ACADEMIC COUNCIL REPORT

SESSION:		**ACTION REQUESTED:**	
Public	☒	**Decision**	☒
		Discussion/Direction	☐
		Information	☐
Financial Impact	☐ **Yes** ☒ **No**	**Included in Budget**	☐ **Yes** ☒ **No**
TO:	**Academic Council**		
DATE:	**June 19, 2023**		
FROM:	**Research Committee**		
PRESENTED BY:	**Les Jacobs, Vice-President, Research and Innovation**		
SUBJECT:	**Establishment of the Aerodynamic and Climatic Adaptation Research (AeroClimar) Centre**		

COMMITTEE MANDATE:
In accordance with Article 1.4(b) of By-law No. 2 and the Procedures for the Creation of Research Entities, Academic Council makes recommendations to the Board on matters including the establishment of research centres.

Recommendation: The Research Committee, at its May 24, 2023 meeting, reviewed the proposal to create the Aerodynamic and Climatic Adaptation Research (AeroClimar) Centre proposed by five Faculty Members in the Faculty of Engineering and Applied Science.

We request that Academic Council review the Aerodynamic and Climatic Adaptation Research (AeroClimar) Centre proposal and find it appropriate to recommend to the Board of Governors for approval.

BACKGROUND/CONTEXT & RATIONALE:
The Aerodynamic and Climatic Adaptation Research Centre aims to bring together a diverse and multidisciplinary community of researchers who are interested in studying the dynamics of flow and its interaction with solid objects across different climatic conditions. By studying these interactions, we can develop adaptive designs for the implementation in several engineering applications to improve their performance, efficiency, and safety. Our ultimate goal is to advance scientific knowledge in this field and develop innovative technologies that will transform our future. One of the primary applications of aerodynamic research is in the aviation industry. Aircraft designers rely on aerodynamic principles to create planes that are more fuel-efficient, faster, and safer to fly. By understanding how air flows over the wings, fuselage, and other components of an aircraft, designers can optimize the shape and configuration of these parts to minimize drag and improve lift. This has significant economic and environmental benefits, as more fuel-efficient

planes can reduce the cost of air travel and minimize the carbon footprint of the aviation industry. Aerodynamics is also essential in the automotive industry, where designers use wind tunnel testing and other aerodynamic tools such as computational fluid dynamics to create cars that are more fuel-efficient. By reducing drag and improving the flow structure around the car, designers can increase its speed and performance while also improving its fuel economy, or the battery range in the case of electric vehicles. In sports, aerodynamics plays a critical role in helping athletes optimize their performance. By reducing drag and improving the flow of air around their bodies or equipment, athletes can run faster, jump higher, and throw farther. This is particularly important in sports such as cycling, skiing, and swimming, where aerodynamic efficiency can make a significant difference in a race. In the construction industry, climatic aerodynamic research helps designers create structures that can withstand strong winds and blowing snow, as well as other environmental forces. By understanding the way wind flows around buildings, architects and engineers can optimize the design to minimize the effects of wind on the structure, making it more stable and safer for occupants. These are just few of the many applications where aerodynamic research cannot be overstated.

Ontario Tech University is a leader in aerodynamic and climatic engineering research, as evidenced by its state-of-the-art research facilities. The university's commitment to advancing the field is further demonstrated by the recent appointment of a Canada Research Chair (CRC) Tier 1 in Adaptive Aerodynamics. This new position will drive innovation in the design of autonomous vehicles (AVs) by implementing controls that can adapt AVs to challenging weather conditions, such as wind, rain, fog, snow, or ice. The appointment of the Canada Research Chair in Adaptive Aerodynamics, along with Ontario Tech University's substantial investments in core aerodynamic research infrastructures, underscores the institution's expertise in the field and its commitment to producing practical solutions that can make a tangible impact. The creation of the Aerodynamic and Climatic Adaptation Research Centre is a natural extension of these efforts, leveraging the existing infrastructure and resources to further advance this vital area of research. The centre will foster collaboration and innovation among multidisciplinary researchers to tackle the complex challenges of aerodynamics and climatic adaptation and develop groundbreaking technological solutions.

Vision

Our vision is to be a world-class centre for research and innovation in the field of climatic aerodynamics.

Mission

Our mission is to drive the development and advancement of cutting-edge technologies and practices that enhance the efficiency, safety, competitiveness, and sustainability of various fields such as air travel, transportation, sports, and wind energy. By leveraging our expertise in aerodynamics and climatic adaptation research, we seek to push the boundaries of what is possible and deliver innovative solutions that address real-world challenges.

RESOURCES REQUIRED:

Physical Requirements

The Aerodynamic and Climatic Adaptation Research Centre will utilize the space currently available to its founding members. However, a central office will be necessary to coordinate activities and hold meetings with potential clients and stakeholders. The location of this office in close proximity to the research infrastructure is crucial, and thus an office in the ACE building would be ideal for this purpose.

Staffing Requirements

As the Aerodynamic and Climatic Adaptation Research Centre is built upon existing faculty collaborations and labs, a key area of growth is to acquire a grant writer who can assist with ongoing projects as well as proposals in the development stage. Thus, the primary goal in the first

few years is to establish a reliable funding source for hiring a staff member. To achieve this objective, the proposers will be encouraged to include funding for this position in their grant applications.

IMPLICATIONS:

Ontario Tech University has unique expertise and state-of-the-art facilities in the areas of aerodynamics, aeroacoustics, fluid-structure interactions, climatic engineering, and adaptive design. Nevertheless, there has been a lack of coordination that hindered the synergy among research activities conducted in these areas and the effective utilization of the university's exceptional on-campus facilities. As a result, the university has yet to establish robust and enduring collaborations with various stakeholders to enhance and expand its research portfolio in a sustainable manner. Thus, the Aerodynamic and Climatic Adaptation Research (AeroClimar) Centre will provide an umbrella framework that facilitates the integration and coordination of research efforts across these multidisciplinary fields. The establishment of this framework under the AeroClimar Centre will enable the university to leverage its unique facilities and expertise to foster strong and sustainable research collaborations with different stakeholders and strengthen its research portfolio.

Additionally, the Aerodynamic and Climatic Adaptation Research (AeroClimar) Centre will be uniquely positioned to foster innovation and advance knowledge in the aforementioned fields. This combination of expertise and resources will make the centre a convergence point for researchers from all over the world to collaborate and conduct cutting-edge research. With its world-class facilities and expertise, the centre will push the boundaries of what is possible in aerodynamics and climatic adaptation research, enabling researchers to deliver innovative solutions that address real-world challenges. The centre's focus on practical solutions that have a real-world impact will also help to attract researchers and collaborators who are passionate about making a positive difference in the world.

ALIGNMENT WITH MISSION, VISION, VALUES & STRATEGIC PLAN:

Ontario Tech University's strategic research plan aims to foster interdisciplinary research collaborations that address complex global challenges. The Aerodynamic and Climatic Adaptation Research Centre (AeroClimar) aligns well with this vision as it is a cross-disciplinary research centre that brings together expertise to address the challenges in various industries and sectors that are vital to the economy, security, and well-being of the country. Moreover, the AeroClimar's main mission is to develop innovative solutions to enhance the safety, performance, and energy efficiency of various industries, including aerospace, construction, and renewable energy. These research activities are aligned well with Ontario Tech University's strategic research priorities, which include energy and sustainability.

Furthermore, the AeroClimar's research mandate involves collaboration with industry partners, government agencies, and other academic institutions, which provides opportunities for knowledge transfer and contributes to the development of a skilled workforce. This approach aligns well with Ontario Tech University's commitment to fostering partnerships that support economic and social development.

Additionally, establishing the AeroClimar Centre is of national importance as it would contribute to the development of advanced technologies and designs in the following various industries and sectors:

1- Aerospace Industry: The aerospace industry is a key driver of innovation and economic growth, with significant contributions to the country's GDP, exports, and job creation. Developing more efficient, safe, and sustainable aircraft and spacecraft is crucial to maintaining the competitiveness of the aerospace industry. the AeroClimar centre would contribute to this goal by conducting research on advanced aerodynamic designs,

materials, and propulsion systems that improve the performance and reduce the environmental impact of aircraft and spacecraft.

2- Transportation Sector: Aerodynamics also plays a critical role in the transportation sector, including road, rail, and maritime transport. Improving the aerodynamic efficiency of vehicles and ships can reduce fuel consumption, emissions, and operating costs, while increasing safety and comfort for passengers. the AeroClimar centre would contribute to this goal by developing innovative technologies and designs that improve the aerodynamic performance of vehicles and ships.
3- Wind Energy: The development of wind energy is crucial to reducing dependence on fossil fuels and mitigating climate change. Aerodynamics is a fundamental aspect of wind energy, as it determines the performance and efficiency of wind turbines. the AeroClimar centre would contribute to this goal by conducting research on advanced aerodynamic designs and control systems that improve the performance and reduce the cost of wind turbines.
4- National Security: Aerodynamics is also critical to national security, particularly in the development of advanced military aircraft, missiles, and drones. the AeroClimar Centre would contribute to this goal by conducting research on advanced aerodynamic designs and materials that enhance the performance and survivability of military aircraft and weapons systems under extreme weather conditions.

Overall, the Aerodynamic and Climatic Adaptation Research Centre is a valuable contributor to Ontario Tech University's strategic research plan as it embodies the interdisciplinary approach and focus on tackling complex global challenges that are central to the university's research priorities.

ALTERNATIVES CONSIDERED:
As mentioned earlier, Ontario Tech University has unparalleled expertise and facilities in the fields of aerodynamics, aeroacoustics, fluid-structure interaction, and climatic adaptation. Failing to capitalize on this expertise, unique infrastructures, and establish the AeroClimar Centre would be a lost opportunity for the university to establish itself as a recognized national and international leader and hinder its ability to secure substantial research funding in these critical fields.

CONSULTATION:
Consultation and feedback on the establishment of the Aerodynamic and Climatic Adaptation Research (AeroClimar) Centre were carried out at different levels within the Faculty of Engineering and Applied Science starting from November 15, 2022. The proposal of the AeroClimar Centre was presented in the Faculty Council on April 27, 2023. Then, the proposal was discussed with the University Research Committee on May 24, 2023.

COMPLIANCE WITH POLICY/LEGISLATION:
The establishment of the AeroClimar Centre aligns with Ontario Tech University's Procedure for the Creation of Research Units, Centres, and Institutes.

NEXT STEPS:
Board of Governors for approval.

MOTION FOR CONSIDERATION:

That pursuant to the recommendation of the Research Committee, Academic Council hereby recommends the Establishment of Aerodynamic and Climatic Adaptation Research (AeroClimar) Centre for approval by the Board of Governors, as presented.

SUPPORTING REFERENCE MATERIALS:

- Proposal, budget, researchers' cvs, and support letter from the Faculty Dean

Proposal for the Establishment of the Aerodynamic and Climatic Adaptation Research (AeroClimar) Centre

April, 2023

1. Name of the Entity:
Aerodynamic and Climatic Adaptation Research Centre (AeroClimar Centre).

2. Proposers – including name, title, and contact information

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3. Background Description and Justification

3.1. Explain why the entity is needed at Ontario Tech University, and if possible, the larger community.

The Aerodynamic and Climatic Adaptation Research (AeroClimar) Centre aims to bring together a diverse and multidisciplinary community of researchers who are interested in studying the aerodynamics and its interaction with solid objects across different climatic conditions. By understanding and modeling these interactions, we can develop adaptive designs for implementation in several engineering applications to improve their performance, efficiency, environmental friendliness, and safety. The ultimate goal of the

AeroClimar Centre is to advance scientific knowledge in this field and develop innovative technologies that will transform our future.

One of the primary applications of aerodynamic research is in the automotive industry. Automotive designers use wind tunnel testing and other aerodynamic tools, such as computational fluid dynamics, to create vehicle body gerometries and topologies which are more fuel-efficient. By reducing drag and improving the flow structure around the car, designers can enhance its handling, drivability, and performance while also improving its fuel economy or the battery range in the case of electric vehicles. Aerodynamics is also essential in the aviation industry. Aircraft designers rely on aerodynamic principles to create planes that are more fuel-efficient, more environmental friendly, faster, and safer to fly. By understanding how air flows over the wings, fuselage, and other components of an aircraft, designers can optimize the shape and configuration of these parts to minimize drag and improve lift. This has significant economic and environmental benefits, as more fuel-efficient planes can reduce the cost of air travel and minimize the carbon footprint of the aviation industry. In sports, aerodynamics plays a critical role in helping athletes optimize their performance. By reducing drag and improving the flow of air around their bodies or equipment, athletes can run faster, jump higher, and swim faster. This is particularly important in sports such as cycling, skiing, and swimming, where aerodynamic efficiency can make a significant difference in a race. Research, innovation, and design of customized sport equipment is aligned with the current research and development at Ontario Tech in additive manufacturing and rapid fabrication has a great potential as a niche area. In the construction industry, climatic aerodynamic research helps designers create structures that can withstand strong winds and blowing snow, as well as other environmental forces. By understanding the way wind flows around buildings, architects and engineers can optimize the design to minimize the effects of wind on the structure, making it more stable and safer for occupants. These are just a few of the many applications where aerodynamic research cannot be overstated.

Ontario Tech University is a leader in aerodynamic and climatic engineering research, as evidenced by its state-of-the-art research facilities. The University's commitment to advancing the field is further demonstrated by the recent appointment of a Canada Research Chair (CRC) Tier 1 in Adaptive Aerodynamics. This new position will drive innovation in the design of autonomous vehicles (AVs) by implementing controls that can adapt AVs to challenging weather conditions, such as wind, rain, fog, snow, or ice. The appointment of the Canada Research Chair in Adaptive Aerodynamics, along with Ontario Tech University's substantial investments in core aerodynamic research infrastructures, underscores the University's expertise in the field and its commitment to producing practical solutions that can make a tangible impact. The creation of the Aerodynamic and Climatic Adaptation Research Centre is a natural extension of these efforts, leveraging the existing infrastructure and resources to further advance this vital area of research. The proposed Centre will foster collaboration and innovation among multidisciplinary researchers to tackle the complex challenges of aerodynamics and climatic adaptation and develop groundbreaking technological solutions.

Vision

Our vision is to be a world-class center for research and innovation in the field of climatic aerodynamics.

Mission

Our mission is to drive the development and advancement of cutting-edge technologies and practices that enhance the efficiency, safety, competitiveness, and sustainability of various fields such as road and marine transportation, air travel, residential and industrial structures defense, sports, and energy sectors. By leveraging our expertise in aerodynamics, fluid-structure interactions, body and surface optimization, and climatic adaptation research, we seek to push the boundaries of what is possible and deliver innovative solutions that address real-world challenges.

3.2. Describe how the entity will foster synergistic collaboration that would not otherwise be possible, and how the entity would facilitate research among scholars within the university and in the wider community.

The Aerodynamic and Climatic Adaptation Research Centre will provide a platform for researchers from different disciplines and backgrounds to collaborate on cutting-edge multidisciplinary research that would not be possible otherwise. By fostering synergistic collaboration, the Centre will enable researchers to pool their knowledge, expertise, and resources to tackle complex problems that require a multidisciplinary approach.

Within the University, the Centre will facilitate research among scholars by providing access to state-of-the-art research facilities and equipment, as well as by organizing workshops, seminars, and other events that bring together researchers from different departments and faculties. The Centre will also support graduate and postdoctoral research programs that enable students and early-career researchers to gain hands-on experience in aerodynamics and climatic adaptation research.

Beyond the University, the Centre will foster research collaboration with scholars in the wider community through partnerships with industry, government agencies, and other academic institutions. The Centre will provide a forum for researchers to share their findings, exchange ideas, and collaborate on research projects that have real-world applications. By bringing together researchers from diverse backgrounds and sectors, the Centre will facilitate the translation of research findings into practical solutions that can have a positive impact on society.

The Aerodynamic and Climatic Adaptation Research (AeroClimar) Centre will be uniquely positioned to foster innovation and advance knowledge in the fields of aerodynamics, aeroacoustics, adaptive digital design, climatic engineering, fluid-structure interactions, and topology optimization. The Centre will bring together a collection of unique expertise and will have access to state-of-the-art research facilities that are among the most sophisticated in the world. This combination of expertise and resources makes the Centre a convergence point for researchers from all over the world to collaborate and conduct cutting-edge research. With its world-class facilities and expertise, the Centre will push the boundaries of what is possible in aerodynamics and climatic adaptation research, enabling researchers to deliver innovative solutions that address real-world challenges. The Centre's focus on practical solutions that have a real-

world impact will also help to attract researchers and collaborators who are passionate about making a positive difference in the world.

Overall, the Aerodynamic and Climatic Adaptation Research Centre will be a hub of innovation and collaboration that will bring together the best and brightest researchers from around the world to advance the frontiers of aerodynamics, climatic adaptation, and resilience.

4. Research Mandate

4.1. Outline the type of research to be performed and identify the scope of activities envisaged.

The Aerodynamic and Climatic Adaptation Research Centre is a research hub focused on developing innovative technologies and strategies to improve the performance and efficiency of buildings, vehicles, and other structures in various climatic conditions. The research at the Centre is interdisciplinary, covering several fields, including aerodynamics, aeroacoustics, adaptive digital design, surface and body fabrication, geometric and dimensioning metrology, climatic engineering, fluid-structure interactions, and topology optimization which are clustered in three groups of Climatic Aerodynamics, Aeroacoustics and Fluid-Structure Interaction, and Solid and Surfaces. Brief description of each cluster with their main research field are provided here.

4.1.1 Climatic Aerodynamics (CA):

Aerodynamics is concerned with the study of the flow of air around objects and its effects on their performance. This area of research encompasses topics such as bluff body aerodynamics, flow separation, turbulent flow, coherent structure dynamics, and flow control, with applications to aerostructures, buildings, and vehicles. In the context of the Centre, researchers would be exploring how to optimize the aerodynamic performance of aircrafts, buildings, ground vehicles, and many other structures to improve their safety, performance, and energy efficiency.

Climatic engineering is concerned with the development of technologies and strategies to address the impacts of extreme weather events, such as hurricanes, hailstorms, heavy rains, floods, and ice storms, on buildings and other structures. Researchers at the Centre would be investigating how to develop resilient and adaptive solutions that can be implemented in many applications so they can withstand extreme weather conditions without compromising their safety and performance.

4.1.2 Aeroacoustics and Fluid-Structure Interaction (AFSI):

Aeroacoustics is the study of sound generation and propagation through air, particularly as it relates to the design of aircraft and other high-speed vehicles. This area of research includes topics such as sound transmission, sound absorption in fluids, radiation and reception of sound waves, resonators, acoustic filters, instability of shear flows and their coupling with sound waves, and active noise control. Researchers at the Centre would be investigating how to minimize noise pollution caused by vehicles and other structures in urban environments.

Fluid-structure interaction refers to the way in which fluid flow interacts with movable or deformable structures, either as a result of internal or external flow. This area of research includes topics such as, non-linear dynamics, mechanical vibration, structure integrity, fluidelastic instability, flutter, and vibration control. In the context of the Centre, researchers would be investigating how to design structures that can withstand the forces exerted by fluids and provide creative solutions to mitigate flow-induced vibration.

4.1.3 Solids and Surfaces (SS)

The research on Solids and Surfaces considers SS design, fabrication, and evaluation. In the field of SS-design, there will be a systematic investigation and research on the classifications of the geometric properties and characteristics on various surfaces and solid bodies along with developing software and digital tools for their design, modeling, and discretizing compatible with multi-physics simulation tools. Adaptive digital design involves the use of Multiphysics analyses and simulation tools to generate and evaluate design alternatives, with the goal of optimizing performance and efficiency. In the context of the Centre, researchers would be exploring how to use digital design tools to create structures that can adapt to changing environmental conditions, such as temperature and wind. Topology optimization research in design of the solid bodies defines material distribution to achieve a desired aerodynamic performance while the functionality and fit requirement are satisfied.

SS-fabrication at *AeroClimar* address the most efficient and accurate methodologies to fabricate prototypes of solid and surfaces. These prototypes are highly needed for various experimental studies on SS including the wind tunnel tests and evaluation. Digital manufacturing technologies including Additive Manufacturing (AM) will be focused in this research to develop fast and customized fabrication processes suitable for climatic aerodynamic tests and evaluations.

SS-Evaluation include research on metrology and inspection of various solids and surfaces needed to evaluate or understand the geometry and surface quality of fabricated or unknown objects. SS-evaluation includes inspection of geometric features, large scale metrology, meso-scale metrology and inspection, and nano and micro scale metrology to characterize surface roughness and other surface qualities.

In summary, the Aerodynamic and Climatic Adaptation Research Centre brings together several interdisciplinary fields of study to develop innovative technologies and strategies to improve the performance and efficiency of buildings, vehicles, and other structures in various climatic conditions.

4.2. Explain how the research activities align with Ontario Tech University's Strategic Research Plan.

Ontario Tech University's strategic research plan aims to foster interdisciplinary research collaborations that address complex global challenges. The Aerodynamic and Climatic Adaptation Research Centre aligns well with this vision as it is a cross-disciplinary research Centre that brings together experts to address the challenges in various industries and sectors that are vital to the economy, security, and well-being of the country. Moreover, AeroClimar's main mission is to develop innovative solutions to enhance the safety, performance, and energy efficiency of various industries, including aerospace, construction, and renewable energy. These research activities are aligned well with Ontario Tech University's strategic research priorities, which include energy and sustainability.

Furthermore, AeroClimar's research mandate involves collaboration with industry partners, government agencies, and other academic institutions, which provides opportunities for knowledge transfer and contributes to the development of a skilled workforce. This approach aligns well with Ontario Tech University's commitment to fostering partnerships that support economic and social development.

Additionally, establishing the AeroClimar Centre is of national importance as it would contribute to the development of advanced technologies and designs in the following various industries and sectors:

1- Transportation Sector: Aerodynamics also plays a critical role in the transportation sector, including road, rail, and maritime transport. Improving the aerodynamic efficiency of vehicles can reduce fuel consumption, emissions, and operating costs while increasing safety and comfort for passengers. The AeroClimar Centre would contribute to this goal by developing innovative technologies and designs that improve the aerodynamic performance of vehicles.
2- Aerospace Industry: The aerospace industry is a key driver of innovation and economic growth, with significant contributions to the country's GDP, exports, and job creation. Developing more efficient, safe, and sustainable aircraft and spacecraft is crucial to maintaining the global competitiveness of the aerospace industry. The AeroClimar Centre would contribute to this goal by conducting research on advanced aerodynamic designs, materials, and propulsion systems that improve performance and reduce the environmental impact of aircraft and spacecraft.
3- Wind Energy: The development of wind energy is crucial to reducing dependence on fossil fuels and mitigating climate change. Aerodynamics is a fundamental aspect of wind energy, as it determines the performance and efficiency of wind turbines. The AeroClimar Centre would contribute to this goal by conducting research on advanced aerodynamic designs and control systems that improve performance and reduce the cost of wind turbines.
4- National Security: Aerodynamics is also critical to national security, particularly in the development of advanced military aircraft, missiles, and drones. The AeroClimar Centre would contribute to this goal by conducting research on advanced aerodynamic designs and materials that enhance the performance and survivability of military aircraft and weapons systems under extreme weather conditions.

Overall, the Aerodynamic and Climatic Adaptation Research Centre is a valuable contributor to Ontario Tech University's strategic research plan as it embodies the interdisciplinary approach and focuses on tackling complex global challenges that are central to the University's research priorities.

4.3. Provide evidence for the long-term sustainability of the entity, including research activities that go beyond collaboration on a single project.

The Aerodynamic and Climatic Adaptation Research Centre is proposed by world-renowned researchers who are experts in their respective fields. Their expertise has earned them funding from government agencies and industry partners, amounting to more than $6.8 million over the last five years (i.e., since 2018). In addition, they have also published a remarkable number of research papers, including over 380 journal articles, 450 referred conference articles, 22 book chapters, and one book. Under the umbrella of the AeroClimar Centre, the founding faculty members will be empowered to create fresh industrial partnerships and expand current ones. A share of any funds obtained by these faculty members will be designated for running the centre's various activities and employing a staff member, thus securing the centre's sustainability in the long run.

The proposal for the AeroClimar Centre is based on the solid foundation of the proposers' significant contributions to the field of aerodynamics and climatic adaptation research. They have established a track record of success that will serve as the backbone of the Centre. Additionally, the Centre will benefit from strategic collaborations that the proposers have established with both national and international partners, including Bombardier Aerospace, Horizon Aircraft, Stantec, Magna International, Transport Canada, General Motors Canada, and Ontario Power Generation, among others.

With the support of the proposers and their partners, the AeroClimar Centre will be well-positioned to advance the field of aerodynamics and climatic adaptation research. The Centre will leverage the knowledge and expertise of its founders to undertake groundbreaking research and innovation to address critical global challenges.

5. List of Existing Research Facilities

The AeroClimar Centre will rely on the following existing infrastructures as the foundation for conducting its diverse research activities:

1- State of the art full scale climatic wind tunnel for testing and model validation through ACE.
2- Anechoic chamber with multi-axis shaker table through ACE.
3- Large and small climatic chamber with -40^{o}C to +60^{o}C temperature range through ACE.
4- Small scale low turbulence wind tunnel for aerodynamic research.
5- A model climatic drive-through wind tunnel
6- High speed wind tunnel for aeracoustics research.
7- The WoW “weather on wheels” instrumented vehicle.
8- Full scale weather instruments: disdrometers; sonic anemometers; weather stations; infrared cameras.
9- A full scale and small scale rain simulators.
10- Model remote controlled test vehicle.
11- Solid and Surface fabrication and Multi-material Additive Manufacturing facilities including Vat PhotoPolymerization, Material Extrusion, and Selective Laser Sintering machines
12- Multi-physics Simulation, CAD/CAM, Topology Optimization and Generative Design, digital twin simulation platforms, various digital design software and hardware workstations.

13- Multi-scale digital metrology and digital inspection systems, laser scanners, tactile probing, surface tomophraphy (micro scale), long range laser tracker (up to 40 m).
14- SHARCNET's supercomputer systems for advanced CFD simulations

6. Student Involvement and Training

The level and type of involvement of undergraduate and graduate students in the activities of the Aerodynamic and Climatic Adaptation Research Centre will depend on the specific research projects and programs undertaken by the Centre. However, it is expected that undergraduate and graduate students will have the opportunity to participate in research activities and projects as well as training programs designed to enhance their skills and knowledge in the field of aerodynamics and climatic adaptation.

The Centre will provide unique research and training opportunities for students at all levels. Undergraduate students may participate in research projects as part of their coursework or through internship programs, allowing them to gain valuable hands-on experience in the field. Graduate students may have the opportunity to participate in more advanced research projects, assisting in the development of cutting-edge technologies and contributing to the advancement of the field.

The AeroClimar Centre will also offer specialized training programs for students, including workshops, seminars, and short courses, designed to enhance their knowledge and skills in the field. These training programs may cover topics such as aerodynamics, climate modeling, renewable energy systems, and sustainable design, among others. The training programs will provide students with the skills and knowledge they need to be successful in their future careers, whether in academia or industry.

In addition to research and training opportunities for undergraduate and graduate students, the Aerodynamic and Climatic Adaptation Research Centre may offer professional industrial courses to professionals already working in the fields of aerodynamics and climatic adaptation.

These professional industrial courses would be designed to provide advanced training and development opportunities for professionals in industry, government agencies, and other organizations involved in the field. By participating in these courses, professionals would be able to stay up-to-date with the latest developments in the field and enhance their skills and knowledge, improving their ability to contribute to their organizations and the industry as a whole. The courses may also provide opportunities for professionals to network with other experts in the field, sharing knowledge and ideas and building valuable connections.

Professional industrial courses offered by the AeroClimar Centre would be developed and taught by experts in the field, including the Centre's founders and collaborators. These courses would be tailored to the needs of industry professionals, providing practical knowledge and skills that can be applied directly in the workplace.

Overall, the Aerodynamic and Climatic Adaptation Research Centre will provide unique and valuable research and training opportunities for undergraduate and graduate students as well as for professionals working in the industry. These opportunities will allow the trainees to gain hands-on experience in cutting-edge research and technology development, as well as enhance their skills and knowledge in the field of aerodynamics and climatic adaptation.

7. Research Dissemination and Service Plan

The Aerodynamic and Climatic Adaptation Research Centre will have a strong focus on the dissemination of research and the provision of service within Ontario Tech University and to the outside community. The following are some of the unique plans that will be implemented:

1. Dissemination of Research: The Centre will disseminate research through various channels such as peer-reviewed journals, conference presentations, and workshops. The Centre will also create a comprehensive website that will provide information on research projects, publications, and events. This website will be regularly updated with the latest research findings and outcomes.

2. Service Plan: The Aerodynamic and Climatic Adaptation Research Centre has a comprehensive service plan that involves developing various programs to serve and impact the community. For instance, the Centre plans to organize community outreach programs aimed at providing information and resources on resilient systems design, renewable energy systems, and climate modeling to local communities.
   Additionally, the Centre intends to partner with industry leaders, government agencies, and non-profit organizations to offer technical expertise and support for various projects. This collaboration will help to promote the Centre's research, as well as foster innovation and sustainable development practices.
   Furthermore, through its extensive network, the Centre will be in a position to provide technical expertise, research findings, and other resources to policymakers. This information will be instrumental in helping policymakers to make informed decisions regarding policy development and implementation in areas such as sustainable design, renewable energy systems, and climate modeling.

8. Governance

The goal of the AeroClimar Centre is to provide assistance to both internal and external researchers and laboratories. To ensure proper management and supervision of the Centre, a Director and a Steering Committee, consisting of the Centre's Founding Faculty Members and Partners, will be responsible for its governance and oversight.

Role	**Mandate**	**Appointment of Members**
Director	• Coordinate and Manage the administration of the Centre • Create possibilities for collaboration with partners	Five-year term appointed according to university policy.
Steering Committee	• Establish yearly objectives for the Centre in areas such as research funding, events,	The founding members of the intitute are members of the steering committee. In addition,

	professional courses and training, and industrial projects • Track the advancement towards achieving those objectives	industrial partners and representative from government agenices may be appointed for a limited term renewable.

Director

The Director of the AeroClimar Centre will oversee the advancement and administration of the Centre, which includes managing the budget and addressing overall matters. The Director will be responsible for creating the yearly report on research activities, fostering collaborations with potential and current partners, and planning the schedule for the research group meetings. The report will be submitted to the Dean of Engineering, with copies sent to the Vice-President of Research and the Provost.

Steering Committee

The Steering Committee of the AeroClimar Centre will be composed of representatives from affiliated faculties within Ontario Tech University and partner organizations. The Committee will establish yearly objectives for the Centre in areas such as research funding, events, projects, and training activities, and monitor the advancement towards achieving those goals. The Committee will convene at least twice annually, with one of the meetings potentially coinciding with the yearly gathering. Additionally, they will assist the Director in creating the annual report.

Annual General Meeting

An annual meeting will be organized by the director for all the stakeholders of the AeroClimar Centre, including partners, collaborating researchers, graduate students, collaborating community members, and faculty previously or prospectively involved in research projects. During the gathering, the activities of the centre over the past year, as detailed in the Director's Annual Report, will be discussed, as well as plans for the upcoming year.

9. Resource Requirements

9.1 Physical Requirements

The Aerodynamic and Climatic Adaptation Research Centre will utilize the space currently available to its founding members. However, a central office will be necessary to coordinate activities and hold meetings with potential clients and stakeholders. The location of this office in close proximity to the research infrastructure is crucial, and thus an office in the ACE building would be ideal for this purpose.

9.2 Staffing Requirements

As the Aerodynamic and Climatic Adaptation Research Centre is built upon existing faculty collaborations and labs, a key area of growth is to acquire a grant writer who can assist with ongoing projects as well as proposals in the development stage. Thus, the primary goal in the first few years is to establish a reliable funding source for hiring a staff member. To achieve this objective, the proposers will be encouraged to include funding for this position in their grant applications.

Curriculum Vitae of the Founding Faculty

Atef Mohany, PhD, PEng

Professor

Horia Hangan, PhD, PEng

Professor

Martin-Agelin-Chaab, PhD, PEng

Associate Professor

Ahmad Barari, PhD, PEng

Associate Professor

Brendan MacDonald, PhD, PEng

Associate Professor

Research Entity Budget

	Items	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Justification
1. Operatonal Budget								
1.1 Labour Costs - Staff								
	Administrative Assistant	$ -	$ -	$ 35,000	$ 35,000	$ 35,000		Not needed in the first 2 years. After the revenue comes from the secured grants/contracts an admin assistant will be hired in year 3.
	Grant Writer	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000		A grant writer will be hired part time. Contingent on the amount of funds secured in the first few years, this poistion may be turned into a full time position.
	Benefits (9%)	$ 3,150	$ 3,150	$ 5,850	$ 5,850	$ 5,850		
SUB-TOTAL Labour		**$ 33,150**	**$ 33,150**	**$ 70,850**	**$ 70,850**	**$ 70,850**	**$ 278,850**	
1.2 Labour Costs - Director								
	Teaching Release	$ -	$ -	$ -	$ -	$ -		Not needed.
	Benefits (9%)							Not needed.
SUB-TOTAL LABOUR		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
1.3 Research Entity Operating Costs								
	Technical/Consulting Services							Not needed.
	IT Support							Not needed.
	Equipment							Not needed.
	Office Supplies and Services							Not needed since this is provided by the Faculty.
	Staff and Director Travel							Faculty member budget.
	Other (explain)							Not needed.
SUB-TOTAL-Research Entity Operating Costs		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
2. Research Networking								
	Seminars and workshops	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 15,000	Annual workshop hosting costs.
	Conference							
	Other (explain)							
SUB-TOTAL-Research Networking		**$ 3,000**	**$ 3,000**	**$ 3,000**	**$ 3,000**	**$ 3,000**	**$ 15,000**	
3. Communications								
	Website	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 5,000	Website creation, hosting, and maintenance fees.
	Other (explain)							
		$ 1,000	**$ 1,000**	**$ 1,000**	**$ 1,000**	**$ 1,000**	**$ 5,000**	
4. Knowledge Transfer and Dissemination								
	Publication Costs	1,000	1000	1000	1000	1000	$5,000	Promotional materials.
	Other (explain)							
SUB-TOTAL								
TOTAL OPERATIONAL BUDGET	**TOTAL OPERATIONAL BUDGET**	**$ 37,150**	**$ 37,150**	**$ 74,850**	**$ 74,850**	**$ 74,850**	**$ 298,850**	
REVENUE								
	VPRI & FEAS Contributions	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 125,000	Costs shared equally betwetween VPRI and FEAS.
	External Grant Funding (Director)	$ 4,000	$ 4,000	$ 10,000	$ 10,000	$ 10,000	$ 38,000	Unsecured- Proposed that the director of the centre contribute $4,000 in the first two years towards the centre. This will ramp up to $10,000 in year 3 based on the flow of grants. This will be built into the grant applications.
	External Grant Funding (Members)	$ 12,000	$ 12,000	$ 30,000	$ 30,000	$ 30,000	$ 114,000	Unsecured - Proposed that each of faculty member collaborating in the centre contribute $3,000 each towards centre staff and resourcing. This will ramp up to $7,500 in year 3 depening on the flow of grants. This will be built into the grant applications.
	Industrail Short Courses			$ 15,000	$ 15,000	$ 15,000	$ 45,000	Unsecured - the short courses will run in year 3 once the center is established and well connected with industry.
TOTAL REVENUE		**$ 41,000**	**$ 41,000**	**$ 80,000**	**$ 80,000**	**$ 80,000**	**$ 322,000**	
TOTAL OPERATIONAL BUDGET LESS REVENUE		**$ 3,850**	**$ 3,850**	**$ 5,150**	**$ 5,150**	**$ 5,150**	**$ 23,150**	

CURRICULUM VITAE FORMAT

A. GENERAL INFORMATION

1. Name, affiliations, contact information

Ahmad Barari, PhD, PEng
Associate Professor
Department of Mechanical and Manufacturing Engineering
Director of Advanced Digital Design and Manufacturing
and Advanced Digital Metrology Laboratories (AD2MLabs)
University of Ontario Institute of Technology – Ontario Tech University (OTU)

2000 Simcoe Street North
Oshawa, Ontario L1H 7K4, Canada
Office Phone: (905) 721-8668 ext 5728
Email: ahmad.barari@uoit.ca;
Web: http://www.ahmadbarari.com;
http://www.AD2MLabs.com;
https://ontariotechu.ca/experts/feas/ahmad-barari.php
Linkedin: https://ca.linkedin.com/in/ahmadbarari
Facebook: https://www.facebook.com/ahmad.barari.1
https://www.facebook.com/AdditiveManufacturingResearch/
https://www.facebook.com/AdvancedCoordinateMetrologyLaboratory/
https://en-gb.facebook.com/AutoStructureDesign/
https://www.facebook.com/groups/ENGDSN/

Other affiliations:
Vice-Chair, IFAC- TC5.1 Technical Committee, Manufacturing Plant Control
Chair, Intelligent Manufacturing Systems Working Group, IFAC- TC5.1
International Federation of Automatic Control

2. Degrees

PhD (2006) - "Conformance to Tolerance by Closed-Loop Machining and Inspection",
Co-supervisors: H. A. ElMaraghy and G. K. Knopf
Department of Mechanical & Materials Engineering, The University of Western Ontario, London, Ontario, Canada, www.uwo.ca

M.Sc. (1997) - "Slicing Optimization in Rapid Prototyping Technologies",
Supervisor: Dr. M. T. Ahmadian
Department of Mechanical Engineering, Sharif University of Technology, Tehran, Iran, www.sharif.edu

B.Sc. –Hons (1995) - "Automated G-Code Generation in CNC Milling of 2 ½ Geometric Features", Supervisor: Dr. B. Arezoo
Department of Mechanical Engineering, Amirkabir University of Technology, Tehran, Iran, www.aut.ac.edu

3. Employment History

July 2017- **Associate Professor**

Department of Automotive, Manufacturing and Mechanical Engineering, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada (www.uoit.ca)

July 2010- **Assistant Professor**

June 2017 Department of Automotive, Manufacturing and Mechanical Engineering, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada (www.uoit.ca)

Date of tenure award: June 2017

Jul 2007- **Tenured Lecturer**

Jul 2010 Department of Automotive, Manufacturing and Mechanical Engineering, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada

Date of tenure award: February 2010

Development and/or delivered courses (www.uoit.ca/calendar):

- Automotive Structural Design & Material Selection- ENGR 4060U
- Advanced Engineering Design – ENGR5011G
- Industrial Ergonomics - ENGR 3460U
- Concurrent Engineering and Design-ENGR 2310U
- Statics & Solid Mechanics - ENGR 2260U
- Fluid mechanics – ENGR2860U
- Fluid Power Systems - ENGR 3320U
- Design Thesis – ENGR4999U

Jun 2006- **Instructor**

May 2007 Department of Automotive, Manufacturing and Mechanical Engineering, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada

Development and/or delivered courses (www.uoit.ca/calendar):

- Machine Design – ENGR3220U
- Industrial Ergonomics - ENGR 3460U
- Concurrent Engineering and Design-ENGR 2310U
- Life Cycle Engineering – ENGR 4380U
- Design Thesis – ENGR 4999U

Oct 2006- **Research Associate**

Dec 2006 Intelligent Manufacturing Systems (IMS) Centre, University of Windsor, Windsor, Ontario, Canada (http://www.ims.uwindsor.ca)

Research Subjects:

- Closed-Loop Engineering
- Computer Aided Tolerancing

May 2006- Jul 2006 **Lecturer**

Department of Mechanical & Materials Engineering, Faculty of Engineering, University of Western Ontario, London, Ontario, Canada (www.uwo.ca)

Delivered course:

- Properties of Materials - ES021b (http://www.eng.uwo.ca/es021b)

Sep 2005- Jan 2006 **Lecturer**

Faculty of Engineering and Applied Science, University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada

Delivered courses (www.uoit.ca/calendar):

- Concurrent Engineering and Design-ENGR 2310U
- Engineering Graphics and Design – ENGR 3200U

Sep 2001- Aug 2006 **Research Assistant**

Integrated Manufacturing Technology Institute (IMTI), National Research Council Canada (NRC), London, Ontario, Canada (http://www.nrc-cnrc.gc.ca/eng/index.html)
Research topics:

- Integrated design and Machining, project partnership with AUTO21 national research project (http://www.auto21.ca)
- Intermittent Machining and Inspection, Distributed Manufacturing group, NRC-IMTI.

Sep 2001- Sep 2005 **Teaching Assistant**

Department of Mechanical & Materials Engineering, Faculty of Engineering, University of Western Ontario, London, Ontario, Canada, (www.uwo.ca)

Presented course:

- Mechanics of Materials
- Computer Aided Design and Manufacturing
- Heat Transfer
- Thermodynamics

March 1999- Aug 2001 **Manager**

Metrology Department, Research Center of Sharif University of Technology, Tehran, Iran (http://www.sharif.edu)

- Developing quality management procedures.
- Developing metrology workshops and training packages for industries.
- Collaborative projects with business and industries
- Research coordinator on Coordinate Metrology, Reverse Engineering, Kinematic error calibration, analysis, and compensation for Machine Tools and Robots.

June 1995- **Research Engineer - Manufacturing Advisor**

Aug 2001 Tehran Scientific & Industrial Services, Tehran, Iran
Quality enhancement and assurance for Automotive industries and suppliers of Iran Khodro (https://www.ikco.ir/en/). Projects focused on:

- Research & Development on design and manufacturing methodologies for auto-industries.
- Reverse Engineering
- Strategic planning for tier one auto-industries.
- Training courses for more than 350 Auto-industry companies with variety of technologies
- Development of workshops and applied courses for Auto-industries.

4. Honours, Awards, Certificates

(i) Honours

May 2018- **Adjunct Professor**

Department of Mechanical & Materials Engineering, Faculty of Engineering, University of Western Ontario, London, Ontario, Canada (www.uwo.ca)

May 2010- **Adjunct Professor**

April 2016 Department of Mechanical & Materials Engineering, Faculty of Engineering, University of Western Ontario, London, Ontario, Canada (www.uwo.ca)

Sep 2006- **Visitor Researcher**

Dec 2007 Integrated Manufacturing Technology Institute (IMTI), National Research Council Canada (NRC), London, Ontario, Canada (http://www.nrc-cnrc.gc.ca/eng/index.html)
Research topic: Simulation of Machining Errors

(ii) Awards

- Best Paper Award, 17th IFAC Symposium on Information Control Problems in Manufacturing (INCOM 2021), Budapest, Hungary, June 7-9, https://incom2021.org/
- Best Paper Award, 2020 IEEE 10th International Conference Nanomaterials: Applications & Properties, NAP 2020, Sumy, Ukraine, 9-13 November 2020, https://nap.sumdu.edu.ua/index.php/nap/nap2021
- Best Paper Award, industrial paper award, Intelligent Manufacturing systems, IMS2016, Austin, Texas, USA, December 2016, http://www.ifacims2016.com/
- Achievement Increment Award (AI), Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, $2400/year, July 2016.
- Achievement Increment Award (AI), Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, $2400/year, July 2014.
- First Place in Ontario, Academic Advisor of Capstone Project, 2010 Ontario Centres of Excellence (OCE) Discovery Showcase, Metro Toronto Convention Centre, (http://www.ocediscovery.com).
- Second Place Winner, Academic Advisor Formula SAE Racing Car, 2010 Student Competition, University of Toronto.
- First Place Winner, Design Chair Award, Advisor of winning Capstone project, Mechanical Engineering programs, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, 2010.

- First Place Winner, Design Chair Award, Advisor of winning Capstone project, Mechanical Engineering programs, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, 2009.
- Second Place Winner, Academic Advisor Formula SAE Racing Car, 2010 Student Competition, University of Toronto.
- Teaching Excellent Award 2008-2009, Faculty of Engineering & Applied Science, University of Ontario Institute of Technology, $500, 2010.
- The Western Engineering Graduate Thesis Research Awards, London, Ontario, Canada, March 2006.
- The Best Project, HQP competition, "*Design of Automobile of 2020*", AUTO21 Third Annual Scientific Conference, Oshawa, Ontario, Canada, June 2005.
- First Round Winner, HQP Poster Competition, AUTO21 National Project, 2005 HQP Conference, Oshawa, Ontario, Canada, May 2005.
- First Round Winner, HQP Poster Competition, AUTO21 National Project, 2004 HQP Conference, sponsored by Daimler-Chrysler Canada, Windsor, Ontario, Canada, May 2004.
- The Best Project Display, AUTO21 Third Annual Scientific Conference, Montréal, Quebec, Canada, $2,500, June 2004.
- First Round Winner, HQP Poster Competition, AUTO21 National Project, 2003 HQP Conference, Oakville, Ontario, Canada, June 2003.
- International Graduate Students Scholarship (IGSS), University of Western Ontario, London, Ontario, Canada, $5,000, 9/2001 – 9/2005.
- Special University Scholarship (SUS), University of Western Ontario, London Ontario, Canada, $12,000/year, 9/2001 – 9/2005.
- National Higher Education Scholarship, Masters Program, Sharif University of Technology, Iran, (9/1995-1/1998).
- National Higher Education Scholarship, Bachelor Program, Amirkabir University, Iran, (9/1990 – 9/1995).

(iii) Certificates – Professional Training

2017 **ANSYS 18 - SpaceClaim**

SimuTech, Toronto, Canada

2017 **ANSYS 18 - Acoustics**

SimuTech, Toronto, Canada

2017 **ANSYS 18 - Linear and Non-Linear Dynamics**

SimuTech, Toronto, Canada

2014 **PolyWorks Reverse Engineering Solution**

InnovMetric Logiciels, Quebec, Canada

2014 **PolyWorks Coordinate Metrology**

InnovMetric Logiciels, Quebec, Canada

2013 **CAM2 Metrology Software**

Faro Technology, Toronto, Canada

2013 **Coordinate Metrology Portable Arm**

Faro Technology, Toronto, Canada

2013 **On Machine Measurement Touch Probe**

REISHAW PLC, Toronto, Canada

2012 **3D Topography**

MICROPHASE, Paris, France

2008 **Online teaching environment using Adobe Connect**

University of Ontario Institute of Technology, Oshawa, Ontario, Canada.

2008 **Developing audio/video based lectures using Camtesia**

University of Ontario Institute of Technology, Oshawa, Ontario, Canada.

2006 **E-Learning systems for educational institutions- WebCT Vista**

University of Ontario Institute of Technology, Oshawa, Ontario, Canada.

2005 **E-Learning systems for educational institutions- WebCT**

University of Ontario Institute of Technology, Oshawa, Ontario, Canada.

2003 **Strategies and Practice of University Teaching**

University of Western Ontario, London, Ontario, Canada.

2002 **WHMIS / Research Lab Safety**

Integrated Manufacturing Technology Institute (IMTI), London, Ontario, Canada.

2001 **TalyRound Metrology System**

TAYLOR HOBSON Ltd, Tehran, Iran.

2001 **TalyRound Metrology System**

TAYLOR HOBSON Ltd, Tehran, Iran.

2000 **Laser Interferometer System**

RENISHAW PLC, Wotton – under - edge, England.

2000 **Ball-Bar Calibration System**

REISHAW PLC, Wotton – under - edge, England.

1999 **Coordinate Metrology**

CARL ZEISS AG, Oberkochen, Germany.

5. Professional Affiliations and Activities

- Chair – Intelligent Manufacturing Systems Working Group, IFAC TC 5.1 (https://tc.ifac-control.org/5/1/scope), International Federation of Automatic Control (IFAC), 2020.

- Vice – Chair of IFAC Technical Committee on Manufacturing Plant Control - IFAC TC 5.1 (http://tc.ifac-control.org/5/1/members/ahmad-barari), International Federation of Automatic Control (IFAC), 2020.

- Member of IFAC Technical Committee on Manufacturing Plant Control - IFAC TC 5.1 (http://tc.ifac-control.org/5/1/members/ahmad-barari), International Federation of Automatic Control (IFAC), 2015-2020.

- Member of American society of Mechanical Engineering (ASME) – Verification and Validation (V&V) Method Data-Driven and Hybrid models - (https://www.asme.org/), since 2020.

- Member of American society of Mechanical Engineering (ASME) – Model Based Enterprise (MBE) Support Group - (https://www.asme.org/), since 2020.

- Member of American society of Mechanical Engineering (ASME) – B46- Project team 53 – Surface Finish for Additive Manufacturing (https://www.asme.org/), 2017.

- Member of American society of Mechanical Engineering (ASME) – B46- Project team pool– Classification and Designation of Surface Qualities (https://www.asme.org/), 2017.

- Member of Education Committee, Coordinate Metrology Society (http://www.cmsc.org/coordinate-metrology-society-cms), 2011-13

- Member of Society of Automotive Engineering international, (http://www.sae.org/), 2011

- Member of American Society for Precision Engineering (http://aspe.net), 2010

- Member of Professional Engineers of Ontario (http://www.peo.on.ca/), 2009

- Member of American Society of Mechanical Engineering (http://www.asme.org), 2005

- Materials and Manufacturing Ontario (http://mmo.on.ca/home.htm), Fall 2001

B. RESEARCH

1. Current Research Interests

- Advanced Manufacturing Technologies, Digital Manufacturing.
- Additive Manufacturing and Rapid Prototyping of sculptured Surfaces.
- Precision Manufacturing, Measurement Uncertainty. 3D Coordinate Metrology, CAM-Based Inspection, CMM inspection of freeform Surfaces.
- Digitalization in inspection and maintenance, digital twins for predictive maintenance.
- Manufacturing surface integrity, Surface quality, and Surface tribology.
- Reverse Engineering. Surface Reconstruction.
- Structural design optimization, Topology optimization, FEA-Based design optimization.

2. Research Awards (grants, contracts, fellowships) including:

(i) Grants

My role in all the following items were the principle investigator. In case of having a co-applicant, the percentage indicated inside the bracket is less than (100%)

F51 **Natural Sciences and Engineering Research Council (NSERC): Alliance Grants (ALLRP) - Missions, "**"Creation of LIVE Digital Twin for Prognostics and Predictive Maintenance of Rotating Machineries (LIVE for 2PM)", **$353,700** (100%), 2022-2024.

F50 **Ontario Power Generation - Repair or Replace Metal 3D Printer Machine (RoR Machine**, "Additive Manufacturing for Repair or Replace in Maintenance of Power Generation Machines", **$270,000** (100%), 2022-2024.

F49 **Natural Sciences and Engineering Research Council (NSERC): Innovation Link Grant, Horizon Aircraft and Ontario Tech Internal Competition**, "Design, Simulation and Testing of Novel Wing-Integrated Electrical Vertical Take-off and Landing (eVTOL) System: **$375,000** (co- applicant, 33%), 2022-2025.

F47 **Automotive Parts Manufacturer's Association (APMA) - Project Arrow: Zero Emission Canadian Vehicle, "**Reverse Engineering of Structure and Components - Digital Metrology, Reverse Engineering, and CAD modeling of Chassis and Structural Components", **$77,356** (100%), 2021-2022.

F46 **CFI John R. Evans Leaders Fund (JELF), "**Additive Manufacturing of Reactive Materials for Transportation Industries", **$151,121** (main-applicant, 33%), 2021.

F45 **Ontario Centers of Excellence Funding (OCE) - VOUCHER FOR INNOVATION AND PRODUCTIVITY (VIP), and Natural Sciences and Engineering Research Council (NSERC),** Arshon Silicon Technology, "Structural Smart Sensors for LIVE Digital Twins of pipelines in Power Generation and Oil and Gas Industries (3S for LIVE Digital Twins)", **$75,000** (100%), 2021.

F41 **Brazilian Federal Foundation for Support and Evaluation of Graduate Education - CAPES, Ministry of Education - MEC,** Scholarship for research visit to USP", **$5,000** (100%), 2020.

F40 **Ontario Centers of Excellence Funding (OCE) - VOUCHER FOR INNOVATION AND PRODUCTIVITY I (VIPI),** "Using Digital Metrology to Control Additive Manufacturing Process", **$249,600** (100%), 2020-2022.

F39 **Brazilian Federal Foundation for Support and Evaluation of Graduate Education - CAPES, Ministry of Education - MEC,** "Scholarship for flight expenses - research visit to the university of Sap Paulo", **$994** (100%), 2019.

F38 **Natural Sciences and Engineering Research Council (NSERC) - Discovery Grant**, "Integrated Inspection System for Digital Manufacturing", **$160,000** (100%), 2019-2024.

F37 **Natural Sciences and Engineering Research Council (NSERC) - Collaborative Research and Development Grants (CRD)**, BlueWrist Inc." Coordinate Metrology and Defected Zone Detection for High Contrasting Surfaces", **$180,425** (100%), 2019-2022.

F36 **National Research Council Canada (NRC) / Industrial Research Assistance Program (IRAP)**, Oombo Technologies, "Prototyping and Test of a New Electronic Road Flare", **$2,150** (100%), 2018.

F35 **National Research Council Canada (NRC) / Industrial Research Assistance Program (IRAP)**, Anubis Solutions, "Developing a solution to control Vacuum Layer Gripping (VLG) Systems", **$10,612** (100%), 2018.

F33 **Natural Sciences and Engineering Research Council (NSERC) - Engage**, BlueWrist Inc." Reducing the sensitivity to 3D scanning noises in measurement of planar surfaces", **$53,889** (100%), 2018.

F32 **Ontario Centers of Excellence Funding (OCE) - VOUCHER FOR INNOVATION AND PRODUCTIVITY I (VIPI)**, "Developing Vacuum-Based End of Arm Pick and Place Tools Using Additive Manufacturing", **$62,500** (100%), 2018.

F31 **Natural Sciences and Engineering Research Council (NSERC) - NSERC Early Career Researcher**, "Integrated Platform for Coordinate Metrology to Enhance Adaptability", **$23,000** (100%), 2018-19

F30 **Natural Sciences and Engineering Research Council (NSERC) - Engage**, SimuTech Group, "Developing a topology optimization module for additive manufacturing applications using ANSYS platform", **$52,480** (100%), 2017.

F29 **National Research Council Canada (NRC) / Industrial Research Assistance Program (IRAP)** , Intellectual Alliance Inc., "Process Control in Diamond-Like Carbon Coating to maintain Surface Quality", **$10,000** (100%), 2016.

F28 **Natural Sciences and Engineering Research Council (NSERC) - Engage**, Cimetrix Ltd, " Post Processing of Additive Manufacturing ABS parts using chemical solution", **$51,167** (100%), 2015.

F27 **Natural Sciences and Engineering Research Council (NSERC) - Engage**, Anubis Manufacturing Consultants Corporation, "Optimization of the Curing Cycles in Selective Sintering Process", **$49.692** (100%), 2015.

F26 **Ontario Centers of Excellence Funding, Technical Problem Solving,** Intellectual Alliance, "Effect of Diamond-Like Carbon Coating on Surface Roughness and Friction Properties of Shafts", **$78,530** (100%), 2013-2014.

F25 **Natural Sciences and Engineering Research Council (NSERC) - Discovery Grant-Additional Award**,"Integrated Platform for Coordinate Metrology to Enhance Adaptability", **$20,000** (100%), 2012-2018.

F21 **Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) and University of Ontario Institute of Technology (OTU), FAPESP-UOIT Brazil/Canada,** "Minimum Deviation Zone of Parametric Sculptured Surfaces in Automotive Body Manufacturing", **$10,000** (100%), 2012-2013.

F20 **Ontario Centers of Excellence Funding, OCE Connections,** Durmach Tools and Dies, "Design of a Walking-Aide Device for a Hemiplegic (half-Body Paralyzed Patient)", **$4000** (100%), 2012-2013.

F19 **Ontario Centers of Excellence Funding, OCE Connections,** Multivans Inc, "Design for weight minimization of 22' Van Bodies", **$23,000** (100%), 2012-2013.

F18 **Federal Economic Development Agency for Southern Ontario (FedDev Ontario), Applied Research and Commercialization Initiative - Industry University research collaborations,** Intellectual Alliance Inc., "Control of Friction Coefficient of Coated Seal Rings in POD Valves Used in Oil Industry", **$69,620** (100%), 2012-2013.

F17 **Natural Sciences and Engineering Research Council (NSERC) - Engage**, Lamko Tool & Mold Inc., " Automated Vision-Based Tool Holder Calibration for Collision-Free Milling", **$48,884** (100%), 2012.

F16 **University of Ontario Institute of Technology (OTU)**, "Tenure Track Start-up Fund", **$40,000** (100%), 2010-2012.

F15 **Ontario Centers of Excellence Fund, OCE Connections,** Gerdau Ameristeel Steel, "Vision-Based Automated Piece Count System", **$3500** (100%), 2011-2-12.

F14 **Ontario Centers of Excellence Fund, OCE Connections,** Durmach Tools and Dies, "Machining Chatter Control Mechanism", **$2500** (100%), 2011-2012.

F12 **Natural Sciences and Engineering Research Council (NSERC) - Discovery Grant-Additional Award**,"Integrated Platform for Coordinate Metrology to Enhance Adaptability", **$5,000** (100%), 2011.

F11 **Canada Foundation for Innovation (CFI)- John R. Evans Leaders Opportunity Fund** " Integrated Research Platform for Pattern Recognition of Machining Errors", **$168,912+ $19,273 for** maintenance (Principle Applicant - 50%), 2011-2020.

F10 **Natural Sciences and Engineering Research Council (NSERC) - Discovery Grant**, "Integrated Platform for Coordinate Metrology to Enhance Adaptability", **$90,000** (100%), 2011-2018.

F09 **Federal Economic Development Agency for Southern Ontario (FedDev Ontario), Applied Research and Commercialization Initiative - Industry University research collaborations,** Durmach Tools and Dies, "Selection of Optimum Machining Parameters to Reduce Cutting-Tool Wear Based on Machine-Tool Performance", **$69,200** (100%), 2011.

F08 **Ontario Centers of Excellence Fund, OCE Connections,** Durmach Tools and Dies, "Design and Manufacturing of Drive-Train Package for Formula SAE Car Composite Based Drive-Shaft", **$5500** (100%), 2010-2011.

F07 **Ontario Centers of Excellence Fund, OCE Connections,** "Active Aerodynamics System", **$2000** (100%), 2010-2011.

F06 **Ontario Centers of Excellence Fund, OCE Connections,** "Sustainable SMC/BMC-Based Redesign", **$3500** (100%), 2010-2011.

F05 **Ontario Centers of Excellence Fund, OCE Connections,** Automotive Center of Excellence, "Design and Prototyping of Vehicle Ignition Kill Device", **$3500** (100%), 2010-2011.

F04 **Ontario Centers of Excellence Fund, OCE Connections,** Multimatic Inc., "Honey-comb composite Structure of Formula SAE Racing Car", **$2500** (100%), 2009-2010.

F03 **Ontario Centers of Excellence Fund, OCE Connections,** Multimatic Inc., "Design of New Generation of UOIT's Formula SAE Racing Cars Employing Automated-Adjustable Aerodynamic Attributes", **$7500** (100%), 2009-2010.

F02 **Ontario Centers of Excellence Fund, OCE Connections,** "Design Optimization of a Stirling Engine", **$3500** (100%), 2009-2010.

F01 **Siemens Product Lifecycle Management Software, Inc.,** "Design and Development of NX-Based Auto-Body Design Software", **$2000** (100%), 2009-2010.

(ii) **Other Awards**

the award holder in the following items were my research students to work on my proposed research projects

F48 **Natural Sciences and Engineering Research Council (NSERC) - Undergraduate Student Research Award (USRAs),** "Intelligent defect detection and repair of Digital Parts and Machine Components"**, $6,000**, 2022.

F44 **Natural Sciences and Engineering Research Council (NSERC) - Undergraduate Student Research Award (USRAs),** "Internet of Things Applications in Digital Metrology, Manufacturing and Maintenance"**, $6,000**, 2021.

F43 **Natural Sciences and Engineering Research Council (NSERC) - Undergraduate Student Research Award (USRAs),** "Digital Twin Application - Design and Development of Multi-material 3D Printing System"**, $6,000**, 2021.

F42 **Natural Sciences and Engineering Research Council (NSERC) - Undergraduate Student Research Award (USRAs), "**drone-based 3D object scanning system"**, $4500**, 2020.

F34 **Natural Sciences and Engineering Research Council (NSERC) - Undergraduate Student Research Award (USRAs), "**Topology Optimization for Additive Manufacturing"**, $4500**, 2018.

F24 **Natural Sciences and Engineering Research Council (NSERC) - Undergraduate Student Research Award (USRAs), "**Topology Optimization for Additive Manufacturing"**, $4500**, 2017.

F23 **Natural Sciences and Engineering Research Council (NSERC) - Undergraduate Student Research Award (USRAs), "**Multi-Head 3D Printing System"**, $4500**, 2014.

F22 **Natural Sciences and Engineering Research Council (NSERC) - Undergraduate Student Research Award (USRAs),** "3D Measurement of Textures on Carbon - Coated Surfaces", **$4500**, 2013.

F13 **Natural Sciences and Engineering Research Council (NSERC) - Undergraduate Student Research Award (USRAs),** "Inspection of Complex Surfaces using Laser Scanning", **$4500**, 2012.

C. SCHOLARLY AND PROFESSIONAL WORK

1. Refereed publications

(ii) Articles in refereed journals – Published / In-Press

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EB04 Barari, A., Tsuzuki, M., S. G., Cohen, Y., and Macchi, M., "Smart manufacturing for Industry 4.0 Era", International Journal of Computer Integrated Manufacturing, Double Special Issue, (2022).

EB03 Barari, A., Tsuzuki, M., S. G., Cohen, Y., and Macchi, M., "Intelligent manufacturing Systems Towards Industry 4.0 Era", Journal of Intelligent Manufacturing, Special Issue, (2021).

EB02 Barari A., IFAC-PapersOnLine , Special Issue for 13th IFAC Workshop on Intelligent Manufacturing Systems IMS 2019", ScienceDirect, Volume 52, Issue 10, Pages 1-406 (2019), https://www.sciencedirect.com/journal/ifac-papersonline/vol/52/issue/10

EB01 Barari A., "Concurrent Engineering and Design", McGraw Hill, 2008, ISBN: 9780070262187, 480 pages.

2. Contributions to practical applications of knowledge –software development

A03 Barari A., 1999, Developing an integrated software solution for industrial Rapid Prototyping system (Protogen), for Razi Metallurgy Co. Ltd, Tehran, Iran

Application: The software is developed for adaptive slicing of the solid Model, automated generation of supports and automatic optimum path generation.

A02 Barari A., 1999, Developing Machining Tool-Path Simulation Software for Three-Axis DECKEL CNC Milling Machine (3D-Sim), for Husseini Machine-Tools Co. Ltd., Tehran, Iran
Application: 3D graphical machining tool-path simulation for machining of the sculptured surface.

A01 Barari A., 1998, Developing controlling software for 4-axes CNC Milling Machine (3D-Con), for Husseini Machine-Tools Co. Ltd., Tehran, Iran
Application: To Control machining operation for 3D Linear, Circular, Ellipsoidal and Helical Interpolations with capability of 3D tool radius compensation in contour milling.

3. Manuscripts/publications etc. in preparation and submitted to publishers but not yet accepted.

J52 Bender, D., Barari, A., 2022, "On Finding the Density-Gradient Vectors of A 3D Structure Resulting from Topology Optimization", *Structural optimization*, Submitted – October 2021.

4. Technical Reports and Consulting Activities

(i) Technical Reports

R10 Technical report,*"Design and Developing of End of Arm Palletizing Too for Additive Manufacturing"*, prepared for *Anubis Manufacturing Inc.*, Mississauga, Ontario, Canada, 2018

R09 Technical report,*"Post Processing of Additive Manufacturing ABS parts using chemical solution"*, prepared for *Cimetrix Ltd*, Oshawa, Ontario, Canada, 2016

R08 Technical report,*" Optimization of the Curing Cycles in Selective Sintering Process"*, prepared for *Anubis Engineering Solutions*, Missisauga, Ontario, Canada, 2015

R07 Technical report, *"Effect of Diamond-Like Carbon Coating on Surface Roughness and Friction Properties of Shafts"*, prepared for *Intellectual Alliance*, Concord, Ontario, Canada, 2014

R06 Technical report, *"Control of Friction Coefficient of Coated Seal Rings in POD Valves Used in Oil Industry"* , prepared for *Intellectual Alliance*, Concord, Ontario, Canada, 2013

R05 Technical report, *"Design for weight minimization of 22' Van Bodies"*, prepared for *Multivans Inc*, Caledon, Ontario, Canada, 2013

R04 Technical report, *"Vision-Based Automated Piece Count System"*, prepared for *Gerdau Ameristeel Steel*, Whitby, Ontario, Canada, 2012

R03 Technical report, *"Machining Chatter Control Mechanism"*, prepared for *Durmach Tools and Dies*, Bowmanville, Ontario, Canada, 2012

R02 Technical report,*" Automated Vision-Based Tool Holder Calibration for Collision-Free Milling"*, prepared for *Lamko Tool & Mold Inc.*, London, Ontario, Canada, 2012

R01 Technical report, *"Selection of Optimum Machining Parameters to Reduce Cutting-Tool Wear Based on Machine-Tool Performance"*, prepared for *Durmach Tools and Dies*, Bowmanville, Ontario, Canada, 2011

(ii)Consulting Activities

- Developing a topology optimization module for additive manufacturing applications using ANSYS platform, 2016-2017, SimuTech Group, Toronto, Ontario, Ontario.
- Process Control in Diamond-Like Carbon Coating to maintain Surface Quality, 2016-2017, Intellectual Alliance Inc., Vaughan, Ontario, Ontario.
- Surface finish of 3D printed ABS parts using chemical solution, 2015-2016, Cimetrix Ltd, Oshawa, Ontario, Ontario.
- Cooling cycles in selective laser sintering 3D printing process, 2015, Anubis 3D, Mississauga, Ontario, Canada.
- Design for automated assembly process of pancake motors, 2013-2014, Van der Graaf Inc., Brampton, Ontario, Canada.
- Design for weight minimization of 22' van bodies, 2012-2013, Mulivans Inc., Bolton, Ontario, Canada.
- 3D topography of surface texture on Carbon Coated Surfaces, 2013, Intellectual Allience Inc., Vaughan, Ontario, Canada.
- Developing a vision system for on-machine measurement of the geometric parameters of the tool-holder and cutting tool, 2012-2013, Lamko Tool and Mold Inc., London, Ontario, Canada.
- Developing a vision system for automatic counting the manufactured pieces in each batch, 2011-2012, Gerdau Ameristeel Oshawa, Whitby, Ontario, Canada.
- Developing experimental setup for measurement of cutting tool vibration, 2011-2012, *Durmach Tools and Dies*, Bowmanville, Ontario, Canada.
- Polymer waste stream management, 2010-2011, Jet Molding Compounds Inc., Ajax, Ontario, Canada.

- Design of holster Flap Tester, 2010-2011, Research In Motion, Waterloo, Ontario, Canada.

- Adjustable Bending mechanism for tubular lattice materials, 2008-2009, Millard Tower Co., Cobourg, Ontario, Canada.

- Structural enhancement and weight reduction of tube-frame chassis, utilizing aluminum extrusions and composite body structure, 2010-2011, Multimatic Engineering Services Group, Markham, Ontario, Canada.

- Enhancement of mechanical properties of composite body structure utilizing reinforcing ribs, 2009-2010, Multimatic Engineering Services Group, Markham, Ontario, Canada.

- Aerodynamic analysis of a Formula SAE racing car chassis and the design of dynamically intelligent adjustable wings to enhance vehicle handling, 2010-2011, *Durmach Tools and Dies*, Bowmanville, Ontario, Canada.

- Development and evaluation of a Stirling cycle engine, 2009-2010, Omachron, Oshawa, Ontario, Canada.

- An ergonomics-based wedge driver for 3EA/B7 General Electric Motor, , General Electric- GE motor, 2008-2009,Peterborough, Ontario, Canada.

- Partners for the Advancement of Collaborative Engineering Education (PACE) international project in designing an emerging market vehicle - Design for Manufacturing of Auto-body for GM's Emerging Market Vehicle, 2008-2009, General Motors international project.

- Industrial Consulting in design, prototyping, test and production planning of reconfigurable manufacturing cells, 1996-2000, for TAC-CUT Co. Ltd., Tehran, Iran.
  Industrial Machining stations including Drilling, Tapping and indexing units were developed in this group of projects based on the ISO standard to be utilized in Reconfigurable Manufacturing Systems.

- Design and manufacturing consulting for auto-industry sectors, 1995-2001, Tehran Scientific & Industrial Services, Tehran, Iran.
  Projects in quality enhancement of Automotive industries and suppliers, reverse engineering of automotive parts and assemblies, research & development of design and manufacturing methodologies for auto-industries, strategic planning for tire one auto-industries, developing and presenting workshops & training courses.

5. Invited Lectures and Papers presented at meetings and symposia

- Invited Speaker, IndustrioTech© Seminars - Smart Maintenance, "*LIVE Digital Twin for Smart Maintenance*", January 28, 2021, Ryerson University, on-line event, Toronto, Canada.

- Invited Speaker, Finite Element Modeling of Additive Manufacturing Operations, "*Design for Additive Manufacturing*", January 22, 2021, McMaster Manufacturing Research Institute (MMRI), Webinar, Hamilton, Canada.

- Invited Speaker, Product Success From Patent to Sales, "*COVID-19 and Digitization in Product Development*", May 28 2020, Cortex Webinar, Toronto, Canada.

- Invited Speaker, Department of Mechatronics Engineering, University of Sao Paulo, "*Integration Gaps in the Digital Product Development Cycle*", October 29, 2019, Sao Paulo, Brazil.

- Invited Keynote speaker, InnoVission 2019, Chinese Professionals Association of Canada (CPAC)'s annual professional development conference, "*The Digital Manufacturing's Requirement in the Industry 4.0 Era*", September 29, 2019, Toronto, Ontario, Canada. https://www.cpac-canada.ca/2019innovision/

- Invited Keynote speaker, Second 3D printing Conference, Advanced Materials and Manufacturing Technologies Council, "*A new Design Paradigm for Additive Manufacturing*", December 5-7, 2018, Tehran, Iran.

- Invited One day Seminar: Evolutionary Technologies for Additive Manufacturing, Faculty of Engineering, University of Guelph, Ontario, Canada, "*Advanced Manufacturing – Academic Research Directions in Additive Manufacturing*", October 1st, 2018.

- Invited One day Seminar, Faculty of Engineering, University of Tabriz, Tabriz, Iran, "*A review on Geometric Tolerances, Topology Optimization, and Surface Integrity in Additive Manufacturing Products*", July 18, 2018.

- Seminar on Vehicle Safety, Simulation Tools for Autonomous Transportation and human-machine interface (HMI), University of Ontario Institute of Technology, Oshawa, Ontario, Canada, "*Industrial Internet of Things Center of Excellence*", http://go.simutechgroup.com/autonomous-systems-uoit , February 26th-2018.

- Guest Speaker, Seminar: ANSYS 18 Innovations sponsored by SimuTech Group – Canada, McMichael Art Gallery, Kleinberg, Ontario, Canada, "*Topology Optimization in Design for Additive Manufacturing*", March 2017.

- Work shop, 8th IFAC Conference on Manufacturing, Modelling, Management and Control (MIM 2016), Workshop on Digital Manufacturing, University of Troyes, Troyes, France, "*Digital Manufacturing: using an Additive Manufacturing platform*", http://mim2016.utt.fr/workshop2.htm, June 2016.

- Invited Seminar, Faculty of Engineering, University of Guilan, Rasht, Iran, "*A review on Geometric Tolerances and Surface Integrity in Additive Manufacturing Products*", April, 29, 2016.

- Work shop, 15th IFAC/IEEE/IFIP/IFORS Symposium on Information Control in Manufacturing (INCOM 2015), Workshop on Additive Manufacturing, Ottawa, Canada,

"*Additive Manufacturing and 3D Printing*", http://www.incom2015.org/downloads/workshop1.pdf , May 2015.

- Invited Lecture, Faculty of Engineering, University of Tabriz, Tabriz, Iran, "*Advances in Additive Manufacturing*", August 2014.

- Invited Lecture, Integrated Manufacturing Technology Institute (IMTI), National Research Council Canada, London, Ontario, Canada, "*Closed-Loop Inspection & Machining for Fabrication of Dies and Tools*", June 2006.

- Invited Lecture, Intelligent Manufacturing Systems (IMS), University of Windsor, Windsor, Ontario, Canada, "*Hybrid Measurement Systems*", August 2004.

- Invited Lecture, Intelligent Manufacturing Systems (IMS), University of Windsor, Windsor, Ontario, Canada, "*Optimum Slicing of Solid Models Rapid Prototyping*", July 2001.

C. TEACHING ACTIVITIES

Number of Developed courses (and presented for the first time): 18 courses

Number of Delivered courses Titles: 30 courses titles

Number of taught classes: 99 classes

1. Graduate courses taught

GT05 **Advanced Topology Optimization** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2019, Winter 2022. This course was developed and presented as PhD and MASc Directed Studies of advanced topology optimization.

GT04 **Advanced Computational Metrology** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, September 2015. This course was developed and presented as PhD and MASc Directed Studies of advanced coordinate metrology systems.

GT03 **Advances in Additive Manufacturing** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, September 2014. This course was developed and presented as a Graduate Course based on Directed Studies on Additive Manufacturing systems.

GT02 **Advanced Computer Aided Geometric Design** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2012, Winter 2013, Winter 2014, Winter 2016, Winter 2017, Winter 2021. This course is developed for Graduate students in mechanical, manufacturing and automotive engineering programs focusing on the principles of the Computational Geometry and Computer Aided Design. 6 classes.

GT01 **Advanced Engineering Design** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2009, Winter 2011, Winter 2015. This is a graduate course for Engineering program focusing on design philosophy, methodologies and principles. 3 classes.

2. Undergraduate courses taught

UT22 **Additive Manufacturing** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2022. This course is developed for senior students in Manufacturing Engineering program and elective for Mechanical Engineering programs focusing on the principles of additive manufacturing technologies. 1 class.

UT21 **Chassis Systems Design** (Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Fall 2019. This course is developed for senior students in Automotive engineering programs focusing on the principles of Chassis Systems design for vehicles. 1 class.

UT20 **Advanced Solid Mechanics and Stress Analysis** (Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Fall 2016. This course is developed for senior students in mechanical/Automotive engineering programs focusing on the theory of elasticity and advanced stress analysis. 1 class.

UT19 **Design for Manufacturing** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Fall 2015, Fall 2016. This course is developed for senior students in manufacturing engineering program focusing on the principles of the Design for Manufacturing. 2 classes.

UT18 **Engineering Design** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2014, Winter 2015, Winter 2016. This course is developed and presented as a core design course for all engineering programs at OTU. Focus of the course is on the principles of Engineering Design. 3 classes.

UT17 **Solid Mechanics** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2012, Winter 2014. A core program course for the second year students in all streams of Mechanical Engineering. 2 class.

UT16 **Finite Element Method** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Fall 2011, Fall 2012, Winter 2015, Fall 2016, Fall 2017, Fall 2019, Fall 2020 (2 Sessions), Fall 2021 (2 Sessions). This course is developed for senior students and graduate students in mechanical, manufacturing and automotive engineering programs focusing on the principles of the Finite Element Methods. 8 classes.

UT15 **Automotive Systems Design I,II,** (Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2011, and Fall 2010. This is the senior Capstone Engineering Design course for the automotive engineering program. 2 classes.

UT14 **Mechanical Systems Design I,II,** (Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2011, and Fall 2010. This is the senior Capstone Engineering Design course for the comprehensive Mechanical engineering program. 2 classes.

UT13 **Thermofluids and Energy Systems Design I,II,** (Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2011, and Fall 2010. This is the senior Capstone Engineering Design course for the mechanical engineering program with Thermofluids and Energy option. 2 classes.

UT12 **Manufacturing Systems Design I,II,** (Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2011, and Fall 2010. This is the senior Capstone Engineering Design course for the mechanical engineering program with Manufacturing option. 2 classes.

UT11 **Mechatronics Systems Design I,II,** (Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2011, and Fall 2010. This is the senior Capstone Engineering Design course for the mechanical engineering program with Mechatronics option. 2 classes.

UT10 **Automotive Structural Design** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Fall 2009, Fall 2010, Fall 2011, Fall 2012, Fall 2013, Fall 2014, Fall 2015, Fall 2016, Fall 2017, Fall 2019. This course is developed for senior students in automotive engineering program focusing on design and analyses of automotive structure. 10 classes.

UT09 **Concurrent Engineering & Design** (Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Fall 2005, Summer 2006, Fall 2006– two sections, Fall 2007– two sections, Fall 2008 – two sections, Fall 2009, Fall 2010 – two sections. This core engineering design course is presented to second year students. The course includes design laboratories, CAD/CAM/CAE software applications, case studies, biweekly design-based assignments and team-based projects. 11 classes.

UT08 **Industrial Ergonomics** (Development, Delivery) University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2007, Winter 2010. The course is developed for fourth year students in Manufacturing and Mechanical Engineering. The course presents the basics of work design and work measurement, applied to manufacturing and service industries, so as to improve worker performance, health and safety (and maintain productivity). 2 classes.

UT07 **Life Cycle Engineering** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Fall 2006, Fall2010. The course is developed for senior students in Manufacturing and Mechanical Engineering. Students in this course study from cradle to grave of a product life cycle project while they review variety of design and manufacturing processes. 2 classes.

UT06 **Fluid Mechanics** (Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2008- two sections, Winter 2009, Winter 2010- two sections, A core program course for the second year students in all streams of Mechanical Engineering. 5 classes.

UT05 **Fluid Power Systems** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2008, Winter 2009- two online sections, Winter 2010. The course is designed for the third year students in Mechanical Engineering providing students with in-depth explanations of the vast field of hydraulic and pneumatic systems. 4 classes.

UT04 **Statics & Solid Mechanics** (Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Fall 2007- two sections, Fall 2008-two sections, Fall 2009 – two sections. A core program course for the second year students in all streams of Mechanical Engineering. 6 classes.

UT03 **Machine Design** (Development, Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Winter 2007. The course is developed for the third year students in Mechanical Engineering. The course presents advanced mechanical concepts in machine design and exposes a wide variety of machine components. 1 class.

UT02 **Properties of Materials** (Delivery), University of Western Ontario (UWO), London, Ontario, Canada, Summer 2006. This is a core engineering course in Faculty of Engineering at UWO providing a comprehensive overview on different Engineering Materials. 1 class.

UT01 **Engineering Graphics & Design** (Delivery), University of Ontario Institute of Technology (OTU), Oshawa, Ontario, Canada, Fall 2005. This classic Engineering course is presented with laboratories, tutorial, software applications and team-based design project. 1 class.

3. Other Teaching and Lectures Given

OT03 **Computer Aided Design and Manufacturing** (Development, Delivery), Tehran Scientific & Industrial Services, Tehran, Iran, Spring 1998, Fall 1998, Fall 1999, Fall 2000, Spring 2001. 5 classes.

OT02 **Reverse Engineering** (Development, Delivery), Theory and Application, Tehran Scientific & Industrial Services, Tehran, Iran, Spring 1998, Fall 1998, Fall 1999, Fall 2000, Spring 2001. 5 classes.

OT01 **Geometric Dimensioning and Tolerancing** (Development, Delivery), Tehran Scientific & Industrial Services, Tehran, Iran, Spring 1998, Fall 1998, Spring 1999, Fall 2000, Spring 2001. 5 classes.

4. Thesis/Projects, HQP supervision.

In case of co-supervision it is specified.

(i) Masters Students:

MH19	2021-2022	Jiping Gao	*MASc- Precision Control in Digital Light Processing (DLP)* – Ontario Tech, Sole Supervision
MH18	2021-2023	Andrew Bondoc	*MASc- Location of Sensors in LIVE Digital Twin* – Ontario Tech, Sole Supervision
MH17	2021-2023	Tristan Zonta	*MASc- Digital Twins Based Smart Sensors for Structures* – Ontario Tech, Sole Supervision
MH16	2018-2019	Jörg Schneidler	*MASc- Adaptive Control in Additive Manufacturing Process – Frankfurt University of Applied Sciences, Frankfurt, Germany, Co-supervision*

MH15	2018-2020	Zahra Lotfi	*MASc- In-Situ Metrology of metal additive Manufacturing Products* – Tabriz University, Co-supervision
MH14	2018-2020	Alireza Jalili	*MASc- Improving Dimensional Accuracy and Surface Quality in Metal Additive Manufacturing* – Tabriz University, Co-supervision
MH13	2017-2019	Davin Jankovics	*MASc- Topology Optimization for Additive Manufacturing* – OTU, Sole Supervision
MH12	2017-2019	Dylan Bender	*MASc- Integrated topology optimization design and process planning for additive manufacturing* – OTU, Sole Supervision
MH10	2015-2018	Cody Berry	*MASc- Coordinate Metrology to Repair and Maintenance of Dies and Molds using Additive and subtractive Manufacturing*– OTU, Sole Supervision
MH09	2015-2017	Amirali Lalehpour	*MASc- Modelling, Inspection, and Post-Processing of Layer-Based Additive Manufacturing surfaces to Maintain Product Quality* – OTU, Sole Supervision
MH08	2013-2017	Jonathon Rolstin	*MASc- Calculation of Volumetric Lost Material In Rapid Prototyping Processes* – OTU, Co-supervision, Part time student.
MH07	2013-2015	Saeed Jami Ahmadi	*MASc- Integration of Deviation Zone Evaluation and Point Measurement Planning in Coordinate Metrology* - OTU, Sole Supervision – **Graduated**
MH06	2013-2016	Ian Wood	*MASc- Development of a Layerless Additive Manufacturing Stereolithography Machine to Improve Surface Quality and Dimensional Accuracy* - OTU, Sole Supervision – **Graduated**
MH05	2013-2016	Farzaneh Kaji	*MASc- Inspection and Modeling of Cusp geometry in Additive Manufacturing to predict Surface Roughness* - OTU, Sole Supervision – **Graduated**
MH04	2011-2013	Osama Ghani	*MASc – Design Optimization of Aerodynamic Drag at the Rear of Generic Passenger Cars Using NURBS Representation* - Co-supervision - **Graduated**.

MH03	2011-2013	Sergio Mordo	*MASc – Experimental Modelling of Surface Roughness and Dynamic Friction Coefficient of Diamond Like Carbon Coated Shafts* - Sole Supervision – OTU, **Graduated**
MH02	2011-2013	Alex Heroux	*MASc- Numerical Investigation of the Interdependence between Humeral Implant Position and Bone Removal Amount for Total Elbow Arthroplasty* – UWO, Co-supervision - **Graduated**
MH01	2010-2012	Steven Tebby	*MASc- Optimal Vehicle Structural Design for Weight Reduction using Iterative Finite Element Analysis* – OTU, Co-supervision - **Graduated**

(ii) Doctoral Students:

PH12	2022-2026	Feisal Asbaghian	*PhD- Developing a Digital Twin for LIVE Digital Twin for Rotating Machinery* – University of Ontario Institute of Technology, Oshawa, Ontario, Canada, Sole supervision
PH11	2021-2025	Yasaman Farahnak majd	*PhD- Developing a Digital Twin for Hybrid Additive Manufacturing* – University of Ontario Institute of Technology, Oshawa, Ontario, Canada, Sole supervision
PH10	2020-2024	Nima Geran Malek	*PhD- LIVE Digital Twin for Error Detection and Preventive Maintenance* – University of Ontario Institute of Technology, Oshawa, Ontario, Canada, Sole supervision
PH09	2019-2024	Tiago Gonçalves Goto	*PhD- Simulated Annealing – Based Evolutionary Topology Optimization* – Department of Mechatronics and Mechanical Systems Engineering, Escola Politénica da Universidade de São Paulo, Co-supervision
PH08	2019-	Dylan Bender	*PhD- Integrated Digital Manufacturing,* University of Ontario Institute of Technology, Oshawa, Ontario, Canada, Sole supervision
PH07	2019-	Naser Tanabi	*PhD- Developing an ultrasonic-based inspection system for Tomography measurement*– Department of Mechatronics and Mechanical Systems Engineering, Escola Politénica da Universidade de São Paulo, Brazil, Co-supervision

PH06	2019-	Hossein Rostami Najafabadi	*PhD- Design and manufacturing of a MEMS inertial sensor*– Department of Mechatronics and Mechanical Systems Engineering, Escola Politénica da Universidade de São Paulo, Brazil, Co-supervision
PH05	2017-2020	Edson Kenji Ueda	*PhD- 3D reconstruction of the missing patches on human skull*– Department of Mechatronics and Mechanical Systems Engineering, Escola Politénica da Universidade de São Paulo, Co-supervision
PH04	2017-	Elnaz Ghanbari	*PhD- Noise Filtering in Coordinate Metrology of Complex Surfaces* – Tabriz University, Co-supervision
PH03	2018-	Cody Berry	*PhD- Integrated Inspection System for Coordinate Metrology of Highly reflective Surfaces* – OTU, sole supervision
PH03	2015-2020	Hosein Gohari	*PhD- Analytical and experimental methodologies to improve surface quality and geometric accuracy in additive manufacturing* – OTU, Co-supervision
PH02	2012-2014	Tahereh Khosravi	*PhD- Topology Optimization for Additive Manufacturing* – OTU, Sole Supervision, Left the program due to family condition
PH01	2011-	Snahungshu Sikder	*PhD – Adaptive Slicing in Additive Manufacturing to obtain maximum conformance to geometric and dimensional tolerances* – OTU, Co-supervision Part time student.

(iii) PostDoc, Research Associate, Research Assistance and Research Engineer:

RH23	2022	Fraser Mann	*Intelligent defect detection and repair of Digital Parts and Machine Components*
RH22	2022-	Mohsen Tayefeh	*Research Associate – Smart Sensors for LIVE Digital Twins*
RH21	2021	Fraser Mann	*Digital Twin Application – Surface Reconstruction for 3D Printing System*
RH20	2021	Huzaifa Zia	*Internet of Things Applications in Digital Metrology, Manufacturing and Maintenance*

RH19	2021	Mohsen Tayefeh	*Research Associate – High Fidelity Simulation in LIVE Digital Twin*
RH18	2020-2022	Hossein Gohari	*Post Doc - Intelligent Inspection for Defect Detection*
RH17	2020-2021	Mohsen Tayefeh	*Research Associate - Topology Optimization for Additive Manufacturing*
RH16	2020	Matthew Bugeya	*Drone-based 3D Coordinate Metrology*
RH15	2018	Matthew Efthimiades	*Integration of Inspection, Manufacturing and Design Data to improve quality of end of arm tooling*
RH14	2018	Spencer Wu	*Topology optimization in design of end of arm tooling for palletizing*
RH13	2017	Maher Mikhail	*Design of end of arm tooling for palletizing using additive manufacturing*
RH12	2017	Lily Goodwin	*Optimization of the parameters in developing skin model of the surfaces for coordinate metrology*
RH11	2017	Garsha Kamilia	*Cost Analysis of Additive and Hybrid Manufacturing corresponding to the repair of parts in aerospace applications*
RH10	2015-2016	Ali Esmaili	*Design for Precision Additive Manufacturing*
RH09	2015	Cody Berry	*Research on photo polymerization process for Additive Manufacturing applications*
RH08	2014	Christopher Brown	*Multi-Head 3D Printing System*
RH07	2013	Marco_Aurelio Rodrigues Bertoni	*Experimental study and calibration of rotational friction coefficient measurement machine*
RH06	2013	Gustavo Vilela Alkmin	*Design and prototyping rotational friction coefficient measurement machine*
RH05	2012	Alex Motolko	*Vision-Based Measurement of Tool-Holder and Cutting Tool*
RH04	2012	Fereydoon Diba	*Experimental study on cutting tool chatter in machining of aluminum products*

RH03	2011	Ian Wood	*Coordinate Metrology of Plates*
RH02	2011	Ian Wood	*Laser Scanner of Manufactured free-form Surfaces*
RH01	2011	Fereydoon Diba	*Kinematic modelling to calibrate adjustable aerodynamic system for a generic racing car*

(iv) Undergraduate Students:

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UH155	2022	Joseph Bigioni	*Modular handheld laser scanner*
UH154		Abhi Patel	
UH153		Pujan Parikh	
UH152		Sohaib Nadeem	
UH151		Alex Ho	
UH150		Moid Mehmood	
UH149	2022	Jarrett Allan	*Design and Development of an Autonomous, IOT-based, All-Season Robot with Snow Removal Module*
UH148		Marco Breard Anderson	
UH147		Matthew Bugeya	
UH146		Osten Conville	
UH145		Hunter Peeters	
UH144	2022	Troy Radam	*Design and Development of an Autonomous IOT-Enabled Disinfection Robot for the Prevention of Airborne Diseases*
UH143		Anas Mohmand	
UH142		Tommy Tran	
UH141		Victoria Uchida	
UH140		Johnny To	
UH139	2021	James Nowicki	*Drone-Based System for 3D scanner for Mechanical Systems and components*
UH138		Kajapirian Arulrasa	
UH137		Mitchell Maguire	
UH136		Peter Lysyk	
UH135		Karolina Piskorski	
UH134			
UH133	2021	Harvin Kaura	*IOT-based Autonomous Snow Removal*
UH132		Kieran Wilson	
UH131		Jonathan Selvanathan	
UH130		Jay Patel	

UH129		Tristan Zonta	
UH128	2021	Jai Patel	*Autonomous Indoor Disinfecting Robot*
UH127		Steve Dsouza	
UH126		Princewill Onyechie	
UH125		Mohet Narang	
UH124		Mehul Rana	
UH123	2020	Judy Afana	*Green Part 3D Printing System*
UH122		Remon Armanious	
UH121		Omar Awwadeh	
UH120		Mohammed Baabbad	
UH119		Frank Du	
UH118		Alex Goncalves	
UH117		Evan Murphy-Snow	
UH116		Temi Oduyale	
UH115	2020	Pizarro Gabriel	*More Robust Optical Coordinate Metrology Sensors for 3D Objects*
UH114		Chu Tuan	
UH113		Leung Kevin	
UH112		Vieira Anthony	
UH111		Sun Junming	
UH110		Panday Ritesh	
UH109		Shah Rushi	
UH108		Fernandez Ballina Rodrigo	
UH107		Mikos Giorgio	
UH106		Cortolezzis Benjamin	
UH105	2018	Bryan Persaud	*Improving dimensional and geometric Accuracy of Layer-less Additive Manufacturing Products*
UH104		Rafsan Rahman	
UH103		Sahan Kadirage	
UH102		Usama Tabit	
UH101		Sarvraj Kahlon	
UH100	2018	Spencer Wu	*Design and Additive Manufacturing Fabrication of Topologically Optimized End of Arm Robot tool for precision pick and place Applications*
UH99		Maher Mikhail	
UH98		Nirmal Weerasinghe	
UH97		Enoch Chan	

UH96	2017	Jonathan Athaide	*Design of New Additive Manufacturing System Capable for Variable Layer Thicknesses*
UH95		Nick Hanninen	
UH94		Davin Jankovics	
UH93		Roger Pereira	
UH92		Mavdeep Sidhu	
UH91		Pravin Yogarajah	
UH90	2017	Dylan Bender	*Design of a New Layer-less Additive Manufacturing System*
UH89		Saif Hussaini	
UH88		Minesh Patel	
UH87		Smit Patel	
UH86		Daniel Santram	
UH85		Kailash Abishek	
UH84	2015	Ethan Jenner	*Design of a New Additive Manufacturing Machine Based on UV Stereo Lithography*
UH83		Erik Johansson	
UH82		Mike Nopper	
UH81		Nik Howe	
UH80		Parker Clow	
UH79		Brendon Seepe	
UH78	2015	Cody Berry	*Multi-Head FDM for Adaptive Layer Thickness Additive Manufacturing Machine*
UH77		Tim Johnston	
UH76		Eric Truong	
UH75		Colin Schwartz	
UH74		Lyle Scott	
UH73	2014	Qing Ye	*Design of Full-Body Tricycle*
UH72		Alexandru Simion	
UH71		Changho Han	
UH70		Noah Kuipery	
UH69	2014	Jason Kanaris	*Design for Automated Assembly Process of Pancake Motors*
UH68		Greg Phillips	
UH67	2013	Ian Wood	*Walking-Aide Device for a Hemiplegic (half-Body Paralyzed Patient)*
UH66		Graham Eidt	
UH65		Brendan Lewis	

UH64		Matt Pollet	
UH63		Matt Woods	
UH62	2013	Andrew Mazzei	*Weight minimization of 22' Van Bodies*
UH61		Aron Naim	
UH60		Jacob Eades	
UH59		Wade Byrne	
UH58		Kareem Boodhoo	
UH57	2012	Mazz Syed	*Design Optimization of Formula SAE 2011-12 Racing Car Based on the Readings of Data Acquisition System*
UH56		Yvan Lichtensteiger	
UH55		Aaron Lang	
UH54		Lucas Boermans	
UH53		Sadain Syed	
UH52	2012	Faisal Al Tamimi	*Design of a Vision-Based Piece Count System*
UH51		Neda Vakili	
UH50		Davin Gibson	
UH49	2012	Charlez Gonzales	*Design & prototyping of an Experimental Setup to Measure Dynamic Characteristics of Machine Tool*
UH48		Mohammad Shafi	
UH47		Sanjeevan Thiyagarajah	
UH46		Roshan Rajmohan	
UH45	2011	Arvin Abshar	*Sustainable SMC/BMC-Based Redesign*
UH44		Arqam Chowdhry	
UH43		Mahmood Hussain	
UH42	2011	Yagiz Gundogdu	*Vehicle Ignition Kill Device*
UH41		Sergio Mordo	
UH40		Vladimir Pivovarov	
UH39		Alexey Rubin	
UH38	2011	Horatiu Haba	*Compensation Scheme for Adjustable Aerodynamics System in Formula SAE Racing Car*
UH37		Melissa Johnson	
UH36	2011	Jason Klein-Horsman	*Design and Manufacturing of Drive-Train Package for New Formula SAE Car*
UH35		Kwun-Yiu Mak	
UH34		Pishoy Mikhail	
UH33		Steven Trepanier	

UH32	2011	Malgorzata Beresztan	*Design of Holster Tester*
UH31		Vaughn Gambeta	
UH30		Allauddin Ziauddin	
UH29	2010	Sam Ashtiani	*Enhancing the Mechanical Properties of Composite Automotive Body and Structure Utilizing Reinforcing Features*
UH28		Amy Tao	
UH27		Shane Viccary	
UH26	2010	Jason Sousa	*Adaptable aerodynamic design of new generation of Formula SAE racing cars*
UH25		Jonathon Rolstin	
UH24	2010	Christopher Kantor	*Intelligent control of Stirling engine for optimum performance*
UH23		Beesham Mahadeo	
UH22		Ayaz Juma	
UH21		Dave Mathews	
UH20	2009	Stephen Cregg	*Design for Manufacturing of Auto-body for GM's Emerging Market Vehicle*
UH19		Gregory Eberle	
UH18		Gaurav Sharma	
UH17	2009	Douglas Cox	*Adjustable Bending Mechanism for Tubular Lattice Materials –Millard Tower Cooperation*
UH16		Endrias bits	
UH15		Benedict Pires	
UH14	2009	Wisam Mustafa	*An Ergonomics-Based Wedge Driver for 3EA/B7 General Electric Motor*
UH13		Mohammad Inayat Ullah	
UH12		Sukhbir Warya	
UH11	2008	Assad Sagaaf	*Design of a Linear Motion Mechanism and its appropriate Spindle Speed for a Portable Drilling Unit*
UH10	2008	Ahmad Bilal Khan	*Design of an Adjustable Feed-rate Mechanism for a Portable Drilling Unit for Reconfigurable Manufacturing Stations*
UH09	2008	Adrian Baker	*Design and Analysis of an Automated Controller for the Precise Alignment of the Laser Beam for Laser Interferometry*

UH08	2008	Aswin Pillarisetty	*Design and Analysis of a Stage with Four Degrees of Freedom Adjustability for the Renishaw XL-80 Laser Interferometer*
UH07	2008	Hussein Karmali	*Design & Development of an Automated Device to Pump and Treat Water Using Solar Energy (Design for Delivery)*
UH06	2008	Oliver Libardo	*Design & Development of an Automated Device to Pump and Treat Water Using Solar Energy (control issues and water conditioning)*
UH05	2008	Nishant Pratap Singh	*Design and Development of a Computer Aided Process for the critical Planning and Scheduling of Unit Drill for Machining Cylindrical Features*
UH04	2008	Cumbysis Tampal	*Design and prototyping of an Adjustable Spoiler System Based on Virtual Wind Tunnel Analysis*
UH03	2008	Alex Yumshtyk	*Design & Implementation of a Mechanical Rotary Motion Feedthrough for UHV (Ultra High Vacuum)*
UH02	2007	Ramon Dastgerdi	*Design and Prototyping of an Adjustable TV Stand with Remote Control*
UH01	2007	Mina Boghdadi	*Design and Implementation of a DFM Tool for Computer Aided Design of the Injection Molding Parts.*

(iv) Contributions in Graduate Students Examination/Supervisory Committees:

EH41	2022	Muhammad Tariq	*PhD- Development and Analysis of Passive Aerodynamic Devices for Bluff Body Applications*
EH40	2022	Andrew Weaver	*PhD- Protecting Diamond Indenters for Nanoindentation between 400-750º C using Titanium PVD Coating*
EH39	2021	Sina Akhbari	*PhD- Path Planning and Interpolation for Four Axes Milling Machine with Parallel Robot Mechanism*
EH38	2021	Krystina Clarke	*MHSc- Combatting the Pandemic-Induced PPE Shortage by Developing a Crowdsourced 3D Printing Application*

EH37	2021	Mohammad Islam Chowdhury	*MASc- : DEVELOPMENT OF SELF-ADAPTIVE PVD COATINGS FOR MACHINING TI6AL4V ALLOY*
EH36	2021	Naseeb Siddiqui	*PhD- Development and Analysis of Passive Aerodynamic Devices for Bluff Body Applications*
EH35	2021	Omar Sadek	*PhD- NUMERICAL INVESTIGATION OF THE FLUIDELASTIC INSTABILITY OF TWO-PHASEFLOW IN A PARALLEL TRIANGULAR TUBE ARRAY*
EH34	2021	Jeremy Boyd	*PhD- ON-AXIS ROTATION PIN-ON-DISC TRIBOMETRY & METAL CUTTING*
EH33	2021	Krystina Clarke	*MHSc- Combatting the Pandemic-Induced PPE Shortage by Developing a Crowdsourced 3D Printing Application*
EH32	2020	Saharnaz Montazeri	*PhD- IMPROVING THE TOOL PERFORMANCE BY USING SOFT COATINGS DURING MACHINING OF INCONEL 718*
EH31	2020	Yarkin Gevez	*MASc- Investigation of Three Integrated Energy Systems with Desalination, Heat Storage, Thermochemical Cycles and Heat Upgrade*
EH30	2020	Shaimaa Seyam	*PhD- Development and Assessment of Alternative Fuel Choices for Clean Transportation Sectors*
EH29	2020	Mert Temiz	*MASc- Design and Evaluation of Solar and Geothermal Energy Systems Integrated with Cu-Cl Cycle*
EH28	2020	Hayford Azangbebil	*A STUDY OF A PIEZOELECTRIC ENERGY HARVESTING SYSTEM USING MAGNETORHEOLOGICAL FLUIDS*
EH27	2020	Eric Michael Tenuta	*MASc- Material Properties and Mechanical Behaviour of Large-scale Additively Manufactured Multi-layered Steels*
EH26	2019	Reza Mohammadali Zadeh	*PhD- DEVELOPMENT, ANALYSIS, AND TESTING OF PNEUMATIC AND HYBRID VEHICLES POWERING OPTIONS*
EH25	2018	Smitha Vempaty	*PhD- Enhancement of Lateral Stability of Car-Trailer Systems Using Model-Reference Adaptive Control*

EH24	2018	RION DSOUZA	*MASc- INVESTIGATION OF COPPER DEPOSITION ON STEEL IN MOLTEN COPPER CHLORIDE*
EH23	2018	Sangamesh Gondegaon	*PhD- A Novel Method for Parametrization and B-Spline Modelling of Complex Planar Domains for Iso-Geometric Analysis (IGA)*
EH22	2017	Azzam Abu-Rayash	*MASc- : DEVELOPMENT OF A NEW INTEGRATED SUSTAINABILITY ASSESSMENT MODEL FOR ENERGY SYSTEMS*
EH21	2017	Saurabh Kapoor	*MASc- Fault-Tolerant Control of Active Trailer Steering Systems for Multi-Trailer Articulated Heavy Vehicles*
EH20	2017	Tushita Sikder	*MASc- Design of Active Trailer Steering Systems for Long Combination Vehicles Using Robust Control Techniques*
EH19	2017	Seham Shahid	*MASc- Development and Analysis of Techniques to Improve Air-cooling and Temperature Uniformity in Battery Packs*
EH18	2016	Farrukh Khalid	*PhD- Development and Analysis of a High Temperature Electrolyser for the Cu-Cl Cycle for Hydrogen Production*
EH17	2016	Satyam Panchal	*PhD- Development and Investigation of New Lithium-ion Batteries and Their Thermal Management for Electric Vehicles*
EH16	2016	Reza Mohammadali Zadeh	*MASc- Development and investigation of compressed air only compressed air only and hybrid powering options*
EH15	2015	Zia Saadatnia	*MASc- Examination Committee member- Nonlinear Vibration and Frequency Response Analysis of Piezoelectric-based Nanotube Resonators*
EH14	2014	Ankur Arora	*MASc- Examination Committee member- Prototype Development and Testing of Active Yaw Moment Control System Using Vehicle Momentum Wheel*
EH13	2014	Sayantan Ghosh	*MASc- Examination Committee member- Experimental investigation of a new light-based hydrogen production syster*

EH12	2013	Kevork Hacatoglu	*PhD- Examination Committee member- A Systems Approach to Assessing the Sustainability of Hybrid Community Energy Systems*
EH11	2013	Nitin N. Varia	*MASc- Examination Committee member- Performance and Emission Characteristics of Natural Gas Combined Cycle Power Generation System with Steam Injection and Oxyfuel Combustion*
EH10	2013	Aras Azimipanah	*MASc- External Examiner- Compressive Sensing Based Non-Destructive Testing using Ultrasonic Arrays*
EH09	2013	Ahad Yazdani	*MASc- Examination Chair- An Interactive and Context-driven Approach to Mobile Decision Support Services*
EH08	2013	Eda Cetinkaya	*PhD- Examination Committee- Experimental and Theoretical Investigation of Integrated Tri-generation Systems*
EH07	2013	Ahmet Ozbilen	*PhD- Examination Committee- Development, Analysis and Life Cycle Assessment of Integrated Systems for Hydrogen Production Based on the Copper-Chlorine (Cu-Cl) Cycle*
EH06	2013	Mehdi Hosseini	*PhD- Examination Committee- Investigation of Energy Storage Systems for Sustainable Energy Systems*
EH05	2013	Pouria Ahmadi	*PhD- Examination Committee- Modeling, Analysis and Optimization of Integrated Energy Systems for ultigenerational Purpose*
EH04	2013	Seyedali Aghahosseini	*PhD- Examination Committee- System Integration and Optimization of Copper-Chlorine Thermochemical Cycle with Various Options for Hydrogen Production*
EH03	2012	Pouya Saneipour	*PhD- Examination Committee- Monarch Heat Engine Design*
EH02	2012	Raji Panta	*MASc- External Examiner- Ultrasonic Inspection of Manufactured Parts-*
EH01	2009	Pouya Saneipour	*MASc- Examination Committee- Monarch Heat Engine Feasibility Study*

D. SERVICE AND ADMINISTRATIVE POSITIONS

1. University Service

- Member of Committee to consider recommendation to reconfigure Faculty of Energy Systems and Nuclear Science, University of Ontario Institute of Technology, 2022.
- Member of University Board of Governors, University of Ontario Institute of Technology, 2021-2023.
- Member of University's President Renewal Committee, University of Ontario Institute of Technology, 2021.
- Member of Academic Council, University of Ontario Institute of Technology, 2020-2022.
- Member of Search Committee, Hiring University Provost / Vice-president Academic, OTU, 2018-19.
- Member of Search Committee, Hiring three faculty members for Mechanical Engineering Design and Manufacturing, Faculty of Engineering and Applied Science, OTU, 2017.
- Member of Academic Council, University of Ontario Institute of Technology, 2016-2018.
- Member of Search Committee, Tier 1 Canada Research Chair on Manufacturing, Faculty of Engineering and Applied Science, OTU, 2015-2016.
- Member of Manufacturing Program Curriculum Committee, Department of Mechanical, Automotive and Manufacturing Engineering, Faculty of Engineering and Applied Science, OTU, 2015-16.
- Member of Service Award Committee, University of Ontario Institute of Technology, 2015.
- Member of Graduate Committee, Faculty of Engineering and Applied Science, OTU, 2013.
- Academic Advisor for MEng Students, Department of Mechanical, Automotive and Manufacturing Engineering, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, 2013.
- Representative of Faculty of Engineering and Applied Science at OTU Faculty Association, 2012 - 2016.
- Stream Leader for Canadian Engineering Accreditation Board (CEAB), engineering programs on Solid Mechanics, Department of Mechanical, Automotive and Manufacturing Engineering, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, 2014, 2015, 2016.

- Member of Curriculum Committee, Department of Mechanical, Automotive and Manufacturing Engineering, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, 2012.

- Member of Academic Council Ad-hoc Committee on Governance, University of Ontario Institute of Technology, 2011.

- Member of Dean Search Committee, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, 2011.

- Member of scheduling task force Committee, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, 2011-2012.

- Member of Program Council Committee, Mechanical Engineering Programs, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, December 2010 - September 2011.

- Member of Faculty Award committee, Faculty of Engineering and Applied Science, OTU, 2011.

- Member of Academic Council, University of Ontario Institute of Technology, 2010-2012.

- Chair of TA Committee, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, 2010-2012.
  Memo: The TA committee had a challenging time during the period of 2010-11 due to new constrains for the Faculty in hiring research and teaching assistants by recently formed TA union and collective agreement, as well as the new policy of minimum funding for research assistants established by the Faculty of Graduate Study. The TA committee was in charge of developing Faculty's procedures, and formula to select and allocate the most suitable TAs based on the needs of the professors and courses.

- Faculty Advisor for Formula SAE – racing car student team, 2010-2011.
  Responsibilities: Advising team in design and manufacturing of their 2011 car, apply to fund for the team through external agencies and potential sponsors, and companying team to Formula SAE Michigan Speedway competition.

- Member of Lab-space Committee, Faculty of Engineering and Applied Science, University of Ontario Institute of Technology, 2010-2011.

- Member of the "Change Committee" to develop a new a new structure for the Capstone Projects, 2010.

- Member of task force committee to review and revise Automotive Engineering program map, 2010.

- Member of Program Committee, review and developing Automotive, Manufacturing and Mechanical Engineering Programs strategies, maps and course descriptions, 2009-2010.

- Member of program accreditation teams, Mechanical, Automotive and Manufacturing programs, 2009 - 2013.

2. Professional Service

- Member of International Program Committee, 14th IFAC Workshop on Intelligent Manufacturing Systems, March 2022, (https://ws.eventact.com/IMS2022?webid=2068501299)

- Guest Editor, Special Issue – Applied Sciences, "*Smart Manufacturing*", 2021-22

- Associate Editor, IEEE/IAS International Conference on Industry Application- INCOM 2021, August 2021, São Paulo, Brazil (https://induscon.org/)

- Guest Editor, Special Issue – Journal of Computer Integrated Manufacturing, "*Intelligent Manufacturing Systems*", 2020-21

- Associate Editor, 17th IFAC Symposium on Information Control Problems in Manufacturing – INCOM 2021, June 2021, Budapest, Hungary (https://incom2021.org/)

- Guest Editor, Special Issue – Journal of Intelligent Manufacturing, "*Intelligent Manufacturing Systems Towards Industry 4.0 era*", 2020-21

- Open Invited Track Organizer, Digitalization in Product Design, Manufacturing and Maintenance (Digitalization for DMM), 17th IFAC Symposium on Information Control Problems in Manufacturing – INCOM 2021, June 2021, Budapest, Hungary (https://incom2021.org/)

- Session Co-Organizer, 39th Computers and Information in Engineering Conference (CIE), Symposium:CIE-12 AMS/SEIKM/CAPPD: Design, Simulation and Optimization for Additive Manufacturing, Aug 18-21, 2019, Anaheim, CA, USA. https://event.asme.org/IDETC-CIE-2019/Program/#/IDETC2019/sessions/335

- Conference Chair, 13th IFAC Workshop on Intelligent Manufacturing Systems, Oshawa, Ontario, Canada, 12-14 August 2019. www.ifacims2019.com

- Member of Durham region delegation visiting Nuremburg academic and industry institutions, June 2018.

- Review panel member, Ontario Research Fund – College-Industry Innovation Fund (ORF-CIIF), Round 6 competition, 2018.

- Member of Canadian delegation for Industry 4.0 Canada-Germany 2+2 program in Canadian Embassy in Germany, visiting the German industries, 2018.

- Technical due diligence proposal reviewer, Ministry of Economic Development and Growth, Jobs and Prosperity Fund, Canada, 2018.

- Technical due diligence proposal reviewer, Ministry of Economic Development and Growth, Jobs and Prosperity Fund, Canada, 2017.

- Member of American society of Mechanical Engineering (ASME) – B46- Project team 53 – Surface Finish for Additive Manufacturing (https://www.asme.org/), since 2017.

- Member of American society of Mechanical Engineering (ASME) – B46- Project team pool – Classification and Designation of Surface Qualities (https://www.asme.org/), since 2017.

- International Program Committee Member, Conference of Advanced Mathematical and Computation Tools in Metrology and Testing (AMCTM 2017), IMEKO TC21.

- SCIREA Journal of Mechanical Engineering, member of the editorial board, Science Research Association, http://www.scirea.org/journal/Mechanical

- Member of International Organizing Committee – Americas, CAD Conference, CAD'17, http://www.cadconferences.com, Okayama, Japan, August 10-12, 2017.

- International Program Committee Member, 12th IFAC Workshop on Intelligent Manufacturing Systems (IMS 2016), http://www.ifacims2016.com,National Instruments, Austin, TX, December 5-7, 2016.

- Organizer for invited Session on 12th IFAC Workshop on Intelligent Manufacturing Systems (IMS 2016), "*Advanced in Additive Manufacturing*", http://www.ifacims2016.com, National Instruments, Austin, TX, December 5-7, 2016

- Member of International Organizing Committee – Americas, CAD Conference, CAD'16, http://www.cadconferences.com/ , Vancouver, Canada, Jun. 27, 2016.

- Serving IFAC Technical Committee on Manufacturing Plant Control - IFAC TC 5.1, http://tc.ifac-control.org/5/1, 2015.

- Topic organizer on "Advanced Manufacturing", ASME 2015 International Mechanical Engineering Congress & Exposition (IMECE 2015), http://www.asmeconferences.org/imece2015/ , Houston, Texas, 2015.

- Organizer for invited Session on 2015 IFAC Symposium on Information Control in Manufacturing (INCOM 2015), Advanced in Additive Manufacturing, http://www.incom2015.org, Ottawa, Canada, 2015

- Member of International Organizing Committee – Americas, CAD'15, http://www.cadconferences.com, London, UK, Jun 23, 2015.

- Member of International Organizing Committee – Americas,, CAD'14, http://www.cadconferences.com, Hong Kong, China, Jun 22-26, 2014

- Member of International Organizing Committee – Americas, CAD'13, http://www.cadconferences.com , Bergamo, Italy, Jun 17-20, 2013.

- Organizer of special track of Computer Aided Tolerance Analysis in The ASME 2012 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2012), http://www.asmeconferences.org/idetc2012/, Chicago, IL, USA, August 12-15, 2012.

- Proposal reviewer for Mitacs Accelerate research, Canada, 2018.

- Proposal reviewer for Ministry of Economic Development and Growth, Canada, 2017-2018.

- Proposal reviewer for Natural Sciences and Engineering Research Council (NSERC), 2014-2018.

- Proposal reviewer for Canada Foundation Innovation (CFI), 2012.

- Proposal reviewer for Ontario Centers of Excellence (OCE), 2012.

- Serving Selection Panel of Ontario Graduate Scholarship (OGS) selection panel for 2011-2012 applications.

- Member of International Organizing Committee – Americas, CAD'12, http://www.cadconferences.com/, Niagara Falls, Ontario, Canada, Jun 11-14, 2012.

- Organizer of Seminar on Vehicle Safety, Simulation Tools for Autonomous Transportation and human-machine interface (HMI), University of Ontario Institute of Technology, Oshawa, Ontario, Canada, http://go.simutechgroup.com/autonomous-systems-uoit , February 26th-2018.

- Organizer of special track in the 2nd CIRP Conference on Assembly Technologies & Systems (CATS 2008), Toronto, Canada, 21-23 September, 2008.

- Organizer of special track in CATS2008, http://www.uwindsor.ca/cats2008, Toronto, Canada, 21-23 September, 2008.

- Organizer of special session in CARV2007, http://www.uwindsor.ca/carv2007, Toronto, Canada, 22-24 July, 2007.

- Organizer of special session in FAIM2007, http://www.ssglobal.org/faim2007, Philadelphia, USA, 18-20 June, 2007.

- Reviewer for Journal and peer-reviewed conferences:

- Reviewer for Rapid Prototyping Journal.
- Reviewer for ASME Transactions – Jour. of Manufacturing Science and Eng.
- Reviewer for International Journal of Vehicle Design.
- Reviewer for International Journal of Engineering with Computers.
- Reviewer for Journal of Machine Tools and Manufacture.
- Reviewer for Journal of Machining Science and Technology.
- Reviewer for Journal of Computer-Aided Design.
- Reviewer for ASME - IDETC 2019 Conference, 2019.
- Reviewer for ASME - IDETC 2018 Conference, 2018.
- Reviewer for CSME 2019 Conference, 2019
- Reviewer for CSME 2018 Conference, 2018
- Reviewer for CSME 2017 Conference, 2017
- Reviewer for IMS 2016 Conference, 2016.
- Reviewer for CAD'13 Conference, 2013.
- Reviewer for MIM 2013 Conference, 2013.
- Reviewer for CAD'12 Conference, 2012.
- Reviewer for ASME - IDETC 2014 Conference, 2014.
- Reviewer for ASME - IDETC 2013 Conference, 2013.
- Reviewer for ASME - IDETC 2012 Conference, 2012.
- Reviewer for ASME - CIE 2013 Conference, 2013.
- Reviewer for ASME - CIE 2012 Conference, 2012.
- Reviewer for IMECE 2014 Conference, 2014.
- Reviewer for IMECE 2012 Conference, 2012.
- Reviewer for CSME 2014 Conference, 2014.
- Reviewer for CSME 2012 Conference, 2012.
- Reviewer for PACE 2011 Conference, 2011.
- Reviewer for ASME - IDETC 2011 Conference, 2011.
- Reviewer for ASME - CIE 2011 Conference, 2011.

3. Community Service

- Design judge, Formula North Racing Cars – Engineering Design Competition, Barrie, Molson Center, Barrie, Ontario, Canada, June 4-7, 2015.

- Judge for Graduate Student Conference, April 24- 26, University of Ontario Institute of Technology, 2012.

- Judging the 2011 Graduate Students Conference, OTU.

- Collaboration with Professional Engineers Ontario Lake Ontario Chapter (PEOLOC) in a project titled "Enhanced Visibility of Professional Engineers Ontario, OTU and Selected Partners in Durham Region", 2011.

- Ontario University Fair, Representing University of Ontario Institute of Technology, Toronto, Ontario, Canada, 2010, 2012, 2013, 2015.

- Judge for Automotive Engineering Section in Canada-Wide Science Fair (CWSF) 2010, Peterborough, Ontario, Canada, http://www.cwsf2010.ca

Brendan D. MacDonald, PhD, PEng

Contact Information

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Web: faculty.ontariotechu.ca/macdonald/

Education

Postdoctoral Fellow, Mechanical Engineering, University of Toronto, Toronto, ON
- Topic: Microfluidic devices for global health diagnostics and water purification
- Advisor: Prof. David Sinton

Ph.D., Mechanical Engineering, University of Toronto, Toronto, ON (November 2011)
- Thesis: The onset of Marangoni convection for evaporating liquids
- Advisor: Prof. Charles A. Ward

M.A.Sc., Mechanical Engineering, University of Victoria, Victoria, BC (April 2006)
- Thesis: Mathematical modelling of a metal hydride hydrogen storage system
- Advisor: Prof. Andrew M. Rowe

B.A.Sc. ***with distinction,*** Mechanical Engineering (Co-op Program), University of Waterloo, Waterloo, ON (April 2004)

Academic Employment

Associate Professor (tenure) **July 2019 - Present**
Ontario Tech University (UOIT), Faculty of Engineering & Applied Science

Assistant Professor **May 2013 - June 2019**
Ontario Tech University (UOIT), Faculty of Engineering & Applied Science

Postdoctoral Fellow **Sept. 2011 - Apr. 2013**
University of Toronto, Department of Mechanical & Industrial Engineering

Other Employment

Co-Founder, CEO, and President **Mar. 2019 - Present**
Ekstera Inc. *(Startup company to commercialize Stirling engine technology)*

Co-op Program, University of Waterloo, Various Locations **Jan. 2000 - Aug. 2003**
Engineering Intern (4 month duration, paid internships)
- Solar Thermal Research Laboratory, University of Waterloo (Research Assistant)
- MD Robotics (Sustaining the Robotic Workstation on the International Space Station)
- Aldworth Engineering Inc. (Consulting engineering for municipal and energy projects)
- MacViro Consultants Inc. (Consulting engineering for municipal/environmental projects)
- Anton Manufacturing (Test Technician)
- Effem Inc. (AutoCAD Technician)

Honours and Awards

- Nominated for a Student Choice Teaching Award at Ontario Tech University (2018, 2021)
- NSERC Postdoctoral Fellowship (Declined)
- Best Oral Presentation at the MIE Research Symposium (2011)
- Russell A. Reynolds Graduate Fellowship in Thermodynamics (2010)
- NSERC Postgraduate Scholarship D3 Award (2007)
- Hydrogen and Fuel Cells Canada Scholarship (2007)
- University of Victoria Fellowship (2006)
- Jarmila Vlasta Von Drak Thouvenelle Graduate Scholarship (2005)
- NSERC Industrial Postgraduate Scholarship (2004)
- University of Victoria President's Research Scholarship (2004)
- NSERC Undergraduate Student Research Assistantship Award (2003)

Research Funding

12. NSERC **Aug. 2020 - Feb. 2022**
Program: Idea to Innovation (Phase 1b)
Title: External heat engine for sustainable and reliable power
Role: PI
Amount: $60,000

11. NSERC **Apr. 2020 - Mar. 2025**
Program: Discovery Grant
Title: Flow control in textile-based capillary-driven microfluidic platforms
Role: PI
Amount: $135,000

10. University of Ontario Institute of Technology **June 2018 - May 2019**
Program: Research Infrastructure Fund
Title: Particle image velocimetry (PIV) system for high-speed flow visualization and meas...
Role: Lead PI (3 co-applicants)
Amount: $130,000

9. NSERC **Jan. 2018 - Dec. 2019**
Program: Collaborative Research and Development Grants
Title: Paper-based and capillary-driven microfluidics platforms for allergy tests
Role: PI
Amount: $193,200 (total budget awarded for direct research costs)

8. NSERC **Jan. 2018 - Dec. 2018**
Program: Idea to Innovation (Phase 1)
Title: External heat engine for sustainable and reliable power
Role: PI
Amount: $124,500

7. Transport Canada **Apr. 2017 - Aug. 2018**
Program: Clean Rail Academic Grant
Title: External heat engines for sustainable locomotive power
Role: PI
Amount: $25,000

6. Ontario Centres of Excellence (OCE) **Feb. 2017 - Feb. 2018**
Program: VIP I
Title: Development of paper-based allergy tests
Role: PI
Amount: $25,000

5. NSERC **Aug. 2016 - Jan. 2017**
Program: Engage Plus Grant
Title: Paper-based microfluidics for enhanced allergy tests
Role: PI
Amount: $25,000

4. NSERC **Aug. 2015 - Jan. 2016**
Program: Engage Grant
Title: Paper-based microfluidics for enhanced allergy tests
Role: PI
Amount: $25,000

3. Grand Challenges Canada **May 2014 - Oct. 2015**
Program: Stars in Global Health
Title: Affordable and simple paper-based arsenic detection tests
Role: PI
Amount: $100,000

2. NSERC **Apr. 2014 - Mar. 2020**
Program: Discovery Grant
Title: Evaporation enhancement for evaporative cooling systems
Role: PI
Amount: $115,000 + $23,000 (Early Career Researcher Extension) = $138,000

1. University of Ontario Institute of Technology **May 2013 - Apr. 2018**
Program: Start-up Grant
Title: Start-up Grant
Role: PI
Amount: $65,000

(Supervised HQP are underlined)

Journal Publications

25. H.W. Fung, M.A. Mahmud, **B.D. MacDonald**, *Experimental investigation of forced convection on evaporation of continuously-fed sessile droplets*, International Journal of Thermal Sciences 175 (2022) 107459.
24. B.T. York, **B.D. MacDonald**, *Influence of misalignment and spacing on the pressure drop through wire mesh Stirling engine regenerators*, Energy Conversion and Management 245 (2021) 114588.
23. M.A. Mahmud, E.J.M. Blondeel, **B.D. MacDonald**, *Counting-based microfluidic paper-based devices capable of analysing sub-microliter sample volumes*, Biomicrofluidics 14 (2020) 014107.
22. A.S. Nielsen, B.T. York, **B.D. MacDonald**, *Stirling engine regenerators: How to attain over 95% regenerator effectiveness with sub-regenerators and thermal mass ratios*, Applied Energy 253 (2019) 113557.
21. S. Ranieri, G.A.O. Prado, **B.D. MacDonald**, *Efficiency reduction in Stirling engines resulting from sinusoidal motion*, Energies 11 (2018) 2887.
20. **B.D. MacDonald**, *Flow of liquids through paper*, Journal of Fluid Mechanics 852 (2018) 1-4.
19. M.A. Mahmud, E.J.M. Blondeel, M. Kaddoura, **B.D. MacDonald**, *Features in microfluidic paper-based devices made by laser cutting: how small can they be?*, Micromachines 9 (2018) 220.
18. R.F. Costa, **B.D. MacDonald**, *Comparison of the net work output between Stirling and Ericsson cycles*, Energies 11 (2018) 670.
17. S. Chakraborty, M.A. Rosen, **B.D. MacDonald**, *Analysis and feasibility of an evaporative cooling system with diffusion-based sessile droplet evaporation for cooling microprocessors*, Applied Thermal Engineering 125 (2017) 104-110.
16. M.A. Chowdury, N. Walji, M.A. Mahmud, **B.D. MacDonald**, *Paper-based microfluidic device with a gold nanosensor to detect arsenic contamination of groundwater in Bangladesh*, Micromachines 8 (2017) 71.
15. M.A. Mahmud, **B.D. MacDonald**, *Experimental investigation of interfacial phenomena in an evaporating sessile droplet for evaporative cooling applications*, Physical Review E 95 (2017) 012609.

14. M.A. Mahmud, **B.D. MacDonald**, *Creating compact and microscale features in paper-based devices by laser cutting*, Analyst 141 (2016) 6449-6454.
13. N. Walji, **B.D. MacDonald**, *Influence of geometry and surrounding conditions on fluid flow in paper-based devices*, Micromachines 7 (2016) 73.
12. M.M. Gong, P. Zhang, **B.D. MacDonald**, D. Sinton, *Nanoporous membranes enable concentration and transport in fully wet paper-based assays*, Analytical Chemistry 86 (2014) 8090-8097.
11. M.M. Gong, **B.D. MacDonald**, T.V. Nguyen, K.V. Nguyen, D. Sinton, *Lab-in-a-pen: a diagnostics format familiar to patients for low-resource settings*, Lab on a Chip 14 (2014) 957-963.
10. **B.D. MacDonald**, P. Zhang, M.M. Gong, D. Sinton, *Out-of-plane ion concentration polarization for scalable water desalination*, Lab on a Chip 14 (2014) 681-685.
9. **B.D. MacDonald**, M.M. Gong, T.V. Nguyen, D. Sinton, *Field tested, millilitre-scale blood filtration device for point-of-care applications*, Biomicrofluidics 7 (2013) 044111.
8. M.M. Gong, **B.D. MacDonald**, T.V. Nguyen, D. Sinton, *Hand-powered microfluidics: A membrane pump with a patient-to-chip interface*, Biomicrofluidics 6 (2012) 044102.
7. **B.D. MacDonald**, C.A. Ward, *Onset of Marangoni convection for evaporating sessile droplets*, Journal of Colloid and Interface Science 383 (2012) 198-207.
6. **B.D. MacDonald**, C.A. Ward, *Onset of Marangoni convection for evaporating liquids with spherical interfaces and finite boundaries*, Physical Review E 84 (2011) 046319.

   Erratum: Physical Review E 84 (2011) 059906(E).
5. K. Das, **B.D. MacDonald**, C.A. Ward, *Stability of evaporating water heated through the vapor and the liquid phases*, Physical Review E 81 (2010) 036318.
4. W. Li, H. Pham, Z. Nie, **B.D. MacDonald**, A. Guenther, E. Kumacheva, *Multi-step microfluidic polymerization reactions conducted in droplets: The internal trigger approach*, Journal of the American Chemical Society 130 (2008) 9935-9941.
3. **B.D. MacDonald**, A. Rowe, *Experimental and numerical analysis of dynamic metal hydride hydrogen storage systems*, Journal of Power Sources 174 (2007) 282-293.
2. **B.D. MacDonald**, A. Rowe, *A thermally coupled metal hydride hydrogen storage and fuel cell system*, Journal of Power Sources 161 (2006) 346-355.
1. **B.D. MacDonald**, A. Rowe, *Impacts of external heat transfer enhancements on metal hydride storage tanks*, International Journal of Hydrogen Energy 31 (2006) 1721-1731.

(Presenter denoted by *)

Conference Presentations

29. A.S. Nielsen*, B.T. York, **B.D. MacDonald**, *How to attain regenerator effectiveness greater than 50% in Stirling engines*, Proceedings of the 5th World Congress on Mechanical, Chemical, and Material Engineering (MCM 19), Lisbon, Portugal, (2019).
28. A.S. Nielsen*, B.T. York, **B.D. MacDonald**, *Influence of regenerator thermal mass ratio on Stirling engine efficiency*, Proceedings of the 6th International Conference of Fluid Flow, Heat and Mass Transfer (FFHMT 19), Ottawa, Canada, (2019).
27. M.J.T. Crowley*, **B.D. MacDonald**, *Transport and concentration of human antibodies in paper-based devices utilizing ion concentration polarization*, 2nd International Conference of Microfluidics, Nanofluidics, and Lab-on-a-Chip, Beijing, China (2018).
26. H.W. Fung*, **B.D. MacDonald**, *Experimental investigation of forced convection on an evaporating sessile droplet*, 2nd International Conference of Microfluidics, Nanofluidics, and Lab-on-a-Chip, Beijing, China (2018).

25. M.A. Mahmud*, E.J.M. Blondeel, M. Kaddoura, **B.D. MacDonald**, *Microscale features and size limitations in microfluidic paper-based analytical devices*, 13th Annual Ontario-on-a-Chip, Toronto, ON (2018).
24. H.W. Fung*, **B.D. MacDonald**, *Experimental investigation of forced convection on an evaporating sessile droplet*, 9th Annual Graduate Student Research Conference, UOIT, Oshawa, ON (2018).
23. M.A. Mahmud, **B.D. MacDonald***, *Experimental investigation of interfacial phenomena in an evaporating sessile droplet for evaporative cooling applications*, 69th Annual Meeting of the American Physical Society's Division of Fluid Dynamics (DFD), Portland, OR (2016).
22. M.A. Mahmud, **B.D. MacDonald***, *Experimental investigation of interfacial phenomena in an evaporating sessile droplet for evaporative cooling applications*, International Conference of Microfluidics, Nanofluidics, and Lab-on-a-Chip, Dalian, China (2016).
21. M. Chowdury, N. Walji, M.A. Mahmud, **B.D. MacDonald***, *Paper-based microfluidic device for arsenic detection in Bangladesh*, 11th Annual Ontario-on-a-Chip, Toronto, ON (2016).
20. M. Chowdury*, N. Walji, M.A. Mahmud, **B.D. MacDonald**, *Paper-based microfluidic device for high sensitivity arsenic detection using gold nanoparticles*, 11th Annual Ontario-on-a-Chip, Toronto, ON (2016).
19. N. Walji*, **B.D. MacDonald**, *Increasing accessibility of analytical chemistry innovations using microfluidic paper-based analytical devices*, 6th Annual Graduate Research Conference, UOIT, Oshawa, ON (2015).
18. N. Walji*, **B.D. MacDonald**, *Characterization of fluid flow in paper-based microfluidic systems*, 67th Annual Meeting of the American Physical Society's Division of Fluid Dynamics (DFD), San Francisco, CA (2014).
17. M.A. Mahmud*, H. Wu, **B.D. MacDonald**, *Harnessing surface tension forces in evaporating sessile droplets to improve efficiency of evaporative cooling systems*, Connaught Symposium: Bio-Inspired Ideas for Sustainable Energy, Toronto, ON (2014).
16. M.M. Gong*, P. Zhang, **B.D. MacDonald**, D. Sinton, *Nanoporous membranes enable concentration and transport in fully wet paper-based assays*, 18th International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS), San Antonio, TX (2014).
15. **B.D. MacDonald***, M.M. Gong, P. Zhang, D. Sinton, *Life after wetting: Active concentration and transport in paper-based microfluidic devices using ion concentration polarization*, 66th Annual Meeting of the American Physical Society's Division of Fluid Dynamics (DFD), Pittsburgh, PA (2013).
14. M.M. Gong, **B.D. MacDonald**, K.V. Nguyen, T.V. Nguyen*, D. Sinton, *Sample collection and processing for multiplexed blood-based point-of-care analysis*, Point-of-care Diagnostics Meeting, Bill and Melinda Gates Foundation Campus, Seattle, WA (2013).
13. M.M. Gong, **B.D. MacDonald**, K.V. Nguyen, T.V. Nguyen, D. Sinton*, *Developing blood-based diagnostic components in Vietnam*, Engineering Global Health Symposium, University of Toronto, Toronto, Canada (2013).
12. M.M. Gong*, **B.D. MacDonald***, K.V. Nguyen, T.V. Nguyen, D. Sinton, *Sample collection and processing for multiplexed blood-based point-of-care analysis*, Grand Challenges Meeting, Grand Challenges Canada, Ottawa, Canada (2012).
11. **B.D. MacDonald***, M.M. Gong, T.V. Nguyen, D. Sinton, *Hand-powered microfluidics: A membrane pump with a patient-to-chip syringe interface*, 65th Annual Meeting of the American Physical Society's Division of Fluid Dynamics (DFD), San Diego, CA (2012).

10. **B.D. MacDonald***, M.M. Gong, G. Pham, T.V. Nguyen, D. Sinton, *Side-by-side testing of a high throughput blood separation device at the National Hospital for Tropical Diseases*, 7th Annual Ontario-on-a-Chip (2012) and MIE Research Symposium (2012).
9. P. Zhang*, **B.D. MacDonald**, D. Sinton, *Energy efficient high throughput water purification device using ion concentration polarization*, 7th Annual Ontario-on-a-Chip (2012) and MIE Research Symposium (2012).
8. M.M. Gong*, **B.D. MacDonald**, G. Pham, T.V. Nguyen, D. Sinton, *High throughput blood separation device for multiplexed point-of-care applications*, 7th Annual Ontario-on-a-Chip (2012) and MIE Research Symposium (2012). [Awarded best poster, MIE Research Symposium]
7. G. Pham*, M.M. Gong, **B.D. MacDonald**, T.V. Nguyen, D. Sinton, *Development of a biochemistry assay to asses liver health on a microfluidic device*, 7th Annual Ontario-on-a-Chip (2012) and MIE Research Symposium (2012). [Awarded "Innovation most likely to be commercialized" poster award at Ontario-on-a-chip]
6. T.D. Van*, **B.D. MacDonald**, M.M.Gong, G. Pham, K.V. Nguyen, T.V. Nguyen, D. Sinton, *Sample collection and processing for multiplexed blood-based point-of-care analysis*, Mekong Sante International Conference, Hanoi, Vietnam (2012).
5. T.V. Nguyen*, **B.D. MacDonald**, D. Sinton, *Sample collection and processing for multiplexed blood-based point-of-care analysis*, Point-of-care Diagnostics Meeting, Bill and Melinda Gates Foundation Campus, Seattle, WA (2012).
4. **B.D. MacDonald***, C. A. Ward, *Onset of Marangoni convection for evaporating liquids with spherical interfaces and finite boundaries*, 64th Annual Meeting of the American Physical Society's Division of Fluid Dynamics (DFD), Baltimore, MD (2011).
3. M.M. Gong*, **B.D. MacDonald**, G. Pham, T.V. Nguyen, D. Sinton, *Sample collection and processing for multiplexed blood-based point-of-care analysis*, Grand Challenges Meeting, Grand Challenges Canada, New Delhi, India (2011).
2. **B.D. MacDonald***, C. A. Ward, *Single parameter description of a Bénard-Marangoni instability for evaporating liquid layers*, MIE Research Symposium, Toronto, ON (2011). [Awarded best oral presentation]
1. **B.D. MacDonald***, A. Rowe, J. Tomlinson, J. Ho, *Impacts of external convection on release rates in metal hydride hydrogen storage tanks*, International Green Energy Conference, Waterloo, ON (2005).

Invited Talks

6. **B.D. MacDonald**, *Ekstera - Electricity generation from any heat source*, Tri-Association Manufacturing Conference (Northumberland, Quinte, and Kawartha), Lunch Spotlight, Virtual Event, (2020).
5. **B.D. MacDonald**, *Sustainable energy from engines: Stirling engine design enhancements*, Nanyang Technological University (NTU), Singapore, (2020).
4. M. Chowdury, N. Walji, M.A. Mahmud, **B.D. MacDonald**, *Paper-based microfluidic device for arsenic detection in Bangladesh*, 11th Ontario-on-a-Chip, Toronto, ON (2016).
3. **B.D. MacDonald**, *Point-of-Care Diagnostics for Hepatitis B in Vietnam*, Guest Lecture for APS 530H: Appropriate Technology & Design for Global Development, University of Toronto, Toronto, ON (2013).
2. **B.D. MacDonald**, *Developing sustainable energy technologies using interfaces, phase change, and microfluidics*, University of Ontario Institute of Tech., Oshawa, ON (2012).
1. **B.D. MacDonald**, *The role of phase change in alternative energy applications*, Research Group of Prof. A. Mitsos, Massachusetts Institute of Technology, Cambridge, MA (2011).

Patents

3. Engine with at least one of non-sinusoidal motion and embedded pistons
US (Granted) & Canadian Patent (Pending) US 11,384,639 B2, Granted July 12, 2022
(PCT Application (WO 2019/046951), September 7, 2018)
(US Provisional Patent (62/555832) was filed September 8, 2017)
Filed by Ontario Tech University
Inventors: **B.D. MacDonald**, M.L.M. Dudman, S. Ranieri

2. External heat engine with non-sinusoidal motion
US & Canadian Patent (Not continued) US20210131540A1, Published May 6, 2021
(US Provisional Patent (62/930706), November 5, 2019)
Filed by Ekstera Inc.
Inventors: **B.D. MacDonald**, J.R. Rizzi, B.T. York

1. Microfluidic Device
PCT Application (WO 2018/032112 A1), August 18, 2017
(US Provisional Patent (62/377236) was filed August 19, 2016)
Filed by ExVivo Labs Inc.
Inventors: M.A. Mahmud, E.J.M. Blondeel, **B.D. MacDonald**

Invention Disclosures

5. Autonomous sessile droplet evaporative cooler
ID #19-03, May 2, 2018
Filed with University of Ontario Institute of Technology, Office of Research Services
Disclosure by: **B.D. MacDonald**, J.R. Rizzi

4. Paper-Based Microfluidic Device with a Gold Nanosensor to Detect Arsenic Contamination
ID #17-06, March 1, 2017
Filed with University of Ontario Institute of Technology, Office of Research Services
Disclosure by: **B.D. MacDonald**, M.A. Chowdury

3. Cam follower with cranking mechanism for external heat engines
ID #17-05, December 1, 2016
Filed with University of Ontario Institute of Technology, Office of Research Services
Disclosure by: **B.D. MacDonald**, S. Ranieri, M.L.M. Dudman

2. Embedded pistons and cam follower for external heat engines
ID #17-03, July 12, 2016
Filed with University of Ontario Institute of Technology, Office of Research Services
Disclosure by: **B.D. MacDonald**, M.L.M. Dudman

1. Patient-to-Chip Syringe Interface with Hand-Powered Membrane Pump for Point-of-Care Diagnostics
RIS #10002417, April 23, 2012
Filed with University of Toronto Office of Research and Innovation
Disclosure by: M.M. Gong, G. Pham, **B.D. MacDonald**, T.V. Nguyen, D. Sinton

Newspaper Articles

- **B.D. MacDonald**, *High Speed Train Route is First Step*, Toronto Star, Opinion Section, February 26, 2007.

Editorial Positions

- **Technical Editor**, Canadian Society for Mechanical Engineering (CSME) Bulletin, (2014-2016).

Undergraduate Courses Taught

Ontario Tech University **Jan. 2014 - Present**
Faculty of Engineering & Applied Science

- MECE 2860U: Fluid Mechanics (2015 - 2023)
- MECE 4240U: Applied Thermal & Fluids Engineering (2014 - 2017)
- MECE 2640U: Thermodynamics & Heat Transfer (2015)
- MECE 3930U: Heat Transfer (2014)

Graduate Courses Taught

Ontario Tech University **Jan. 2014 - Present**
Faculty of Engineering & Applied Science

- ENGR 5120G: Advanced Fluid Mechanics (2017, 2022)
- ENGR 5162G: Microfluidics (2021)
- ENGR 5005G: Special Topics: Microfluidics (2016, 2018, 2020)
- ENGR 5013G: Advanced Engineering Mathematics (2014)

Teaching Assistant Positions

University of Toronto **Sept. 2009 - Apr. 2010**
Department of Mechanical & Industrial Engineering

- MAT 234: Differential Equations
- AER 334: Numerical Methods I

University of Victoria **Jan. 2005 - Dec. 2006**
Department of Mechanical Engineering

- MECH 395: Heat & Mass Transfer
- MECH 390: Energy Conversion (Thermodynamics II)
- MECH 443: Advanced Thermodynamics

Graduate Students Supervised

19. Mary Elizabeth Konrad **Sept. 2020 - Oct. 2022**
Degree awarded: MASc
Thesis title: Improving cold climate performance of heat pumps using market-available systems.
Role: Supervisor

18. Arup Chutia **Sept. 2019 - Aug. 2021**
Degree awarded: MASc
Thesis title: Comparison of the force and torque transfer for different cam profiles.
Role: Supervisor

17. Brayden York **May. 2019 - Apr. 2021**
Degree awarded: MASc
Thesis title: Pressure drop in Stirling engine regenerators.
Role: Supervisor

16. Md. Almostasim Mahmud (Postdoc) **June 2019 - Aug. 2020**
Position: Postdoctoral fellow
Research topic: Development and analysis of capillary-driven microfluidic devices.
Role: Supervisor

15. William Oishi **Sept. 2017 - Aug. 2019**
Degree awarded: MASc
Thesis title: Increasing the efficiency of cam follower systems through energy recovery.
Role: Supervisor

14. Justin Rizzi **Sept. 2017 - Aug. 2019**
Degree awarded: MASc
Thesis title: Analytical modelling of annular flow magnetorheological valves for advanced fluid control.
Role: Supervisor

13. Anders Nielsen **May 2017 - Apr. 2019**
Degree awarded: MASc
Thesis title: Enhancing the effectiveness of Stirling engine regenerators.
Role: Supervisor

12. Michael Crowley **Sept. 2016 - Apr. 2019**
Degree awarded: MASc
Thesis title: Active transport and concentration of analytes in microfluidic paper-based analytical devices using ion concentration polarization.
Role: Supervisor

11. Henry Fung **Sept. 2016 - Apr. 2019**
Degree awarded: MASc
Thesis title: Influence of forced convection on sessile droplet evaporation.
Role: Supervisor

10. Salvatore Ranieri **Sept.. 2016 - Dec. 2018**
Degree awarded: MASc
Thesis title: Influence of sinusoidal motion on Stirling engines.
Role: Supervisor

9. Md. Almostasim Mahmud (PhD) **Sept. 2015 - Apr. 2019**
Degree awarded: PhD
Thesis title: Miniaturization of features in microfluidic paper-based analytical devices for user-friendly testing and diagnosis using small sample volumes
Role: Supervisor

8. Rui Costa **Feb. 2017 - July 2017**
Degree awarded: Master's Thesis (Coimbra University, Portugal)
Thesis title: Comparison of the net work output between Stirling and Ericsson cycles.
Role: Supervisor

7. Soma Chakraborty **May 2015 - Apr. 2017**
Degree awarded: MASc
Thesis title: Analysis and feasibility of an evaporative cooling system with sessile droplet evaporation to provide cooling for microprocessors.
Role: Primary supervisor (Co-supervised with M. Rosen)

6. Mosfera Chowdury **Jan. 2015 - Dec. 2016**
Degree awarded: MASc
Thesis title: Paper-based microfluidic device with a gold nanoparticle sensor for arsenic detection applied to groundwater in Bangladesh.
Role: Supervisor

5. Md. Almostasim Mahmud (MASc) **Sept. 2013 - Aug. 2015**
Degree awarded: MASc
Thesis title: Analysis of heat transfer and fluid flow in an evaporating sessile droplet for evaporative cooling applications.
Role: Supervisor

4. Noosheen Walji **Sept. 2013 - Aug. 2015**
Degree awarded: MASc
Thesis title: Characterization of fluid flow in paper-based microfluidic devices.
Role: Supervisor

3. Max Gong **Sept. 2011 - Apr. 2013**
Degree awarded: PhD
Thesis title: Microfluidic point-of-care diagnostics for global health.
Role: Secondary supervisor (Primary: D. Sinton)

2. Pei Zhang **Sept. 2011 - Apr. 2013**
Degree awarded: MASc
Thesis title: Application of ion concentration polarization to water desalination and active control of analytes in paper.
Role: Secondary supervisor (Primary: D. Sinton)

1. Gemma Pham **Sept. 2011 - Nov. 2012**
Degree awarded: MASc
Thesis title: Blood filtration for multiplexed point-of-care diagnostic devices.
Role: Secondary supervisor (Primary: D. Sinton)

Undergraduate Research Students Supervised

16. Dorina Voynov **May 2022 - Aug. 2022**
Position: Summer Research Student (NSERC USRA)
Project topic: Wood burner for Stirling engine.
Role: Supervisor

15. Cole Lamothe **May 2022 - Aug. 2022**
Position: Summer Research Student (NSERC USRA)
Project topic: Instrumentation and testing of Stirling engine prototypes.
Role: Supervisor

14. Cole Lamothe **May 2021 - Aug. 2021**
Position: Summer Research Student (NSERC USRA)
Project topic: Instrumentation and testing of Stirling engine prototypes.
Role: Supervisor

13. Tarek Abouchakra **May 2021 - Aug. 2021**
Position: Summer Research Student (NSERC USRA)
Project topic: Stirling engine prototype development.
Role: Supervisor

12. Lucas Sprung **May 2021 - Aug. 2021**
Position: Summer Research Technician
Project topic: Stirling engine prototype and generator development.
Role: Supervisor

11. Adam Nabzdyk **May 2020 - Aug. 2020**
Position: Summer Research Student (NSERC USRA)
Project topic: Stirling engine prototype development.
Role: Supervisor

10. Spencer Wright **May 2020 - Aug. 2020**
Position: Summer Research Technician
Project topic: Stirling engine prototype development.
Role: Supervisor

9. Lisa Bailey **May 2019 - Aug. 2019**
Position: Summer Research Student (UOIT STAR Award)
Project topic: Stirling engine applications.
Role: Supervisor

8. Conor McDermott **May 2018 - Aug. 2018**
Position: Summer Research Student (NSERC USRA)
Project topic: Magnetorheological fluid control system.
Role: Supervisor

7. Brayden York **May 2018 - Aug. 2018**
Position: Summer Research Technician
Project topic: Regenerator temperature for external heat engines.
Role: Supervisor

6. Brett Van Mierlo **May 2018 - Aug. 2018**
Position: Summer Research Technician
Project topic: Piston internal heat transfer.
Role: Supervisor

5. Samuel Little **May 2017 - Aug. 2017**
Position: Summer Research Student (NSERC USRA)
Project topic: Evaporative cooling systems for robotics.
Role: Supervisor

4. Gilberto Prado **May 2016 - Aug. 2016**
Position: Summer Research Student
Project topic: Heat transport for sustainable engine design.
Role: Supervisor

3. Anders Nielsen **May 2016 - Aug. 2016**
Position: Summer Research Student (UOIT STAR Award)
Project topic: Sustainable external heat engine design and construction.
Role: Supervisor

2. Anders Nielsen **May 2015 - Aug. 2015**
Position: Summer Research Student (NSERC USRA)
Project topic: Heat transport for sustainable engine design.
Role: Supervisor

1. Han Wu **May 2014 - Aug. 2014**
Position: Summer Research Student (NSERC USRA)
Project topic: Temperature measurement devices for evaporating sessile droplets.
Role: Supervisor

Capstone Projects Supervised

Design & development of a model airplane with rotating wings **Sept. 2022 - Present**
Cole Lamothe, Philip Anisimov, Nick Biro, Marissa Kubien, Kaveh Ziaeian

Design & development of front and rear wings for a Formula SAE car **Sept. 2022 - Present**
Sheng Chen, Zhiyi Chen, Liao Stone, Tyler Paquette, Mostafa Shaarawy, Alyssa Wong

Design & development of an active aerodynamic system for a time attack car **Sept. 2022 - Present**
David Donskoy, Stefano Fraschetti, Ahmed Hajjeh, Peter Lewy, Alexi Tzakas

Design & development of an electrical power conversion and storage unit **Sept. 2021 - Apr. 2022**
Lucas Sprung, Bryce Elvin, Cameron Slade, Daniel Kuiumdjian, Christian Toso

Design & development of a model airplane with moveable flaps **Sept. 2021 - Apr. 2022**
Daniel Smalley, Lucas Heaton, Riley McDonough, Cassandra Leathers, Cory Markle, Spencer Wright

Design & development of a multi level flow visualization system for the ACE full scale wind tunnel **Sept. 2021 - Apr. 2022**
Alexandra Wilker, Courteney Coulthard, Cassandra Bryant, Simona Koleska, Ethan Koseck, Mitchell McAuley

Design & development of an emission reduction system for small engines **Sept. 2020 - Apr. 2021**
Kurtis Collins, Kevin Francis, Ahmed Hussein, Komayl Jawadi, Richard Thiessen

Design & development of an alternative fuel feed system for jet turbine engines **Sept. 2020 - Apr. 2021**
Jacob Bevis, Sarah Butts, Brooke Godding, Joshua Sequeira, Paul Szuflita, Brad Taylor

Design & development of a water pressure rocket **Sept. 2020 - Apr. 2021**
Hassan Butt, Kyle Cornect-Benoit, Nitheesh Kumar, Kenneth Morris, Antonio Nadile

Design & development of a pre-spun aircraft landing gear **Sept. 2018 - Apr. 2019**
Dylan Sinstead, Elliott Stambler, Brett Van Mierlo, Brayden York

Design & development of a speed boost system for an internal combustion engine **Sept. 2018 - Apr. 2019**
Emanuel Gingl, Graeme Hillebrand, Brendan Krahn, Montana McElwain, Ankeet Patel, Ryan Robertson, Olivia Wilz

Design & development of a solar thermal water boiling system **Sept. 2018 - Apr. 2019**
Leighton Gray, Kohillen Kulenthiran, Son Pham, John Serjeantson, Ronny Sorto Carranza

Design & development of a homogeneous charge compression ignition (HCCI) engine **Sept. 2017 - Apr. 2018**
Kyle Hyatali, Jad Khawam, Mohamd Imad, Robert Mundy, Roy Alda

Design & development of an electronic control unit and combustion system for a pistonless rotary engine **Sept. 2017 - Apr. 2018**
Samuel Little, Nicholas MacPherson, Maddison Wegner, Natassia Lunzmann, Heather Wyatt, Christopher Thomas, Felix Chan-Ying

Design & development of a passive cooling system for parked vehicles **Sept. 2016 - Apr. 2017**
David Cassar, Amin Hourfar, Nathan Hunt, Nikesh Jaggan, Brandon Walsh, Gregory Wigglesworth

Design & development of a tracking system for a solar thermal concentrator **Sept. 2016 - Apr. 2017**
Anders Nielsen, Timothy Armstrong, Dadrian Hinds, Ronald Lang, Matthew Stypulkowski

Design & development of a dynamometer for small engines **Sept. 2016 - Apr. 2017**
Justin Rizzi, Ricardo Araujo, Chris Gilbank, Audrey Goh, Alex Liang, Muhammad Siddiqui

Design & development of an artificial skin evaporative cooling system **Sept. 2015 - Apr. 2016**
Michael Cleave, Matthew Langford, Taylor Corner, Matthew Laplante

Design & development of a solar concentrator for thermal collection **Sept. 2015 - Apr. 2016**
Mohamed Ibrahim, Ashiq Shaikh, Ahmed Hasan, Yuyang Wei

Design & development of compact pistonless rotary engine **Sept. 2015 - Apr. 2016**
Jeremy Gogan, Christian Milojevic, Michael Crowley, Salvatore Ranieri, Henry Fung, Paul Pal

Design & development of a portable evaporative cooling unit **Sept. 2014 - Apr. 2015**
Greg Freisinger, Vishal Gogna, William Jordan, Andrew Kopp

Design & development of an Ericsson cycle engine **Sept. 2014 - Apr. 2015**
Matthew Dudman, Kareem Boulos, Parth Hukerikar, Rodrigo Mitsuy, Munish Selhi, Duncan Shaw

Professional Affiliations and Activities

Professional Societies

- Professional Engineer, Ontario, PEO #100198782.
- Member of the Canadian Society for Mechanical Engineering (CSME).
- Member of the American Physical Society (APS).
- Member of SAE International.

Reviewer for Scientific Journals

- Nature Communications
- Journal of Fluid Mechanics
- Physical Review Letters
- Physical Review E
- International Journal of Heat and Mass Transfer
- International Journal of Thermal Sciences
- International Journal of Thermophysics
- Nanotechnology
- Lab on a Chip
- Microfluidics and Nanofluidics
- Langmuir

- Analyst
- Talanta
- Sensors and Actuators A: Physical
- Journal of Physical Chemistry
- Journal of Materials Chemistry A
- Biomicrofluidics
- Micromachines
- Applied Sciences
- Inventions
- ACS Sustainable Chemistry and Engineering
- ACS Applied Materials and Interfaces
- Journal of Fluids Engineering
- Entropy
- Journal of Electrochemical Energy Conversion and Storage
- Journal of Power Sources
- International Journal of Hydrogen Energy

Reviewer for Grant Applications

- NSERC Discovery Grants
- Netherlands Organisation for Scientific Research
- NSERC Collaborative Research and Development Grants
- NSERC Strategic Partnership Grants
- NSERC Idea to Innovation Grants
- CFI John R. Evans Leaders Fund
- Mitacs Accelerate & Mitacs Elevate

University Service

University of Ontario Institute of Technology, Oshawa, ON **May 2013 - Present**

- Member of the Program Curriculum Committee for Mechanical Engineering (2016-2023)
- Member of the Departmental and Faculty Graduate Committees (2022-2023)
- Member of the FEAS Faculty On-Campus Research Committee (2020-2022)
- Member of the Faculty (FEAS) Academic Integrity Committee (2016-2021)
- Member of the University Selection Committee for CGS Doctoral Scholarships (2020)
- Member of the Third Year Review Committee (2020)
- Faculty Advisor, Engineers Without Borders (2016-2018)
- Member of the Hiring Committee for Asst./Assoc. Prof. (Solid Mechanics) (2017)
- Member of the PhD Entrance Scholarship Committee (2017)
- Session Chair for "Manufacturing of the Future" at FEAS Research Day (2017)
- Member of the Research Day Planning Committee (2017)
- Member of the Hiring Committee for Asst./Assoc. Prof. (Mechatronics) (2016)
- Faculty Advisor, Student Design Competition Team (2016-2017)
- Co-Stream Leader, Thermo/Fluids Stream (2015-2017)
- Faculty Representative for the International Opportunities Committee (2014-2017)
- Member of the AMME/FEAS Strategic Planning Committee (2014-2015)
- Member of the Program Curriculum Committee for Energy Systems Engineering (2013-2014)

University of Toronto, Toronto, ON **May 2012**

- Member of the Academic Committee for the MIE Departmental Research Symposium

University of Victoria, Victoria, BC **Sept. 2006**

- Volunteer for the Engineering Open House

University Outreach

Women in Engineering, UOIT, Oshawa, ON **May 2016-2022**
- Guest lecture to visiting female highschool students about engineering research

Ridgeback Welcome, UOIT, Oshawa, ON **May 2021-2022**
- Presentation about finding your passion in engineering

Faculty Retreat - Teaching Innovation Workshop, UOIT, Oshawa, ON **Sept. 2021**
- Presentation about using technology in my engineering courses

Orientation, UOIT, Oshawa, ON **Sept. 2020**
- Presentation about finding your passion in engineering

Volunteer for Pi Day Campaign, UOIT, Oshawa, ON **March 2018**
- Interviewed for a video and distributed pie to students and staff on Pi Day

Political Outreach

Research Matters Parliament Hill Pop-Up Research Park, Ottawa, ON **May 2017**
- Presented my research in Parliament Hill to Members of Parliament and interested staff

Community Service

Hodgson Middle School, Toronto, ON **Nov. 2019, June 2021**
- Science and Engineering Presentations, Mr. Lynch's and Ms. Lim's Classes (Grade 8)

McKee Public School, Toronto, ON **Jan. 2016**
- Volunteer for Scientist in the School, Ms. Hwang's Class (Grade 3)

Cummer Valley Middle School, Toronto, ON **Oct. 2012, Apr. 2013**
- Science Presentations and Demonstrations, Ms. Lim's Classes (Grade 7 & 8)

Media Coverage

- **UOIT News Release**, *University strengthens commitment to scholarship and discovery*, June 20, 2018.
- **UOIT News Release**, *Can modern research address our human health and sustainability challenges?*, May 17, 2018.
- **The Globe and Mail**, Excellence in Engineering special report, *UOIT team tackles testing efficacy, affordability and accessibility*, November 2, 2016.
- **UOIT News Release**, *UOIT knows clean energy*, June 9, 2016.
- **UOIT News Release**, *Lieutenant Governor tours UOIT's clean energy research labs*, May 31, 2016.
- **Southern Ontario Water Consortium News Release**, *UOIT Experts are tackling a variety of ecotoxicology issues with help from SOWC*, March 1, 2016.
- **UOIT News Release**, *Finding the way forward on climate change*, November 27, 2015.
- **UOIT News Release**, *UOIT researchers receive $1.9 million boost from NSERC*, July 11, 2014.
- **UOIT News Release**, *UOIT researcher pioneering new testing methods to detect arsenic in water*, May 22, 2014.

A) BACKGROUND INFORMATION

MARTIN AGELIN-CHAAB, *Ph.D., P.Eng.*

Department of Mechanical & Manufacturing Engineering
Faculty of Engineering and Applied Science
Ontario Tech University
2000 Simcoe Street North
Oshawa, Ontario, Canada, L1G 0C5
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1. Education

- **Doctor of Philosophy in Mechanical Engineering,** 2011
  Faculty of Engineering, University of Manitoba, Winnipeg, Canada

- **Master of Science in Mechanical Engineering,** 2006
  Faculty of Engineering, University of Manitoba, Winnipeg, Canada

- **Master of Engineering in Engineering Management,** 2003
  Faculty of Engineering, University of Alberta, Edmonton, Canada

- **Bachelor of Science (First Class) in Mechanical Engineering,** 2001
  Faculty of Engineering, K. N. University of Science and Technology, Ghana

- **Postgraduate Certificate in Higher Education Teaching,** 2009
  University Teaching Services, University of Manitoba, Winnipeg, Canada

2. Employment History

- **Acting Department Chair** (January 2023 – June 2023)
  Mechanical & Manufacturing Engineering Department,
  Faculty of Engineering and Applied Science,
  Ontario Tech University, Oshawa, Ontario, Canada.

- **Associate Professor (tenured)** (July 2017 – date)
  Mechanical & Manufacturing Engineering Department,
  Faculty of Engineering and Applied Science,
  Ontario Tech University, Oshawa, Ontario, Canada.

- **Graduate Program Director** (July 2021 – December 2022)
  Automotive & Mechatronic Engineering Department, and
  Mechanical & Manufacturing Engineering Department,
  Faculty of Engineering and Applied Science,
  Ontario Tech University, Oshawa, Ontario, Canada.

- **Graduate Program Director** (July 2018 – June 2021)
  Automotive, Mechanical & Manufacturing Engineering Department,
  Ontario Tech University, Oshawa, Ontario, Canada.

- **Assistant Professor (tenure-track)** (July 2011 – June 2017)
  Mechanical & Manufacturing Engineering Department,
  Ontario Tech University, Oshawa, Ontario, Canada.

- **Research Engineer** (October 2010 – June 2011)
  E. H. Price Limited, Winnipeg, Manitoba, Canada.

- **Sessional Lecturer** (January 2008 - May 2008)
  Department of Mechanical Engineering,
  University of Manitoba, Winnipeg, Manitoba, Canada.

- **Research & Teaching Assistant** (Sept. 2004 - October 2010)
  Department of Mechanical Engineering,
  University of Manitoba, Winnipeg, Manitoba, Canada.

- **Research & Teaching Assistant** (Sept. 2001 - August 2003)
  Department of Mechanical Engineering,
  University of Alberta, Edmonton, Alberta, Canada.

3. Professional Positions and Honors/Recognition

- **Best Paper Recognition**, SAE International - World Congress Experience, 2022
- **Editorial Board Member**, Energies, since 2020
- **Best Paper Recognition**, SAE International - World Congress Experience, 2020
- **Board Member**, Canadian Society for Mechanical Engineering, since 2019
- **Committee Chair**, Fluid Mechanics Engineering Technical Committee, Canadian Society for Mechanical Engineering, since 2019

- **Editorial Board Member**, International Journal of Global Warming, since 2018
- **Adjunct professor**, Department of Mechanical Engineering, Univ. of Manitoba, Winnipeg, Manitoba, Canada, since 2016
- **Associate Editor**, Transactions of the Canadian Society for Mechanical Engineering, since 2015
- **Best Paper Award**, IEEE Conference on Smart Energy Grid Engineering, 2014
- **Best Instructor Award**, UOIT's Engineering Students' Society, 2013
- NSERC **Industrial R&D Fellowship** (*declined*), 2010
- Edward R. Toporeck **Graduate Fellowship** in Engineering, Univ. of Manitoba, 2008, 2010
- **Japanese Society for the Promotion of Science** Summer Program (*declined*), 2009
- **NSERC Postgraduate Scholarship**, 2008-2010
- Dean of Graduate Studies **Student Achievement Award**, Univ. of Manitoba, 2008
- University of Manitoba **Graduate Fellowship**, Canada, 2007-2008

B) RESEARCH & SCHOLARLY WORK

I) List of Publications

*Co-authors underlined are students or research fellows under my supervision/co-supervision. Other co-authors are research collaborators. I have made significant contributions to all articles listed here. The impact factor (**IF**) indicated for each article is from the Journal Citation Reports™ (2022 Edition).*

Summary

- Refereed Journal Articles (Published/Accepted): . **110**
- Journal Articles Submitted/Under Review: . . **03**
- Book Chapters Published: **04**
- Refereed Conference Articles (Published/Accepted): **85**
- Published Abstracts: **07**
- Technical reports: **14**
- Invention Disclosures/Patent registration: . . **07**
- Google Scholar Citations **(h-index)**: . . . **3,660 (35)**

1. Refereed Articles in Journals (Published, In press or Accepted)

J110. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2023. New Fuel Cell Based Rail Engine System Using Green Fuel Blends. Applied Thermal Engineering, **Accepted**

J109. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** 2023. Design of a Multigenerational Energy System with Hydrogen Production for Clean Cement Plants. J. Clean Prod. **Accepted**.

J108. Siddiqui, N.A. and **Agelin-Chaab, M.** 2023. Investigation of the wake flow around the elliptical Ahmed body using detached Eddy simulation. *International Journal of Heat and Fluid Flow. Vol. 101, **In press** [IF:2.643]*

J107. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2023. Efficiency, Economic and Environmental Impact Assessment of a Newly Developed Rail Engine using Hydrogen and Other Sustainable Fuel Blends, *e-Prime - Advances in Electrical Engineering, Electronics and Energy.* Vol. 3, ***In press.***

J106. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2023. Environmental Impact Assessment of a Newly Developed Solid Oxide Fuel Cell-Based System Combined with Propulsion Engine Using Various Fuel Blends for Cleaner Operations. *Sustainable Materials and Technologies.* Vol. 35, ***Accepted***

J105. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2023. An Innovative Study on A Hybridized Ship Powering System with Fuel Cells Using Hydrogen and Clean Fuel Blends. *Applied Thermal Engineering.* Vol. 221, *In press*

J104. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** 2022. Design and Assignment of a New Helical Fixed Bed Type CO2 Methanation Reactor. *Fuel Journal.* Vol. 35, ***Accepted***

J103. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2022. Investigation and comparative evaluation of a hybridized marine engine powered by eco-friendly fuels including hydrogen. *Int. J. Hydrogen Energy*, **In press.** [7.139]

J102. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** 2022. Transport Phenomena Modeling of Various Novel Renewable Natural Gas Reactors and Reactor Configurations. *Chemical Engineering Science.* **In press.** [IF: 4.889]

J101. Shahid, S. and **Agelin-Chaab, M.** 2022. A review of thermal runaway prevention and mitigation strategies for lithium-ion batteries. *Energy Conversion and Management.* ***In press.***

J100. Seyam, S., Dincer, I. and **Agelin-Chaab**, M. 2022. Investigation of A Hybridized Combined Cycle Engine with SOFC System for Marine Applications. Journal of Thermal Analysis and Calorimetry, **In press**. **[IF: 4.629]**

J99. Siddiqui, N.A. and **Agelin-Chaab, M.** 2022. Flow Features of the Ahmed Body at a Low

Reynolds Number. *International Journal of Heat and Fluid Flow. Vol. 98,* **In press** [IF:2.643]

J98. Siddiqui, N.A. and **Agelin-Chaab, M.** 2022. Experimental investigation of the flow features around an elliptical Ahmed body. *Physics of Fluids. Vol. 34,* **In press.** [IF: 4.980]

J97. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2022. Development and Assessment of a Unique Hybridized Gas Turbine Locomotive Engine Operated by Sustainable Fuel Blends. *Fuel Journal.* **In press.** [IF: 8.035]

J96. Hangan, H., **Agelin-Chaab**, **M.**, Gultepe, I., Elfstrom, G. and Komar, J. 2022. Weather Aerodynamic Adaptation for Autonomous Vehicles: A Tentative Framework, *Transactions of the Canadian Society for Mechanical Engineering*, **In press.** [IF: 1.45]

J95. Pao, W.Y., Li, L. and **Agelin-Chaab, M**. 2022. A Soiling Mitigation Method to Enhance the Performance of ADAS in Precipitation, *SAE International Journal of Advances and Current Practices in Mobility*, doi:10.4271/2022-01-0076.
Selected as one of the best papers for the SAE International - World Congress Experience 2022.

J94. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2022. Environmental Impact Assessment of a Newly Developed Solid Oxide Fuel Cell-Based System Combined with Propulsion Engine Using Various Fuel Blends for Cleaner Operations. *Sustainable Materials and Technologies,* **In press** [IF: 10.681]

J93. Chea, B., **Agelin-Chaab, M.**, Mastali, M. and Szymczyk, R. 2022. Thermal Modeling and Analysis of an Electric Vehicle Charging System. *Energy Technology*, **In press**. [IF: 4.149]

J92. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2022. Analysis of a Newly Developed Locomotives Employing Sustainable Fuel Blends with Hydrogen. *Fuel*, Vol. 319, pp. 123748. https://doi.org/10.1016/j.fuel.2022.123748 [IF: 8.035]

J91. Shahid, S., Chea, B. and **Agelin-Chaab, M.** 2022. Development of a Hybrid Cooling Concept for Cylindrical Li-ion Cells. *Journal of Energy Storage*, Vol. 50, pp. 104214. https://doi.org/10.1016/j.est.2022.104214. [IF: 8.907]

J90. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** 2022. Development and Analysis of a Clean Methane Production System. *Fuel*, Vol. 317, 123396, ISSN 0016-2361, https://doi.org/10.1016/j.fuel.2022.123396. [IF: 8.035]

J89. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2022. Economic and Environmental Impact Assessment of Hybridized Aircraft Engines with Hydrogen and Other Fuels. *Int. J. Hydrogen Energy*, Vol. 47(22), pp. 11669-11685, ISSN 0360-3199, https://doi.org/10.1016/j.ijhydene.2022.01.171. [IF: 7.139]

J88. Addo-Binney, B. and **Agelin-Chaab, M.** 2022. Analysis of an integrated thermal energy

system for applications in cold regions. *J. Energy Resources Technology (ASME), Vol.* 144(1), pp. 012104 (14 pages) [IF: 2.90]

J87. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2022. Exergetic assessment of a newly designed solid oxide fuel cell-based system combined with a propulsion engine. *Energy*, Vol. 239, Part D, pp. 122314, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2021.122314. [IF: 8.857]

J86. Addo-Binney, B. and **Agelin-Chaab, M.**, Bamfo, E. and Koohi, S. 2022. A Comprehensive Life Cycle Assessment of a Cascade Heat Pump and a Natural Gas Furnace. *Integrated Environmental Assessment and Management*, Vol. 18, pp. 572 - 580. [IF: 3.084]

J85. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2021. Exergetic, Exergoeconomic and Exergoenvironmental Analyses of a Hybrid Combined Locomotive Powering System for Rail Transportation. *Energy Conversion and Management*, Vol. 245, pp. 114619. [IF: 11.533]

J84. Pejhan, S., **Agelin-Chaab, M.**, Yusuf, M. and Eng., D. 2021. Analysis of ebike dynamics and cyclists' anxiety levels and interactions with road vehicles that influence safety. *Accident Analysis and Prevention*, Vol. 159, pp. 106272 [IF: 6.376]

J83. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2021. Investigation of Potential Fuels for Hybrid Molten Carbonate Fuel Cell-Based Aircraft Propulsion Systems. *Energy & Fuels*, Vol. 35(12), pp. 10156–10168. [IF: 4.654]

J82. Chea, B., Bolt, A., **Agelin-Chaab, M.** and Dincer, I. 2021. Assessment of effectiveness of optimum physical distancing phenomena for COVID-19. *Physics of fluids.* Vol. 33, pp. 051903 [IF: 4.98]

J81. Shahid, S., and **Agelin-Chaab, M.** 2021. Development of hybrid thermal management techniques for battery packs. *Applied Thermal Engineering*, Vol. 186, pp. 116542. [IF: 6.465]

J80. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2021. Investigation of Two Hybrid Aircraft Propulsion and Powering Systems Using Alternative Fuels. *Energy*, Vol. 232, pp. 121037**.** [IF: 8.857]

J79. Siddiqui, N.A. and **Agelin-Chaab, M.** 2021. Nature-inspired solutions to bluff body aerodynamic problems: A review. *J. Mechanical Engineering and Sciences*, Vol. 15(2), pp. 8095 - 8140. [IF: 0.41]

J78. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** 2021. A review of unique aluminum-water based hydrogen production options. *Energy & Fuels*, Vol. 35(2), pp. 1024–1040 [IF: 4.654]

J77. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2021. Development and assessment of a cleaner locomotive powering system with alternative fuels. *Fuel Journal*, Vol. 296, pp.

120529 [IF: 8.035]

J76. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2021. Novel hybrid aircraft propulsion systems using hydrogen, methane, methanol, ethanol, and dimethyl ether as alternative fuels. *Energy Conversion and Management*, Vol. 238, pp. 114172 [IF: 11.533]

J75. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** 2021. A new integrated system with thermal energy storage for five useful outputs: A case study. *Sustainable Energy and Technology Assessment.* Vol. 45, pp. 101116 [7.632]

J74. Siddiqui, N.A. and **Agelin-Chaab, M.** 2021. A Simple passive device for the drag reduction of an Ahmed body. *J. Applied Fluid Mechanics*, Vol. 14(1), pp. 147-164. [IF: 1.41]

J73. Collings, W., Pao, W. and **Agelin-Chaab, M.** 2020. Investigation of the effectiveness of a passive device for soiling mitigation for vehicle side-cameras. *SAE Int. J. Adv. & Curr Prac. in Mobility*, 2(6), pp. 3293 - 3300, https://doi.org/10.4271/2020-01-0699
Selected as one of the best papers for the SAE International - World Congress Experience 2020.

J72. Azangbebil, H. K., Djokoto, S. S. and **Agelin-Chaab, M.** 2020. Experimental and Numerical Studies of a Soft Impact Piezoelectric Energy Harvesting Using an MR Fluid. *IEEE Sensors Journal*, Vol. 20(19), pp. 11204-11211 [IF: 4.325]

J71. Bolt, A., Chea, B., Dincer, I., **Agelin-Chaab, M.** and Rosen M. 2020. Design of a Multigenerational System with Absorption Cooling for a Residential Community: A Case Study. *J. Energy Resources Technology (ASME),* Vol. 143(6), pp. 1–11. [IF: 2.90]

J70. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** 2020. A Critical Review of Synthetic Natural Gas Production Techniques and Technologies. *J. Natural Gas Science and Engineering*. Vol. 84, pp.103670. [IF:5.285]

J69. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2020. Development of Clean Power Plant Integrated with Solar Farm for a Sustainable Community. *Energy Conversion and Management*, Vol. 225, pp 113434. [IF: 11.533]

J68. Djokoto, S. S., Azangbebil, H. K., **Agelin-Chaab, M.**, Dragasius, E. and Juresnas, V. 2020. Modelling and Study of Magnetorheological Fluid Impact Base Frequency Enhancement for a Micro-Piezoelectric Energy Generator. *Int. J. Green Energy*, Vol. 17(9), pp. 529-539.[IF: 3.206]

J67. Djokoto, S. S., Dragasius, E., Juresnas, V. and **Agelin-Chaab, M.** 2020. Controlling of vibrations in micro-cantilever beam using a layer of active electrorheological fluid support. *IEEE Sensors Journal*, Vol. 20 (8), pp. 4074 - 4079. [IF: 4.325]

J66. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2020. Thermodynamic Analysis of a hybrid

energy system using geothermal and solar energy sources with thermal storage in a residential building. *Energy Storage,* Vol. 2(1), pp. 1-22.

J65. Seyam, S., Dincer, I. and **Agelin-Chaab, M.** 2020. Analysis of a clean hydrogen liquefaction plant integrated with a geothermal system. *J. Cleaner Production,* Vol. 243, pp. 118562 [11.072]

J64. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** 2020. Experimental study of hydrogen production process with aluminum and water. *Int. Journal of Hydrogen Energy*, Vol. 45(28), pp. 14232–14244. [IF: 7.139]

J63. Wei, Y. and **Agelin-Chaab, M.** 2020. Experimental Study of a Thermal Cooling Technique for Cylindrical Batteries. *Journal of Electrochemical Energy Conversion & Storage (ASME),* 17(2): 021102 (13 pages) [IF: 2.01]

J62. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** 2020. Energy and exergy analyses of hydrogen production process with aluminum and water chemical reaction. *Energy,* Vol. 205, pp. 117978. [IF: 8.857]

J61. Wei, Y. and **Agelin-Chaab, M.** 2019. Development and Experimental Analysis of a Hybrid Cooling Concept for Electric Vehicle Battery Packs. *J. Energy Storage,* Vol. 25, pp.100906 [IF: 8.907]

J60. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** 2019. An Integrated Heat Recovery and Storage System for a Residential Building. *Energy Storage,* Vol. 1(5), pp. 1–13.

J59. Gultepe, I., **Agelin-Chaab, M.**, Komar, J., Elfstrom, G., Boudala, F. and Zhou, B. 2019. A Meteorological Supersite for Aviation and Cold Weather Applications. *Pure Appl. Geophys,* Vol. 176 (5), pp. 1977–2015. [IF: 2.641]

J58. Shahid, S. and **Agelin-Chaab, M.** 2018. Application of Jets and Vortex Generators to Improve Air-cooling and Temperature Uniformity in a Simple Battery Pack. *J. Thermal Science and Engineering Applications (ASME),* Vol. 11(2), doi:10.1115/1.4041493 (16 pages). [IF: 1.47]

J57. Bingham, R., **Agelin-Chaab, M.** and Rosen M. 2018. Whole Building Optimization of a Residential Home with PV and Battery Storage in The Bahamas. *Renewable Energy,* Vol. 132, pp. 1088-1103 [IF: 8.634]

J56. Adane, K.F.K. and **Agelin-Chaab, M.** 2018. Laminar-Turbulent Transition Flows of Non-Newtonian Slurries: Models Assessment. *J. Fluids Engineering (ASME),* Vol. 141(1), pp. 011104 (10 pages). [IF: 1.995]

J55. Panchal, S., Mathew, M., Dincer, I., **Agelin-Chaab, M.**, Fraser, R. and Fowler, M. 2018. Thermal and Electrical Performance Assessments of Lithium-Ion Battery Modules for an Electric Vehicle Under Actual Drive Cycles. *Electric Power Systems Research*, Vol. 163,

pp.18-27 [IF: 3.818]

J54. Shahid, S. and **Agelin-Chaab, M.** 2018. Experimental and Numerical Studies on Air Cooling and Temperature Uniformity in a Battery Pack. *Int. J. Energy Research*., Vol. 42(6), pp. 2246-2262 [IF: 4.672]

J53. Wei, Y. and **Agelin-Chaab, M.** 2018, Experimental Investigation of a Novel Hybrid Cooling Method for Lithium-ion Batteries. *Applied Thermal Engineering, Vol.* 136, pp. 375-387 [IF: 6.465]

J52. Panchal, S., Dincer, I., **Agelin-Chaab, M.**, Fraser, R. and Fowler, M. 2018. Design and Simulation of a Lithium-ion Battery at Large C-Rates and Varying Boundary Conditions through Heat Flux Distributions. *Measurement*, Vol. 116, pp. 382-390. [IF: 5.131]

J51. Shahid, S. and **Agelin-Chaab, M.** 2018. Development and analysis of a technique to improve air-cooling and temperature uniformity in a battery pack for cylindrical batteries. *Thermal Science and Engineering Progress,* Vol. 5, pp. 351-363. [IF: 4.56]

J50. Shahid, S. and **Agelin-Chaab, M.** 2017. Analysis of Cooling and Temperature Uniformity Effectiveness in a Battery Pack for Cylindrical Batteries. *Energies*, Vol. 10, pp. 1157:4-17. [IF: 3.252].

J49. Adaramola, S., Quansah, D.A., **Agelin-Chaab, M.** and Paul, S.S. 2017. Multipurpose Renewable Energy Resources based Hybrid Energy System for Remote Community in northern Ghana. *Sustainable Energy Technologies and Assessments,* Vol 22, pp. 161-170. [IF: 7.632]

J48. Panchal, S., Dincer, I., **Agelin-Chaab, M.,** Fraser, R. and Fowler, M. 2017. Uneven temperature and voltage distributions due to rapid discharge rates and different boundary conditions for series-connected $LiFePO_4$ batteries. *Int. Comm. in Heat Mass Transfer*, Vol. 81, pp. 210-217. [IF: 6.782]

J47. Alhayek, B., **Agelin-Chaab, M.** and Reddy, B. 2017. Analysis of an innovative direct steam generation based parabolic trough collector plant hybridized with a biomass boiler. *Int. J. Energy Research,* Vol. 41(14), pp. 2236-2247. [IF: 4.672]

J46. Panchal, S., Khasow, R., Dincer, I., **Agelin-Chaab, M.**, Fraser, R. and Fowler, M. 2017. Thermal design and simulation of mini-channel cold plate for water cooled large sized prismatic Lithium-ion battery. *Applied Thermal Engineering,* Vol. 122, pp. 80-90. [IF: 6.465]

J45. Panchal, S., McGrory, J., Kong, J., Dincer, I., **Agelin-Chaab, M.,** Fraser, R. and Fowler, M. 2017. Cycling degradation testing and analysis of a $LiFePO_4$ battery at actual Conditions. *Int. J. Energy Research,* Vol. 41(15), pp. 2565-2575. [IF: 4.672]

J44. Panchal, S., Dincer, I., **Agelin-Chaab, M.**, Fraser, R. and Fowler, M. 2017. Experimental investigation and simulation of temperature distribution in a 16Ah-$LiMnNiCoO_2$ battery

during rapid discharge rates. *Heat and Mass Transfer*, Vol. 53(3), pp. 937-946 [IF: 2.325]

J43. Iftekhar, H. and **Agelin-chaab, M.** 2017. Characteristics of Turbulent Flows Over Forward Facing Steps in Adverse Pressure Gradients Based on Two-Point Analyses. *J. Fluids Engineering (ASME),* Vol. 139(11), pp. 114501 (6 pages). [IF: 1.995]

J42. Panchal, S., Dincer, I., **Agelin-Chaab, M.**, Fraser, R. and Fowler, M. 2017. Transient Electrochemical Heat Transfer Modeling and Experimental Validation of a Large Sized LiFePO4/Graphite Battery. *Int. Journal of Heat and Mass Transfer*, Vol. 109, pp. 1239-1251. [IF: 5.431]

J41. Panchal, S., Khasow, R., Dincer, I., **Agelin-Chaab, M.**, Fraser, R. and Fowler, M. 2017. Numerical modeling and experimental investigation of a prismatic battery subjected to water cooling. *Numerical Heat Transfer, Part A: Applications,* Vol. 71(6), pp. 626-637. [IF:2.569]

J40. Panchal, S., Dincer, I., **Agelin-Chaab, M.**, Fraser, R. and Fowler, M. 2016. Experimental and simulated temperature variations in a $LiFePO_4$-20Ah battery during discharge process. *Applied Energy*, Vol. 180, pp. 504-515. [IF: 11.446]

J39. Bingham, R.D., **Agelin-Chaab, M.** and Rosen, M.A. 2016. Feasibility of a hybrid solar and wind power system for an island community in The Bahamas. *Int. J. Renewable Energy Research*, Vol. 6(3), pp. 951-963. [IF: 8.30]

J38. Ghandehariun, S., Rosen, M. A., **Agelin-Chaab, M.** and Naterer, G.F. 2016. Modeling of heat transfer from molten salt droplets using various gases. *Int. J. Heat and Mass Transfer,* Vol. 105, pp. 140-146. [IF: 5.431]

J37. Iftekhar, H. and **Agelin-Chaab, M.** 2016. Structure of turbulent flows over forward facing steps with adverse pressure gradient. *J. Fluids Engineering (ASME),* Vol. 138(11), pp. 111202-111202-12. [IF: 1.995]

J36. Panchal, S., Dincer, I. and **Agelin-Chaab, M.** 2016. Analysis and evaluation of a new renewable energy based integrated system for residential applications. *Energy and Buildings*, Vol. 128, pp. 900-910. [IF: 7.201]

J35. Panchal, S., Dincer, I., **Agelin-Chaab, M.**, Fraser, R., & Fowler, M. 2016. Experimental and theoretical investigation of temperature distributions in a prismatic lithium-ion battery. *Int. J. Thermal Sciences*, Vol. 99, pp. 204 – 212. [IF: 4.779]
On the list of most downloaded of the journal's articles from October to Dec. 2015

J34. **Agelin-Chaab, M.** 2016. Experimental study of turbulent offset jets. *Int. J. Fluid Mechanics Research*, Vol. 43(3), pp. 234-250. [IF: 0.20]

J33. Abdel-Rahman, A., **Agelin-Chaab, M**., Elfstrom, G. and Komar, J. 2016. Integrated aero-thermal testing of a race car in a full scale climatic wind tunnel. *SAE International,*

Technical Paper # 2016-01-1588. https://doi.org/10.4271/2016-01-1588.

J32. Panchal, S., Dincer, I., **Agelin-Chaab, M.**, Fraser, R. and Fowler, M. 2016. Thermal modeling and validation of temperature distributions in a prismatic lithium-ion battery at different discharge rates and varying boundary conditions. *Applied Thermal Engineering*, Vol. 96, pp. 190-199. [IF: 6.465]

J31. Suleman, F., Dincer, I. and **Agelin-Chaab, M.** 2016. Comparative impact assessment study of various hydrogen production methods in terms of emissions. *Int. J. Hydrogen Energy*, Vol. 41(19), pp. 8364-8375. [IF: 7.139]

J30. Panchal, S., Dincer, I., **Agelin-Chaab, M.**, Fraser, R. and Fowler, M. 2016. Experimental temperature distributions in a prismatic lithium-ion battery at varying conditions. *Int. Communications in Heat and Mass Transfer*, Vol. 71, pp. 35-43. [IF: 6.782]

J29. Panchal, S., Dincer, I., **Agelin-Chaab, M.**, Fraser, R. and Fowler, M. 2016. Experimental and theoretical investigation of heat generation rates for a water cooled LiFePO4 battery. *Int. J. Heat and Mass Transfer*, Vol. 101, pp. 1093 - 1102. [IF: 5.431]

J28. Ghandeharium, S., Rosen, M. and **Agelin-Chaab, M.** 2016. Modeling a direct contact heat recovery process from molten salt droplets in various gases for thermochemical hydrogen production. *WSEAS Transactions on Heat and Mass Transfer*, Vol. 11, pp. 72-78.

J27. Shao, W. J. and **Agelin-Chaab, M.** 2015. Turbulent flows over forward facing steps with surface roughness. *J. Fluids Engineering (ASME)*, Vol. 138(2), pp. 021103 (12 pages). [IF: 1.995]

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J9. Tachie, M. F., Paul, S. S., **Agelinchaab, M.** and Shah, M. K. 2009. Structure of turbulent flow over 90º and 45º transverse ribs. *J. Turbulenc*e, Vol. 10(20), pp. 1-23. *Invited Paper*. [IF: 2.395]

J8. **Agelinchaab, M.** and Tachie, M. F. 2008. PIV study of adverse and favorable pressure gradient turbulent flows over transverse ribs. *J. Fluids Engineering (ASME)*, Vol. 130(11), pp. 111305 (12 pages). [IF: 1.995]

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J4. Shah, M. K., **Agelinchaab, M.** and Tachie, M. F. 2008. Influence of PIV interrogation area on turbulence statistics up to fourth order moments in smooth and rough wall turbulent flows. *Experimental Thermal and Fluid Science*, Vol. 32(2), pp. 725-747. [IF: 3.37]

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J2. **Agelinchaab, M.** and Tachie, M. F. 2006. Open channel turbulent flow over hemispherical ribs. *Int. J. Heat and Fluid Flow*, Vol. 27(6), pp. 1010-1027. [IF: 2.643]

J1. **Agelinchaab, M.**, Tachie, M. F. and Ruth, D. W. 2006. Velocity measurement of flow through a model three-dimensional porous medium. *Physics of Fluids*, Vol. 18(1), pp. 017105-017116. [IF: 4.98]

1. Journal Articles Submitted or Under Review

J111. Pao, W. Y., Li, L. and **Agelin-Chaab**, **M**. 2022. A Novel Method to Study Automotive Sensors Performance in Rain. *Submitted to IEEE Transactions on Intelligent transportation Systems.*

J112. Pao, W. Y., Li, L. and **Agelin-Chaab**, **M**. 2022. Controlled and Realistic Artificial Rainfall Simulation System for Wind Tunnels. *Submitted to IEEE Sensors.*

J113. Aranha, R., Pao, W. Y., Li, L. and **Agelin-Chaab**, **M**. 2022. Design Optimization of Aerodynamic Devices for the Ahmed Body Using Genetic Algorithm. Submitted to *Computer Aided Geometric Design*.

3. Book Chapters (Refereed)

B4. Shahid, S. and **Agelin-Chaab, M.** 2023. Battery thermal management through simuilation and experiment: Air cooling and enhancement. In Fethi Aloui Sr., V. Edwin Geo, and Ankit Sonthalia (eds.), Handbook of Thermal Management Systems. *Elsevier, Global Content Partners.* ***Accepted.***

B3. Gultepe, I., **Agelin-Chaab, M.**, Komar, J., Elfstrom, G., Boudala, F. and Zhou, B. 2019. A Meteorological Supersite for Aviation and Cold Weather Applications. In: Gultepe**,** Ismail, Feltz**,** Wayne F. (Eds.**)**, Aviation Meteorology: Observations and Models. *Springer Nature Switzerland AG, Cham, Switzerland*

B2. **Agelin-Chaab, M.** 2018. Fluid Mechanics Aspects of Energy. In: Dincer, I. (ed.), *Comprehensive Energy Systems.* Vol. 1, pp. 478–520: Energy Systems Fundamentals, Elsevier, Oxford, United Kingdom.

B1. Adaramola, M.S., **Agelin-Chaab, M.**, Paul, S.S. 2015. Assessment of Wind Power Generation Along the Coast of Ghana. In: Adaramola, M.S. (ed.), *Wind Resources and Future Energy Security: Environmental, Social, and Economic Issues*, Apple Academic Press, Waretown, NJ, USA.

4. Refereed Articles in Conference Proceedings

C85. Pao, W.Y., Li, L. and **Agelin-Chaab, M.** April 2023. Drive-Thru Climate Tunnel: A Proposed Method to Study ADAS Performance in Adverse Weather, SAE Technical Paper. **Accepted**

C84. Shahid, S. and **Agelin-Chaab, M.** March 2023. Comparison of Different Fluids for a Hybrid Cooling Strategy of Cylindrical Lithium-ion Batteries. In Proceedings of the 8th Thermal and Fluids Engineering Conference (Hybrid), University of Maryland, Maryland, United States of America. **Accepted**

C83. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** December 2022. Design of a New Cement Plant Multigenerational System With Hydrogen Production. 13th International Conference on Hydrogen Production (ICH2P- 2022), December 11-14, Karachi, Pakistan.

C82. Seyam, S., Dincer, I., **Agelin-Chaab, M.** December 2022. A hybridized ship-powering system with fuel cells using hydrogen and methane. 13th International Conference on Hydrogen Production (ICH2P-2022), December 11-14, Pakistan.

C81. Seyam, S., Dincer, I., **Agelin-Chaab, M.** November 2022. Exergoenvironmental analysis of hybridized gas turbine locomotive engine operated by a sustainable fuel blend. 10th Global Conference on Global Warming (GCGW-2022), November 7-10, Sharjah, United Arab Emirates.

C80. Bolt, A., Dincer, I. and **Agelin-Chaab, M.** June 2022. Design of a New Helical Methane Fixed Bed- Reactor. 23rd World Hydrogen Energy Conference (WHEC-2022), June 26-30, Istanbul, Turkey.

C79. Pao, W.Y., Li, L. and **Agelin-Chaab, M**. June 2022. Wind-Driven Rain Effects on Automotive Camera and LiDAR Performances. In Proceedings of the 2022 CSME International Congress. University of Alberta, Edmonton, AB, Canada.

C78. Gustin, S. and **Agelin-Chaab, M.** August 2022. Aerodynamic Control With Multiple Array Dielectric Barrier Discharge Plasma Actuators. In Proceedings of the 2022 Fluids Engineering Division's (FED) Summer Meeting, Toronto, Ontario, Canada.

C77. Harley, T., Siddiqui, N. and **Agelin-Chaab, M.** August 2022. Effect of the Rear Geometry on the Flow Structure and Drag of the Ahmed Body. In Proceedings of the 2022 Fluids Engineering Division's (FED) Summer Meeting, Toronto, Ontario, Canada.

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C73. Gultepe, I., **Agelin-Chaab, M.**, Fernando, J.H., Elfstrom, G., Komar, J. Hangan, H. and Heymsfield, A.J. August 2021. Ice Crystals and Snow Measurements from a Climatic Wind Tunnel to Atmospheric Field Studies, 3rd International Summer Snowfall Conference, Reading, UK.

C72. Siddiqui, N.A. and **Agelin-Chaab, M.** June 2021. Drag Reduction on a Square Back Ahmed Body Using a Simple Flap, In Proceedings of the 2021 CSME International Congress. University of PEI, Charlottetown, PEI, Canada.

C71. Aranha, R. and **Agelin-Chaab, M.** June 2021. Design of Aerodynamic Devices Using Genetic Optimization, In Proceedings of the 2021 CSME International Congress. University of PEI, Charlottetown, PEI, Canada.

C70. Pao, W.Y. and **Agelin-Chaab, M.** June 2021. Fundamental and Parametric Considerations for Numerical Rain Simulation in a Wind Tunnel, In Proceedings of the 2021 CSME International Congress. University of PEI, Charlottetown, PEI, Canada.

C69. Siddiqui, N.A. and **Agelin-Chaab, M.** Nov. 2020. Effect of aspect ratio on the recirculation region of 35° Ahmed body. *Australian Journal of Mechanical Engineering*, https://www.tandfonline.com/doi/abs/10.1080/14484846.2020.1842307

C68. Djokoto, S. S., Dragasius, E., Juresnas, V. and **Agelin-Chaab, M.** 2019. Micro-Piezoelectric Actuator Vibration Control using Electrorheological Fluid Active Support: Experimental Study. *IFAC-PapersOnLine Vol. 52 (10), pp. 388-393.*

C67. Seyam, S., Al-Hamed, K. H., Qureshy, A. M., Dincer, I., **Agelin-Chaab, M.** and Rahnamayan, S. June 2019. Multi-objective Optimization of Hydrogen Production in Hybrid Renewable Energy Systems. In *2019 IEEE Congress on Evolutionary Computation (CEC)* (pp. 850-857). Wellington, New Zealand.

C66. Siddiqui, N.A. and **Agelin-Chaab, M.** June 2019. Numerical investigation of the effect of mid-section length on the aerodynamics of the Ahmed body. In Proceedings of the 2019 CSME International Congress. Western University, London, ON, Canada.

C65. Jankovics, D., **Agelin-Chaab, M.** and Barari, A. June 2019. Development of a Formula SAE Front Wing with an Emphasis on Additional Aerodynamic Devices, In Proceedings of the 2019 CSME International Congress. Western University, London, ON, Canada.

C64. Pao, W.Y., Pop-Iliev, R. Rizvi, G. and **Agelin-Chaab, M.** June 2019. Computational Studies of the Aerodynamics of a Simplified Miata MX-5, In Proceedings of the 2019 CSME International Congress. Western University, London, ON, Canada.

C63. Djokoto, S. S., **Agelin-Chaab, M.**, Jūrėnas, V. and Dragašius, E. April 2019. Experimental Investigation of Squeezed MRF Flim Stopper and Its Effect on Vibrating Bimorph for Frequency Tuning of an Energy Generator. In Proceedings IEEE SoutheastCon 2019, Von Braun Center in Huntsville, Alabama, USA.

C62. Djokoto, S. S., Azangbebil, H., **Agelin-Chaab, M.**, Dragašius, E. and Jūrėnas, V. June 2019. Design and Modeling of MRF Impact Base Frequency Enhancement for a Piezoelectric Energy Generator. In Proceedings of the 2019 CSME International Congress. Western London: Western University, London ON, Canada.

C61. Azangbebil, H., Djokoto, S. S., **Agelin-Chaab, M.** and Dragašius, E. August 2019. A Study of Nonlinear Piezoelectric Energy Harvester with Variable Damping using Thin Film MR Fluid. In Proceedings of 13th IFAC Workshop on Intelligent Manufacturing

Systems (IMS 2019) Oshawa, Canada.

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C59. Gustin, S., **Agelin-Chaab, M.** and Patel, K. July 2018. Preliminary Testing of a New Vibration Energy Harvester, in *Proceedings of the 9th International Symposium on Fluid-Structure Interactions, Flow-Sound Interactions, Flow-Induced Vibration & Noise*, Toronto, Ontario, Canada.

C58. Wei, Y. and **Agelin-Chaab, M.** June 2018. Novel Hybrid Cooling Concept for Battery Thermal Management Design. in *Proceedings of the 5th International Conference on Fluid Flow, Heat and Mass Transfer (FFHMT'18),* Niagara Falls, Canada.

C57. Ibrahim, M. and **Agelin-Chaab, M.** April 2018. Investigation and Development of Underbody Aerodynamic Drag Reduction Devices for Trailer Trucks, WCX**™**18: SAE World Congress Experience, Detroit, MI, United States.

C56. Ibrahim, M. and **Agelin-Chaab, M.** July 2018. Optimization of an underbody aerodynamic drag reduction device for trailer trucks, 9th International Symposium on Fluid-Structure Interactions, Flow-Sound Interactions, Flow-Induced Vibration & Noise, Toronto, ON, Canada.

C55. Nwaiwu, C.F., Tachie, M.F. and **Agelin-Chaab, M.** July 2018. Effects of Offset Height on the Turbulent Characteristics of Rectangular Twin Jets. In Proceedings of the 5th Joint US-European Fluids Engineering Division Summer Meeting, Montreal, Quebec, Canada.

C54. Nwaiwu, C.F., **Agelin-Chaab, M.** and Tachie, M.F. July 2018. Nozzle Orientation Effects on the Turbulent Structure of Submerged Twin Jets. In Proceedings of the 5th Joint US-European Fluids Engineering Division Summer Meeting, Montreal, Quebec, Canada.

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C52. Benjamin, S., Gultepe, I., **Agelin-Chaab, M.** et al. April 2018. Improvements to ceiling/visibility/turbulence forecasts from the 2018 HRRR/RAP US model and supersite observations for North American aviation applications. *European Geoscience Union General Assembly,* Vienna, Austria.

C51. Gultepe, I. and **Agelin-Chaab, M**. November 2017. Icing in Extreme Weather Conditions and Impact on Flights, 8th Atmospheric Sciences Symposium – ATMOS2017, Istanbul, Turkey.

C50. Bingham, R., **Agelin-Chaab, M.** and Rosen M. August 2017. Multi-objective Optimization of a Residential Building Envelope in the Bahamas, *5th IEEE International Conference on Smart Energy Grid Engineering*, Oshawa, Canada.

C49. Gultepe, I., Heymsfield, A., **Agelin-Chaab, M.**, Komar, J., Elfstrom, G. and Baumgardner, D. April 2017. Observational simulation of icing in extreme weather conditions, Session on aviation meteorology, *European geophysical union annual meeting 2017*, Vienna, Austria.

C48. Ghandeharium, S., Rosen, M.A.and **Agelin-Chaab, M.** October 2016. Modeling a Direct Contact Heat Recovery Process from Molten Salt Droplets in Various Gases for Thermochemical Hydrogen Production, *9th International Conference on Energy Planning, Energy Saving, Environmental Education* (EPESE '16) (EPESE16) to be held in Rome, Italy.

C47. Adane, K.F. and **Agelin-chaab, M.** July 2016. Laminar-turbulent transition flows of non-Newtonian slurries: models assessment. In Proceedings of the *ASME Fluids Engineering Division Summer Meeting*, FEDSM2016-7597, Washington, DC, USA.

C46. Ghani, O. A., **Agelin-Chaab, M.** and Barari, A. December 2015. A framework for aerodynamic design optimization of passenger cars using NURBS. J. *Appl. Mech. Eng.*, 4(6): 188-196.

C45. Wang, Z. and **Agelin-Chaab, M.** September 2015. Onboard plug-in hydrogen production from water with high pressure reversible fuel cells. *3rd Annual Symposium on Automotive Research and Development*. Tongji University, Shanghai, China.

C44. Hassan, I., Shao, W. and **Agelin-Chaab, M.** May-June 2015. Reynold number effect on forwarding facing step in pressure gradient. *Canadian Congress of Applied Mechanics*, London, Ontario, Canada.

C43. Hassan, I. and **Agelin-Chaab, M.** May-June 2015. Flow around 2D bluff bodies mounted close to a floor. *Canadian Congress of Applied Mechanics*, London, Ontario, Canada.

C42. Bingham, R., Rosen, M. and **Agelin-Chaab, M.** August 2015. Comparison of a 10 MW solar farm and equivalent on-grid residential solar systems in The Bahamas. *IEEE International Conference on Smart Energy Grid Engineering*, Oshawa, Ontario, Canada.

C41. Suleman, F., Dincer, I. and **Agelin-Chaab, M.** May 2015. Comparative study of various hydrogen production methods in terms of emissions. *International Conference on Hydrogen Production-2015* (ICH_2P-2015), Oshawa, Ontario, Canada.

C40. Shao, W. J. and **Agelin-Chaab, M.** August 2014. Turbulent flows over rough forward facing steps. In Proceedings of the *4th Joint US-European Fluids Engineering Summer*

Meeting, ASME, FEDSM2014-21359, Chicago, Illinois, USA.

C39. Shao, W. J. and **Agelin-Chaab, M.** August 2014. The structure of forward facing step flows in adverse pressure gradient. In Proceedings of the *4th Joint US-European Fluids Engineering Summer Meeting*, ASME, FEDSM2014-21357, Chicago, Illinois, USA.

C38. Shao, W. J. and **Agelin-Chaab, M.** June 2014. Experimental study of flows over forward facing steps with surface roughness. In Proceedings of the *Canadian Society for Mechanical Engineering International Congress*, Toronto, Ontario, Canada.

C37. Shao, W. J. and **Agelin-Chaab, M.** June 2014. Forward facing step flows in adverse Pressure gradient. In Proceedings of the *Canadian Society for Mechanical Engineering International Congress*, Toronto, Ontario, Canada.

C36. Allcock, J., Waller, E. J., **Agelin-Chaab, M.** and Perera, S. June 2014. Experimental modeling of a vertical loop geothermal system for undergraduate teaching applications. In Proceedings of The *Canadian Society for Mechanical Engineering International Congress*, Toronto, Ontario, Canada.

C35. Khasow, R. and **Agelin-Chaab, M.** August 2014. Automotive underbody diffuser effects on thermal management. *International Conference on Smart Grid Engineering* (SEGE'14), Oshawa, ON, Canada.
This paper received the Best Student Paper Award.

C34. **Agelin-Chaab, M.** et al. June 2013 Experimental study of horizontal turbulent jets from a slot diffuser. In Proceedings of the *8th World Congress on Experimental Heat Transfer, Fluid Mechanics and Thermodynamics*, Lisbon, Portugal**.**

C33. Abdulrahman, M.W., Wang, Z., Naterer, G. F. and **Agelin-Chaab, M.** September 2013. Thermohydraulics of a thermolysis reactor and heat exchangers in the Cu-Cl cycle of nuclear hydrogen production. *5th World Hydrogen Technologies Convention* (WHTC2013), Shanghai, China.

C32. **Agelin-Chaab, M.** June 2013. Turbulent flow over a complex 2D bluff body in wall Proximity. *24th Canadian Congress of Applied Mechanics*, Saskatoon, Canada.

C31. Ghani, O.A., Barari, A. and **Agelin-Chaab, M.** June 2013. Wake structure and aerodynamic characteristics of rectangular cylinders. *24th Canadian Congress of Applied Mechanics*, Saskatoon, Canada.

C30. Essel, E.E., **Agelin-Chaab, M.** and Tachie, M.F. June 2013. Backward facing step flow in adverse pressure gradient, *24th Canadian Congress of Applied Mechanics*, Saskatoon, Canada.

C29. Tsitaka, J.K. and **Agelin-Chaab, M**. June 2013. A horizontal jet from a commercial slot Diffuser. *24th Canadian Congress of Applied Mechanics*, June 2-6, Saskatoon, Canada.

C28. Essel, E.E., Tachie, M.F., **Agelin-Chaab, M.**, Ampadu-Mintah, A.A., Koupriyanov, M. and Tully, B. September 2012. Experimental study of turbulent flow in a slot diffuser. In proceedings of the *7th International Symposium on Turbulence, Heat and Mass Transfer*, Palermo, Italy.

C27. Ampadu-Mintah, A.A, Tachie, M.F. and **Agelin-Chaab, M.** September 2012. Low Reynolds Number Open Channel Flows over a Backward Facing Step. Proceedings of *the ASME 2012 Fluids Engineering Summer Meeting, FEDSM2012*, Rio Grande, Puerto Rico.

C26. Ampadu-Mintah, A.A, Tachie, M.F. and **Agelin-Chaab, M.** September 2012. Roughness effects on separated and reattached open channel turbulent flow. In Proceedings of the *7th International Symposium on Turbulence, Heat and Mass Transfer*, Palermo, Italy.

C25. Essel, E.E., Tachie, M.F., **Agelin-Chaab, M.**, Koupriyanov, M. and Tully, B. June 2012. An Experimental study of plane free jet from a vertical slot diffuser. In Proceedings of the *Canadian Society of Mechanical Engineers (CSME) International Congress*, Winnipeg, Canada.

C24. **Agelin-Chaab, M.** and Tachie, M. F. June 2010. Characteristics of 3D Offset Jets. In proceedings of the *8th International ERCOFTAC Symposium on Engineering Turbulence Modeling and Measurements*, Marseille, France.

C23. **Agelinchaab, M.** and Tachie, M. F. August 2009. Characteristics of a 3D turbulent wall jets and offset jets with small offset ratios. In Proceedings of the *ASME Fluids Engineering Division Summer Meeting, FEDSM2009-78540*, Vail, Colorado, USA.

C22. **Agelinchaab, M.** and Tachie, M. F. August 2009. Three-dimensional turbulent wall jets. In proceedings of the *ASME Fluids Engineering Division Summer Meeting, FEDSM2009-78542*, Vail, Colorado, USA.

C21. **Agelinchaab, M.**, Paul, S. S. and Tachie, M. F. August 2009. Velocity characteristics of flow around finite square and circular cylinders. In Proceedings of the *33rd International Association of Hydraulic Engineering and Research Congress*, Vancouver, B.C., Canada.

C20. **Agelinchaab, M.**, Tsikata, J. M., Tachie, M. F. and Katopodis, C. August 2009. Experimental study of open channel flows past rectangular and streamlined cylinders at incidence. In Proceedings of the *ASME Fluids Engineering Division Summer Meeting, FEDSM2009-78281*, Vail, Colorado, USA.

C19. Bejatovic, S., **Agelinchaab, M.** and Tachie, M. F. August 2009. Experimental study of turbulent flow in two-dimensional porous media. In Proceedings of the *ASME Fluids Engineering Division Summer Meeting, FEDSM2009-78292*, Vail, Colorado, USA.

C18. Paul, S. S., **Agelinchaab, M.** and Tachie, M. F. August 2009. Flow around finite circular and square cylinders in an open channel. In Proceedings of the *ASME Fluids Engineering Division Summer Meeting, FEDSM2009-78268*, Vail, Colorado, USA.

C17. Tachie, M. F. and **Agelinchaab, M.** July 2009. Turbulent flows over aligned and inclined ribs. In Proceedings of the *IUTAM Symposium on The physics of wall-bounded flows on rough walls*, Cambridge, UK.

C16. **Agelinchaab, M.**, Paul, S. S. and Tachie, M. F. June 2009. Comparison of flow patterns in the near wake of finite circular and square cylinders. In Proceedings of the *American Institute of Aeronautics and Astronautics (AIAA) 39th AIAA Fluid Dynamics Conference and Exhibit*, AIAA-2009-3564, San Antonio, Texas, USA.

C15. Adane, K. K., Tachie, M. F., **Agelinchaab, M.** and Shah, M. K. June 2009. Low Reynolds number turbulent flow over smooth and transitionally rough surfaces. In Proceedings of the *American Institute of Aeronautics and Astronautics (AIAA) 39th AIAA Fluid Dynamics Conference and Exhibit*, AIAA-2009-3565, San Antonio, Texas, USA.

C14. Bejatovic, S., Tachie, M. F., **Agelinchaab, M.** and Paul, S. S. May-June 2009, PIV study of turbulent flow in porous media. In Proceedings of the *2nd International Conference on Turbulence and Interaction -TI2009*, Sainte-Luce, Martinique.

C13. Tsikata, J. M., **Agelinchaab, M.**, Tachie, M. F. and Katopodis, C. July 2008. Open channel flow over a pair of rectangular cylinders at incidence. In Proceedings of the *6th International Colloquium on Bluff Bodies Aerodynamics and Applications*, Milan, Italy.

C12. **Agelinchaab, M.**, Tsikata, J. M. and Tachie, M. F. June 2008. Open channel flow rectangular cylinders at incidence. In Proceedings of the *American Institute of Aeronautics and Astronautics (AIAA) 38th AIAA Fluid Dynamics Conference and Exhibit*, AIAA-2008-4306, Seattle, USA.

C11. **Agelinchaab, M.**, Tsikata, J. M. and Tachie, M. F. June 2008. Open channel flow around rectangular and streamlined cylinders at incidence. In Proceedings of the *American Institute of Aeronautics and Astronautics (AIAA) 38th AIAA Fluid Dynamics Conference and Exhibit*, AIAA-2008-4154, Seattle, USA.

C10. **Agelinchaab, M.** and Tachie, M. F. June 2008. PIV Study of pressure gradient turbulent flows over square ribs. In Proceedings of the *7th International ERCOFTAC Symposium on Engineering Turbulence Modeling and Measurements*, Vol. 2, 381-388, Limassol, Cyprus.

C9. Tsikata, J. K., **Agelinchaab, M.** and Tachie, M. F. June 2008. Open channel flow over array of square and rectangular cylinders at incidence. In Proceedings of the *7th International ERCOFTAC Symposium on Engineering Turbulence Modeling and Measurements*, Vol. 2, 237- 239, Limassol, Cyprus.

C8. **Agelinchaab, M.**, Tsikata, J. M. and Tachie, M. F. May 2008. Open channel flow past a rectangular prism at incidence. In Proceedings of the *Inaugural International Conference of the Engineering Mechanics Institute*, paper w2401, Minneapolis, USA.

C7. Derksen, R. W., **Agelinchaab, M.** and Tachie, M. F. May 2008. Characteristics of flow over a NACA 0012 airfoil at low Reynolds numbers. In Proceedings of the *International Conference on Advances in Fluid Mechanics*, The New Forest, UK.

C6. Tsikata, J. M., **Agelinchaab, M.** and Tachie, M. F. May 2008. Open channel flow around pairs of rectangular and streamlined cylinders. In Proceedings of the *Inaugural International Conference of the Engineering Mechanics Institute*, paper w2402, Minneapolis, USA.

C5. **Agelinchaab, M.** and Tachie, M. F. July-August 2007. Separated and reattached flow over square, rectangular and semi-circular blocks. In Proceedings of the *American Society of Mechanical Engineers (ASME) 5th Joint ASME/JSME Fluids Engineering Conference*, FEDSM2007-37246, San Diego, USA.

C4. **Agelinchaab, M.** and Tachie, M. F. July-August 2007. PIV study of three-dimensional wall jet over smooth and rough surfaces. In Proceedings of the *American Society of Mechanical Engineers (ASME) 5th Joint ASME/JSME Fluids Engineering Conference*, FEDSM2007-37251, San Diego, USA.

C3. **Agelinchaab, M.**, Tsikata, J. M. and Tachie, M. F. June 2007. Open channel flow past a rectangular cylinder close to a plane wall and a free surface. In Proceedings of the *American Institute of Aeronautics and Astronautics (AIAA) 37th AIAA Fluid Dynamics Conference and Exhibit*, AIAA-2007-4478, Miami, USA.

C2. **Agelinchaab, M.** and Tachie, M. F. June 2007. Pressure gradient turbulent flow over two-dimensional ribs. In Proceedings of the *American Institute of Aeronautics and Astronautics (AIAA) 37th AIAA Fluid Dynamics Conference and Exhibit*, AIAA-2007-4509, Miami, USA.

C1. Tachie, M. F., **Agelinchaab, M.** and Shah, M. K. September 2006. Turbulent flow over ribs in open channel. In Proceedings of the *Turbulence, Heat and Mass Transfer Conference 5*, Dubrovnik, Croatia.

5. Patent Applications/Invention Disclosures

P7. Pao, W., Li, L., **Agelin-Chaab, M.**, Julian Knutzen and Alexis Baltazar-Y-Jimenez 2022. Hydrophilic. Magna International Invention Disclosure.

P6. Bolt, A., Dincer, I. and **Agelin-Chaab, M.**, 2022. A Novel Hydrogen Production through Aluminum and Water. Ontario Tech University Invention Disclosure.

P5. Pao, W., Long Li, and **Agelin-Chaab, M.**, Julian Knutzen and Alexis Baltazar-Y-Jimenez 2021. Rain Simulation System. United States Provisional Patent Application No. 63/283,793

P4. **Agelin-Chaab, M.** and Addo-Binney, B. 2018. Innovative Cascade Heat Pump for Domestic

Applications in Cold Regions, Ontario Tech University Invention Disclosure; United States Provisional Patent Application No. 62/770,829.

P3. Gustin, S., Patel, K. and **Agelin-Chaab, M.** 2018. A wind energy generator based on flutter phenomena in a tensioned surface. United States Provisional Patent Application No. 62/573,788.

P2. Wei, Y. and **Agelin-Chaab, M.** 2018. Novel Hybrid Cooling System for Battery Packs, United States Provisional Patent Application No. 62/555,439. Submitted a final Patent Application in 2019.

P1. Gustin, S. and **Agelin-Chaab, M.** 2017. A method for modifying airflow and for the control of atmospheric craft utilizing multi-directional plasma actuators. United States Provisional Patent Application No. 62/632,408.

6. Technical Reports (Industry Research Projects)

R14. Pejhan, S. and **Agelin-Chaab, M**. 2020. Analysis of ebike dynamics and cyclist interaction with road vehicles that influence safety. Technical Report prepared for General Motors Canada, Oshawa, ON, Canada.

R13. Chea, B. and **Agelin-Chaab, M**. 2020. Thermal Characterization and Modeling of an Innovative Energy Storage System. Technical Report prepared for Ecamion Inc., Toronto, ON, Canada.

R12. Omran, A. and **Agelin-Chaab, M**. 2018. Detailed Analysis of the Forces Acting on a High-Speed Full-Scale Elevator. Technical Report prepared for Schindler Elevators, Toronto, ON, Canada.

R11. **Agelin-Chaab, M.**, Ibrahim, M. and Lace, R., 2016. Development of Climatic Testing Techniques for E-Bikes,and Cross-Wind Aerodynamic Studies. Technical Report prepared for General Motors Canada, Oshawa, ON, Canada.

R10. **Agelin-Chaab, M.** and Khasow, R., 2016. Aerodynamic Analysis of a Pollution Control Technology. Technical Report prepared for Envision SQ Inc., Guelph, ON, Canada.

R9. **Agelin-Chaab, M.** and Khasow, R., 2015. Aerodynamic optimization of pollution control System. Technical Report prepared for Envision SQ Inc., Guelph, ON, Canada.

R8. **Agelin-Chaab, M.** and Rahman, A., 2014. Aerodynamics and thermodynamics of race Vehicles. Technical Report prepared for Mantis Automotive, Oakville, ON, Canada.

R7. **Agelin-Chaab, M.** and Khasow, R., 2014. Automotive Thermal Phenomena in Cross-Wind. Technical Report prepared for Aiolos Engineering Corporation, Toronto, ON, Canada.

R6. **Agelin-Chaab, M.** 2011. Ventilation effectiveness and infection control. Technical Report for E.H. Price Ltd, Winnipeg, Canada

R5. **Agelin-Chaab, M.** 2011. Experimental design and testing lint in ventilation systems. Technical Report for E.H. Price Ltd, Winnipeg, Canada

R4. **Agelin-Chaab, M.** 2011. Optimization of Slot Diffusers, Technical Report, E.H. Price Ltd, Winnipeg, Canada

R3. **Agelin-Chaab, M.** 2011. Ventilation effectiveness, a mockup test report, Technical Report, E.H. Price Ltd, Winnipeg, Canada

R2. **Agelinchaab, M.,** Lin, J., Fyfe, K. R., Zuo, M. J. and Tian, X. 2002. Experiments with Rotor Kit. Technical Report. Reliability Research Lab., University of Alberta, Edmonton, Canada.

R1. Tian, X., Lin, J., Zuo, M. J., Fyfe, K. R. and **Agelinchaab, M.** 2002. Vibration Signature Database for Rotating Equipment Fault Diagnosis. Technical Report. Reliability Research Lab., University of Alberta, Edmonton, Canada.

7. Refereed Abstracts/Presentations (not listed above)

A7. Pao, W., Long Li, and **Agelin-Chaab, M.**, January 2022. Simulating Precipitation for Autonomous Vehicle Testing and Development. 102nd American Meteorological Society Annual Meeting, Houston, TX, USA.

A6. Gultepe, I., **Agelin-Chaab, M.** , Komar, J. and Hangan, H., January 2022. Fog and Snow Measurements: From Climatic Wind Tunnel to Atmosphere. 102nd American Meteorological Society Annual Meeting, Houston, TX, USA.

A5. Komar, J., Elfstrom, G. and **Agelin-Chaab, M.** 2015. Test facilities and techniques for vehicle thermal management model validation: a roadmap for the Automotive Centre of Excellence at UOIT. *3rd Annual Symposium on Automotive Research and Development*, Tongji University, Shanghai, China.

A4. Komar, J., **Agelin-Chaab, M.** and Elfstrom, G. 2015. Aerodynamics at ACE UOIT climatic wind tunnel. *2nd Joint Conference of the Supersonic Tunnel Association, International (STAI) and Subsonic Aerodynamic Testing Association (SATA)*, Newport News, USA.

A3. Khasow, R., **Agelin-Chaab, M.**, Best, S., Komar, J. and Elfstrom, G. 2015. Experimental investigation of underbody thermal and aerodynamic flow-field features. *SAE 2015 World Congress and Exhibition*, Detroit, USA.

A2. **Agelin-Chaab, M.** and Tachie, M.F. 2009. Structure of three-dimensional turbulent offset jets with small offset distances. Abstract in Bulletin of the *American Physical Society 62nd Annual Meeting of the APS Division of Fluid Dynamics*, Vol. 54, Number 19,

Minneapolis, Minnesota.

A1. Tachie, M.F. and **Agelin-Chaab, M.** 2009. Flow field of three-dimensional turbulent wall Jets. Abstract in Bulletin of the *American Physical Society 62nd Annual Meeting of the APS Division of Fluid Dynamics,* Vol. 54, Number 19, Minneapolis, Minnesota.

II) List of Research Grants

Summary (*Only my cash value from the grants*)

- External grants as PI: . . . $1,719,000
- External grants as co-PI/co-applicant: $751,660
- Internal grants as PI: . . . $65,000
- Internal grants as co-PI/co-applicant: . $133,500
- External grants pending: . . $972,000
- Internal grants pending: . . $0

Total $3,641,160

1. Grants Submitted

- Agency and Program: ORF/Research Excellence Stream 1.
  Project Title: Next-Gen Electric Vehicle Battery Systems: Lightweight, Thermally Performant and Fire Safe for all Climates
  Value (percentage): **$6,000,000** (15%)
  Co-PI: Martin Agelin-Chaab; PI: Cristina Amon, UofT and others
  Award Dates: October 2022 – September 2026

2. Grants Awarded

- Agency and Program: Mitacs Accelerate/Magna Int.
  Project Title: Material characterization and innovative strategies for enhancing the performance of autonomous vehicle sensors in adverse weather
  Value (percentage): **$90,000** (60%)
  PI: Martin Agelin-Chaab; co-PI: Langis Roy
  Award Dates: February 2023 – January 2024

- Agency and Program: Mitacs Accelerate/TerraVis Energy Inc.
  Project Title: Design, development, and manufacturing of an ultra-efficient heat pump for cold climates
  Value (percentage): **$157,500** (80%)
  PI: Martin Agelin-Chaab; co-PI: Sheldon Williamson
  Award Dates: February 2022 – January 2023

- Agency and Program: NSERC/CREATE
  Project Title: Thermal Management of Electrification Technologies (TherMET)
  Value (percentage): **$5,003,960** (10%)
  Co-PI: Martin Agelin-Chaab; PI: Cristina Amon, UofT and others.
  Award Dates: April 2022 – March 2028

- Agency and Program: Mitacs Accelerate/Worksport
  Project Title: Design and Development of a Non-Parasitic DC Fast Charging Station for E-Transportation
  Value (percentage): **$200,000** (30%)
  Co-PI: Martin Agelin-Chaab; PI: Sheldon Williamson, Co-PI: Ibrahim Dincer
  Award Dates: December 2021 – December 2022

- Agency and Program: Ontario Centres of Excellence/Magna Int.
  Project Title: Numerical modelling and optimization of soiling mitigation concepts for autonomous vehicle applications in adverse weather
  Value (percentage): **$60,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: October 2021 – April 2023

- Agency and Program: Transport Canada - Enhanced Road Safety Transfer Payment Program
  Project Title: Improving the Safety and Movement of the Blind when Interacting with Emerging Vehicles In Urban Environments
  Value (percentage): **$150,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: October 2021 – April 2023

- Agency and Program: Mitacs Accelerate/Glasshouse Systems.
  Project Title: Development of a Drive-through Climate Tunnel for Autonomous Vehicle Development
  Value (percentage): **$15,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: April 2022 – December 2022

- Agency and Program: Mitacs Accelerate/Positive Energy Inc.
  Project Title: Design and production of a fully functional prototype of a plug 'n play battery energy storage system based on spent EV batteries
  Value (percentage): **$90,000** (50%)
  Co-PI: Martin Agelin-Chaab; PI: Sheldon Williamson
  Award Dates: May 2021 – September 2022

- Agency and Program: Mitacs Accelerate/GM Canada.
  Project Title: Implementation and evaluation of a surface estimation algorithm to modify the control of ADAS features
  Value (percentage): **$45,000** (100%)

PI: Martin Agelin-Chaab
Award Dates: February 2021 – February 2022

- Agency and Program: Mitacs Accelerate/Glasshouse Systems.
  Project Title: Characterization and numerical simulation of precipitation in the climatic wind tunnel
  Value (percentage): **$15,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: September 2020 – April 2021

- Agency and Program: Mitacs Research Training Award.
  Project Title: Development of a new vertical rain system
  Value (percentage): **$6,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: August 2020

- Agency and Program: ECO Canada Fund
  Project Title: Thermal management systems combining liquid and air cooling
  Value (percentage): **$15,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: December 2020 – June 2021

- Agency and Program: Autonomous Vehicle Innovation Network
  Project title: Vulnerable Road Users Safety
  Value (percentage): **$800,000** ($500,000 cash; $300,000 in-kind), (100%)
  PI: Martin Agelin-Chaab
  Award dates: March 2019 – February 2022.

- Agency and Program: Transport Canada, Clean Transportation System – Research and Development Program
  Project Title: Development and Assessment of Alternative Fuel Choices for Clean Transportation Sectors
  Value (percentage): **$100,000** (50%)
  Co-PI: Martin Agelin-Chaab, PI: Ibrahim Dincer.
  Award Dates: October 2020 – March 2022

- Agency and Program: Ontario Centres of Excellence/Magna Int.
  Project Title: Development of techniques to improve the performance of autonomous vehicle sensors in adverse weather
  Value (percentage): **$90,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: February 2020 – January 2022

- Agency and Program: NSERC Discovery Grant
  Project Title: Investigation of Turbulent Flow Separation and the Development of Flow Control Strategies for Bluff Bodies in Ground Proximity
  Value, (percentage): **$160,000** (100%)

PI: Martin Agelin-Chaab
Award Dates: May 2018 – April 2023

- Agency and Program: MITACS Accelerate/ General Motors Canada
  Project title: Analysis of the e-bike dynamics and cyclist interaction with road vehicles that influence safety
  Value (percentage): **$65,000** (100%)
  PI: Martin Agelin-Chaab
  Award dates: November 2018 – April 2020.

- Agency and Program: Ontario Centres of Excellence/eCAMION Inc.
  Project Title: Thermal Characterization and Modeling of an Innovative Energy Storage System
  Value (percentage): **$40,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: December 2018 – March 2020

- Agency and Program: NSERC Engage Grant/eCAMION Inc.
  Project Title: Thermal Characterization and Modeling of an Innovative Energy Storage System
  Value (percentage): **$39,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: December 2018 – March 2020

- Agency and Program: Research Infrastructure Fund (Internal UOIT)
  Project title: State-of-the-art Living Lab for Rapid Prototyping of Endless-range Autonomous E-drones
  Value (percentage): **$270,500** (33%)
  Co-PI: Martin Agelin-Chaab, PI: Sheldon Williamson
  Award dates: May 2018.

- Agency and Program: Research Infrastructure Fund (Internal UOIT)
  Project title: Particle image velocimetry (PIV) system for high-speed flow visualization and measurement
  Value (percentage): **$130,000** (33%)
  Co-PI: Martin Agelin-Chaab, PI: Brendan MacDonald, co-PI: Atef Mohany
  Award dates: May 2018.

- Agency and Program: MITACS Aceelerate/Schindler Elevator Corp.
  Project title: Detailed analysis of the forces acting on a high-speed full-scale elevator
  Value (percentage): **$29,000** (100%)
  PI: Martin Agelin-Chaab
  Award dates: November 2017 – July 2018.

- Agency and Program: NSERC Engage Grant/General Motors Canada
  Project Title: Development of Climatic Testing Techniques for E-Bikes, and Cross-Wind

Aerodynamic Studies
Value (percentage): **$50,640** (100%)
PI: Martin Agelin-Chaab
Award Dates: February 2016 – August 2016

- Agency and Program: NSERC Engage Plus Grant/Envision SQ Inc.
  Project Title: Aerodynamic optimization of pollution control system.
  Value (percentage): **$55,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: January 2016 – June 2016

- Agency and Program: ACE Wind tunnel project
  Project Title: Design, build and commission a subsonic wind tunnel for aerodynamic testing of scale models
  Value (percentage): **$20,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: September 2015 – April 2016

- Agency and Program: NSERC Engage Grant/Mantis Automotive Inc.
  Project Title: Aerodynamics and thermodynamics of race vehicles
  Value (percentage): **$48,480** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: May 2015 – October 2015

- Agency and Program: NSERC Engage Grant/Envision SQ Inc.
  Project Title: Aerodynamic optimization of pollution control system.
  Value (percentage): **$50,640** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: January 2015 – June 2015

- Agency and Program: NSERC Discovery Grant
  Project Title: Bluff body aerodynamics in ground proximity
  Value, (percentage): **$120,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: May 2013 – April 2018

- Agency and Program: NSERC Engage Grant/Aiolos Engineering Corp.
  Project Title: Automotive thermal phenomena in cross wind
  Value, (percentage): **$40,420** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: August 2013 – January 2014

- Agency and Program: Science Without Borders (Brazil) for students: 7 students
  Project Title: Vehicle aerodynamics, thermal analysis, and energy systems research.
  Value (percentage): **$40,250** (100%); Salaries of students working on my research
  PI: Martin Agelin-Chaab

Award Dates: May 2013 – August 2016

- Agency and Program: ACE Capstone Project
  Project Title: Design and fabrication of a smoke generator for flow visualization
  Value (percentage): **$5,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: September 2012 – April 2013

- Agency and Program: UOIT Start-up Grant from Ontario Tech
  Project Title: Thermo-fluids
  Value (percentage): **$40,000** (100%)
  PI: Martin Agelin-Chaab
  Award Dates: July 2011 – June 2016

C) TEACHING RELATED ACTIVITIES

1. Supervision of Students/Fellows/Scholars

Summary

- Postdoctoral/Visiting fellows:. **04** (0 in progress)
- Ph.D. students: . . **08** (6 in progress)
- MASc. students: . . **30** (6 in progress)
- M.Eng. students: . . **04** (0 in progress)
- Undergraduate research students: **26** (2 in progress)
- Visiting Scholars: . . **07** (0 in progress)
- Capstone students: . . **124** (24 projects)
- Graduate thesis committees: . over **70**

i) Postdoctoral/Visiting Fellows

P4. Shabnam Pejhnan, Postdoctoral Fellow (Sole supervisor), UOIT, Oshawa, April 2019- April 2022.
Research: Experimental design and testing of e-bike riding scenarios and testing
*Current position: **Assistant Professor at Ontario Tech***.

P3. Sylvester S. Djokoto, Visiting Fellow from Kaunas University of Technology, Lithuania (Sole supervisor), UOIT, Oshawa, August 2018 - December 2019.
Research: Application of smarts fluids for energy harvesting.
Current position: *Engineer*.

P2. Qi Wang, Visiting Fellow from Beijing University of Chemical Technology, China (Sole supervisor), UOIT, Oshawa, August 2016 – March 2017
Research: Electro-mechanical integration of test facilities
Current position: ***Full Professor at Beijing University of Chemical Technology.***

P1. Samane Ghandehariun, Postdoctoral Fellow (Co-supervising with Dr. Marc Rosen, FEAS), UOIT,
Oshawa, November 2015 – December 2016.
Research: Thermal hydraulics and the integration of the Cu-Cl cycle for hydrogen production.
Current position: ***Assistant Professor at Iran University of Science and Technology***

ii) Doctoral Students

D8. Bismark Addo-Binney, PhD (Sole Supervisor), UOIT, May 2022 –
Thesis title: Development of a novel cascade heat pump for residential applications.

D7. Seham Shahid, PhD (Sole Supervisor), UOIT, Oshawa, May 2020 –
Thesis title: Innovative thermal management techniques for electric batteries
Recipient of Ontario Graduate Scholarship (OGS)

D6. Andre Bolt, MASc (Co-Supervisor with Dr. Ibrahim Dincer, FEAS), UOIT, Oshawa, January 2020 –.
Thesis title: Design and Development of a Synthetic Natural Gas Reactor
Recipient of Ontario Graduate Scholarship (OGS)

D5. Wing Yi Pao, PhD (Sole Supervisor), UOIT, Oshawa, September 2019 –
Thesis title: Mitigating soiling on autonomous road vehicle sensors
Recipient of NSERC Postgraduate Scholarship
Recipient of Ontario Graduate Scholarship (OGS)
Won the CSME National Student Design Competition, 2022

D4. Naseeb Siddiqui, PhD (Sole Supervisor), UOIT, Oshawa, January 2019 –
Thesis title: Development and Analysis of Passive Aerodynamic Devices for Bluff Body Applications

D3. Shaimaa Seyam, PhD (Co-supervisor with Dr. Ibrahim Dincer, FEAS), UOIT, Oshawa, September 2018 –
Thesis title: Analysis of integrated sustainable energy systems for transportation
Recipient of Ontario Graduate Scholarship (OGS)

D2. Satyam Panchal, PhD (Co-supervisor with Dr. Ibrahim Dincer, FEAS), UOIT, Oshawa, May 2014 – December 2016.
Thesis title: Thermal characterization of new lithium-ion battery and their utilization in experimental electric vehicle settings.

Thesis was nominated for Best Thesis Award.
Recipient of Ontario Graduate Scholarship (OGS)
Current position: Senior Engineer at Stellantis (Formerly Chrysler)

D1. Mohammed Abdulrahman, PhD (Sole Supervisor), UOIT, Oshawa, January 2012 – July 2016.
Thesis title: Analysis of the thermal hydraulics of a multiphase oxygen production reactor in the cu-cl cycle.
Current position: Unknown

iii) Master's Students

M30. Miray Dincer, MASc (Sole Supervisor), Ontario Tech, September 2022 –
Thesis title: Development of integrated energy systems for off-grid applications

M29. Eric Villeneuve, MASc (Sole Supervisor), UOIT, Oshawa, September 2019 –.
Thesis title: Flow characterization and flow quality improvement in the wind tunnel

M28. Wahid Besada, MASc (Sole Supervisor), UOIT, Oshawa, September 2019 –.
Thesis title: Development of a novel cascade heat pump for residential applications

M27. Chunyu Mao, MASc (Co-Supervisor with Dr. Yuping He, FEAS), UOIT, Oshawa, September 2019 –.
Thesis title: Development of active control systems for improving safety in high performance vehicles

M26. Mark Ironside, MASc. (Sole Supervisor), UOIT, Oshawa, September 2016 –
Project title: Calibration and commission of the low speed aerodynamic open circuit wind tunnel
Current position: Engineering manager at General Dynamics

M25. Sam Gustin, MASc (Sole Supervisor), UOIT, Oshawa, September 2017 –.
Thesis title: Active flow control through the use of plasma actuators (PAs).
Current position: Senior Software Engineer at Amazon Canada

M24. Bismark Addo-Binney, MASc (Sole Supervisor), UOIT, Oshawa, September 2018 – August 2021
Thesis title: Development of a novel cascade heat pump for residential applications.
Thesis was nominated for Best Thesis Award.
Current position: Senior Engineer at Napoleon Inc.

M23. Yagneswaran Suresh, M.Eng. (sole supervisor), Ontario Tech, September 2019 – November 2020.
Project title: A Numerical Simulation of the 25° Ahmed Body.
Current position: Engineer at Multimatic Inc., Ontario, Canada

M22. Adwait Murali, M.Eng. (sole supervisor), Ontario Tech, September 2019 – November 2020.
Project title: Simulation Study of 35^{o} Ahmed Body Model Using Stanford University Unstructured (SU2) Software.
Current position: Unknown

M21. Raphael Lace, MASc (Sole Supervisor), UOIT, Oshawa, May 2019 –.
Thesis title: Analysis of aerodynamic devices and vortex identification using OpenFoam
Current position: CFD Engineer at RWDI

M20. Seham Shahid, MASc (Sole Supervisor), UOIT, Oshawa, January 2016 –July 2017.
Thesis title: Development and analysis of vortex induced thermal management systems for batteries in electric vehicles.
Current position: PhD candidate under my supervision

M19. Branson Chea, MASc (Sole Supervisor), UOIT, Oshawa, May 2019 – August 2020.
Thesis title: Numerical characterization of thermal profiles and cooling strategies for the electric car charging system.
Thesis was nominated for Best Thesis Award.
Current position: Engineer at Bruce Power

M18. Chidiebere Nwaiwu, MSc (Co-supervisor with Dr. M.F. Tachie), UofManitoba, Winnipeg, May 2016 – May 2020.
Thesis title: Experiment investigation of turbulent jets at a free water interface
Current position: unknown

M17. Andre Bolt, MASc (Co-Supervisor with Dr. Ibrahim Dincer, FEAS), UOIT, Oshawa, January 2019 –December 2019.
Thesis title: Investigation of a hydrogen production process through aluminum and water chemical reaction
Current position: PhD candidate under my co-supervision

M16. Shaurya Rana, MASc (Sole Supervisor), UOIT, Oshawa, September 2018 – September 2020.
Thesis title: Aerodynamic optimization of a model road vehicle underside
Current position: Engineer at Stellantis (formerly Chrysler)

M15. Hayford Azangbebil, MASc (Sole Supervisor), UOIT, Oshawa, September 2018 – July 2020.
Thesis title: Analysis of renewable energy techniques for West Africa
Current position: Project Engineer at Wolf Steel Ltd, Ontario, Canada

M14. Abed Omran, MASc (Sole Supervisor), UOIT, Oshawa, September 2017 –2018.
Thesis title: Active flow control using aerodynamic diffuser
Current position: Engineer at Multimatic Inc., Ontario, Canada

M13. Yuyang Wei, MASc (Sole Supervisor), UOIT, Oshawa, May 2016 –2018.
Thesis title: Development of an air-water hybrid battery management system for electric vehicles.
Thesis was nominated for Best Thesis Award.
Current position: Engineer at Multimatic Inc., Ontario, Canada

M12. Mohammed Ibrahim, MASc (Sole Supervisor), UOIT, Oshawa, Sept. 2016 – October 2018.
Thesis title: Development and analysis of underbody fairing for drag reduction in trucks.
Current position: Engineer at ANSYS Canada, Ontario, Canada

M11. Raymond Bingham, MASc (Co-Supervisor with Dr. Marc Rosen, FEAS), UOIT, Oshawa, May 2015 –August 2017.
Thesis title: Development of renewable energy and net zero buildings for inland communities.
Current position: Energy engineer at Graphile Engineering Ltd., The Bahamas

M10. Bashar Alhayek, MASc (Co-Supervisor with Dr. Bale Reddy, FEAS), UOIT, Oshawa, September 2015 –November 2016.
Thesis title: Development and analysis of integrated biomass and solar system for power generation.
Current position: Energy analyst at Nexant Inc., Ontario, Canada

M9. Abdalla Abdel-Rahman, MASc (Sole Supervisor), UOIT, Oshawa, May 2014 –July 2015.
Thesis title: Development and application of an integrated aerodynamic and thermodynamic testing system for cars.
Won 2nd place in the 2015 UOIT Three Minutes Thesis (3MT)
Current position: Engineer at Ford Motor Company, Detroit, USA

M8. Weijie Shao, MASc (Sole Supervisor), UOIT, Oshawa, September 2013 – August 2014.
Thesis title: Experimental study of turbulent boundary layer flows over forward facing steps with different surface conditions.
Current position: CFD Analyst at CAD-IT Consultants, Shanghai, China

M7. Rocky Khasow, MASc (Sole Supervisor), UOIT, Oshawa, May 2013 – December 2014.
Thesis title: Aerodynamic and thermal analysis of a heat source at the underside of a passenger vehicle.
Received the Best Student Paper Award at SEGE 2014
Current position: Mechanical Engineer at Aiolos Engineering, Ontario, Canada

M6. Hassan Iftekhar, MASc (Sole Supervisor), UOIT, Oshawa, January 2015 – May 2016.
Thesis title: Experimental and numerical studies of flows over forward facing steps in pressure gradients.

Current position: Lecturer at National Textile University, Pakistan

M5. Osama A. Ghani, MASc (Co-supervisor with Dr. A. Barari, FEAS), UOIT, Oshawa, September 2011 –May 2013.
Thesis title: Design optimization of aerodynamic drag at the rear of generic passenger cars using NURBS representation.
Current position: Mechanical Engineer at Wenzel Downhole Tools, Edmonton, Canada

M4. Anagal Ashutosh, MASc (Co-supervisor with Dr. B. Reddy, FEAS), UOIT, Oshawa, September 2012 – June 2014.
Thesis title: Performance analysis of gas turbine cogeneration systems.
Current position: New Product Induction Coordinator, UTIL, Canada

M3. Fahad Suleman, MASc (Co-supervisor with Dr. Ibrahim Dincer, FEAS), UOIT, Oshawa, January 2014 – December 2014.
Thesis title: Comparative study of various hydrogen production methods for vehicles.
Current position: Engineer at Mafna Air Technologies, Ontario, Canada

M2. Forough Foroutan, M.Eng. (Sole Supervisor), UOIT, Oshawa, January 2015 – January 2016.
Project title: Mobility improvement and sand reduction techniques for enhanced oil recovery.
Current position: Engineer at Cosgroves Ltd Engineering Consultant, New Zealand

M1. Varad Thalnerkar, M.Eng. (Sole Supervisor), UOIT, Oshawa, September 2015 – August 2016.
Project title: Aerodynamic improvements in passenger cars.
Current position: Engineer at Honda Motor Company, Ontario, Canada

iv) Undergraduate Research Students

U26. Andrew Moniz, Mitacs undergraduate scholar (Summer 2021)
Project title: Soiling mitigation devices for road vehicles.

U25. Long Li, NSERC undergraduate scholar (Summer 2021)
Project title: Soiling mitigation devices for road vehicles.
Won the CSME National Student Design Competition, 2022

U24. Olivia Shurtleff, NSERC undergraduate scholar (Summer 2020 and Fall 2020)
Project title: Soiling mitigation devices for road vehicles.

U23. Michael Lamanna, Summer undergraduate researcher (Summer 2019), UOIT.
Project title: Fabrication of full scale Ahmed body for soiling mitigation testing

U22. William Collings, NSERC undergraduate scholar (Summer 2019)

Project title: Soiling mitigation devices for road vehicles.

U21. Michael Currie, NSERC undergraduate scholar (Summer 2018)
Project title: Active aerodynamic drag reduction devices for road vehicles.

U20. Kirtan Patel, NSERC undergraduate scholar (Summer 2017)
Project title: Aerodynamic drag reduction devices for road vehicles.
Obtained MSc from Carnegie Mellon University, USA

U19. Mustafa Haji, Summer undergraduate researcher (Summer 2016), UOIT, FEAS, Oshawa.
Project Title: Development of active underbody aerodynamic devices for high performance SUVs

U18. Hao Tan, NSERC undergraduate scholar (Summer 2016)
Project title: Aerodynamic drag reduction devices for road vehicles.
Obtained MASc from Ontario Tech University

U17. Aaditya Geed, Summer undergraduate researcher (Summer 2016), UOIT, FEAS, Oshawa.
Project title: Aerodynamics of bicycles.

U16. Radu Giurca, Summer undergraduate researcher (Summer 2016), UOIT, FEAS, Oshawa.
Project title: Aerodynamics of bicycles.

U15. Ryan Ashley, Summer undergraduate researcher (Summer 2016), UOIT, FEAS, Oshawa.
Thesis/Project Title: Integration of the continuous Cu-Cl thermochemical cycle for Hydrogen production

U14. Raphael Lace, Canada-Brazil CsF Scholarship Program students summer research internship (Summer 2016).
Project title: Aerodynamic drag reduction devices for road vehicles.
Obtained MASc from Ontario Tech University

U13. Felipe Pereira, Canada-Brazil CsF Scholarship Program students summer research internship (Summer 2016).
Project title: Development of a solar water pumping system.

U12. Selenne Verastegui, General Electric Canada Energy Female in Summer Experience Award (Summer 2016). Co-supervised with Dr. Bale Reddy.
Project title: Analysis of a solar energy cooling system

U11. Olutope Omole, Undergraduate researcher (Summer 2016/Fall 2016)
Projoect title: Aerodynamic devices for bicycles

U10. Ahmad Alnabulsi, Undergraduate researcher (Summer 2016/Fall 2016)
Project title: Radio controlled boats application in modern shipping methods

U9. Mark Mihailov, Undergraduate summer research (2015)
Project title: Integration of the continuous Cu-Cl thermochemical cycle for Hydrogen production.
Current position: Final year UOIT student

U8. Victor Mazzuocco, Undergraduate researcher (Summer 2014 to Winter 2016)
Project title: Race car aerodynamics.
Attended the University of Toronto

U7. Eunsik Bae, NSERC undergraduate scholar (Summer 2015)
Project title: Aerodynamic drag reduction devices for road vehicles.
Current position: Engineer at UTC Space Systems, Toronto

U6. MD Safayaat-UL Alam, NSERC undergraduate scholar (Summer 2014)
Project title: Full scale wind tunnel measurement of a race car.
Current position: Mechanical Engineer at Trench Canada Limited

U5. Jonas Fernandes, Canada-Brazil CsF Scholarship Program students summer research internship (Summer 2014).
Project title: Full scale wind tunnel flow visualization and thermal studies of a race car.
Current position: Working as engineer in Brazil

U4. Iuri F. Viera, Canada-Brazil CsF Scholarship Program students summer research internship (Summer 2014).
Project title: Full scale wind tunnel flow visualization and thermal studies of a race car.
Current position: Working as engineer in Brazil

U3. Nicolas P. Quintão, Canada-Brazil CsF Scholarship Program students summer research internship, (Summer 2013).
Project title: Aerodynamic and thermal analysis of a heat source at the underside of a passenger vehicle.
Current position: Working as an engineer in Brazil

U2. Adylio V. Neto, Canada-Brazil CsF Scholarship Program students summer research internship, (Summer 2013).
Project title: Aerodynamic and thermal analysis of a heat source at the underside of a passenger vehicle.
Current position: Unknown

U1. Diego P. de Andrade, Canada-Brazil CsF Scholarship Program students summer research internship (Summer 2013).

Project title: Thermal decomposition process of the copper oxychloride inside the oxygen reactor for the Cu-Cl cycle.
Current position: Unknown

v) Visiting Scholars

V7. Vincenzo de Fato, Visiting Scholar from University of Salerno, Italy.
(Sole supervisor), Ontario Tech, Oshawa, January 2022-June 2022.
Research: *Modeling and Analysis of a New Innovative Microcogeneration System based on an Air Source Heat Pump and a HT-PEM Fuel Cell.*

V6. Margherita Capuano, Visiting Scholar from University of Salerno, Italy.
(Sole supervisor), Ontario Tech, Oshawa, January 2022-June 2022.
Research: *Design and Analysis of a Hybrid Space Heating System Based on HT-PEM Fuel Cell and an Air Source Heat Pump with a Novel Heat Recovery*

V5. Alberto Giammarini, Visiting Scholar from Politecnico di Torino, Italy
(Co-supervising with Dr. Marc Rosen, FEAS), UOIT, Oshawa, September 2019 – January 2020.
Research: Spatial analysis of hydrogen production from renewable energy sources for injection in natural gas grid.

V4. Vincent Denarie, Visiting Scholar from Université Polytechnique Hauts-de-France
(Sole supervisor), Ontario Tech, Oshawa, June 2019-December 2019.
Research: Development of aerodynamic devices to soiling mitigation

V3. Kacper Kowalski, Visiting Scholar from Université Polytechnique Hauts-de-France
(Sole supervisor), Ontario Tech, Oshawa,
June 2019-December 2019.
Research: Development of aerodynamic devices to soiling mitigation

V2. Giulio del Giudice, Visiting Scholar from Politecnico di Torino, Italy (Co-supervising with Dr. Marc Rosen, FEAS),
UOIT, Oshawa, April 2019-August 2019.
Research:: Comparative techno-economic analysis of energy utilization

V1. Stan Kuipers, Visiting Scholar from University of Twente, Netherlands (Sole supervisor), UOIT, Oshawa, November 2017- April 2018
Research: Data analysis of e-bike testing and validation

vi) Capstone Students

1. Guy, J., Bingham, R., Mezarine, L. and Sekonopo, T., 2012-2013.
Project title: Design and Development of Smoke Generator Probe System.

Project won 3rd place in the 2012 Engineering Capstone Design Competition at UOIT.

2. Kumar, G., Ross-Gaye, S. and Shida, J., 2012-2013.
   Project title: Design and Development of Aerodynamic Drag Reduction Devices for Pickup Trucks

3. Patel, H., Foster, S., Hamed, S. and Lin, C., 2013 – 2014.
   Project title: Design and Development of a Hydrogen Production Loop that Uses Fossil Fuel and Solar Energy.
4. Bondarenko, D., 2013 – 2014.
   Project title: Design and Construction of a humidity system for a climatic wind chamber.

5. Allcock, J., Runge, J., Kanesalingam, N. and Watson, D., 2013 – 2014 (Co-advisor with Sharman Perera and Ed Waller, FESNS).
   Project title: Design and development of a modular climatic wind chamber for education and training.

6. David, P., Edwards, B., Burns, J., Morrow, A. and Ferguson, N., 2014 – 2015.
   Project title: Design and fabrication of a simple solar based water purification system for a family of six.

7. Aldarwish, H., Alobaidan, H., Ironside, M., Owens, M., Patel, M., 2014 – 2015.
   Project title: Development of a wind tunnel model car capable of generating realistic temperatures in the engine and exhaust systems and three speeds.

8. Govindarajah, N., Lloyd-Phillip, K., Rodriguez, N., Anand, A., Remisch, A. and Murillo, A., 2014 – 2015.
   Project title: Design and Development of a simple automotive underbody diffuser that reduces aerodynamic drag and improves down-force

9. Victor Mazzuocco, V., Villeneuve, E. and Hoban, E., 2015 – 2016.
   Project title: Design, build and commission a subsonic wind tunnel for aerodynamic testing of scale models.
   Project won 1st in the 2016 IEEE Ryerson University Student Branch International Conference for Upcoming Engineers. It also won 3rd place in the 2016 Engineering Capstone Design Competition at UOIT.

10. Gondal, I., Jani, S., Joshi, A., Khan, M. and Khalid, Z., 2015 – 2016.
    Project title: Design and develop an ergonometric and energy efficient electric bicycle

11. Allen, C., Sun, L., Howden, M., Thirugnanasampanthar, S., Sashikumar, S. and Tang, T., 2015 – 2016.
    Project title: Design and develop a renewable energy based waste treatment system for a small rural community.

12. Haji, M., Ali, T., Haseeb, M., Mushfig, W., Quraishi, F., Shukla, K., 2016 -2017
    Project title: Design and Development of Active Underbody Aerodynamic Device(s) for Road Vehicles.

13. Bratina, M., Gill, D., Kamboj, A., Kuzminski, J., Rai, S., Sharifi, M. and Solaiman, R., 2016 -2017
    Project title: Design and Development of a Model Hybrid Rocket Engine for Launching CubeSat into a Low Earth Orbit

14. Barber, E., Bogar, B., Bower, L., Pandya, D., Parker, M., 2016 -2017
    Project title: Design and Development of an Electrolyzer Stack for Hydrogen Production

15. Baird, C., Haviland J., Min, S.M., Nadesan, N., Oishi, W., Omran, A., 2016 -2017
    Project title: Design and Development of a Low Drag Brake Cooling Wheel

16. Jundi, M., Adetona, O., Addo-Binney, B., Krause, J., Al-Shamaa, H., Pinizzotto, N., Rajjab, H. and Paul-Chinka, F., 2018-2019
    Project title: Design and Development of a New Cascade Refrigeration System for Household Application

17. Scalzo, C., Smith, A., DeCunha, T., Bruno, R., Chandramohan, S. and Patel, D., 2018-2019
    Project title: Shape Morphing Aerodynamic Devices for Road Vehicles

18. Brown, R, Hanna, M., Kamal, D., Lacroix, J., Qadri, S., Rahal, O. and Zarrello, G., 2019 – 2020
    Project title: Design and Development of a Static Model Balance Strut for the Model Wind Tunnel

19. Rasalingam, A., Mazzara, C., Le, J. Panjla, K., Patel, K., Bhardwaj, S., and Tharumarasa, T., 2019 – 2020
    Project title: Design and Development of a Smart Distributed Clean Drinking Water System

20. Albrecht, K., Bailey, L., Chukwuonwe, E., Hampaul, A. and Labade, F., 2020 – 2021
    Project title: Design and Development of a Low-Cost Refrigeration System without Electricity or Compressed Air

21. Aziz, R., Illman, R., Rodrigues, I., Huycke, B. and Prajapati, J., 2020 – 2021
    Project title: Design & Development of an Active Aerodynamics Grille System for Electric Vehicles

22. Fontanilla, J., Gollen, T., Rizk, M., Alfonsi, D. and Koudijs, M., 2021 – 2022
    Project title: Design and Development of Shape Morphing Aerodynamic Devices for Road Vehicles

23. Plummer, C., Carmona-Epp, E., Budhooram, K., Khela, P., Sahaye, K. and Gayle, T., 2021 – 2022
    Project title: Design and Development of a Micro-Heat Pump Using Micro Turbo Compressors

24. Ansari, B., Yeung, D., Voynov, D., Liao, K. and Ali, U., 2021 – 2022
    Project title: Design and Development of Small 6-Degree Freedom Aerodynamic Force Balance for ACE Open Return Model Wind Tunnel

2. Graduate Thesis Committees

i) Doctoral Thesis

1. Kevin Pope, *Multiphase flow and chemical reactor thermodynamics for hydrolysis and thermochemical production*, PhD Thesis, UOIT, June 2012.

2. Halil Hamut, *Exergy and exergoeconomic analyses and optimization of thermal management systems in electric and hybrid electric vehicles*, PhD Thesis, UOIT, December 2012.

3. Behnaz Rezaie, *Modifying district energy systems performance by using multiple thermal energy storages*, PhD Thesis, UOIT, August 2013.

4. Ofelia Jianu, *Mass transfer and particle dissolution in liquid-gas and solid-liquid flows: application to hydrogen production processes*, PhD Thesis, UOIT, October 2013.

5. Rami El-Emam, *Analysis, assessment and optimization of integrated solar hydrogen production systems*, PhD Thesis, UOIT, December 2014.

6. Shahryar Garmsiri, *Modelling, analysis and optimization of net zero energy communities that strategically integrate transportation: Tool development, configurations and the role of energy storage systems*, PhD Thesis, UOIT, April 2015.

7. Sinan Ozlu, *Development of solar energy based multi-generation systems*, PhD Thesis, UOIT, May 2015.

8. Sayam Zafar, *Experimental and Theoretical Investigation of novel PCM for Thermal Applications*, PhD Thesis, August 2015.

9. Hasan Ozcan, *Experimental and theoretical investigations of Magnesium-chlorine cycle and its integrated systems*, PhD Thesis, November 2015.

10. Canan Acar, *Experimental investigation and analyses of Continuous type hybrid Photoelectrochemical hydrogen Production systems*, PhD Thesis, June 2016.

11. Yusuf Bicer, *Investigation of novel ammonia production options using photoelectrochemical hydrogen*, PhD Thesis, April 2017.

12. Farrukh Khalid, *Development and Analysis of a High Temperature Electrolyser for the Cu-Cl Cycle for Hydrogen Production*, PhD Thesis, UOIT, July 2017.

13. Janette Hogerwaard, *Development and Investigation of integrated solar systems for hydrogen and potential fuel synthesis*, PhD Thesis, UOIT, August 2017.

14. Murat Emre Demir, *Experimental investigation of an integrated solar driven wastewater treatment system for trigeneration applications*, PhD Thesis, UOIT, July 2018.

15. Shady Abd-Elmongy Abbas El-Batawy, *Intelligent integration of prosumers with battery energy storage in smart distribution systems using optimal design and a transactive energy framework*, PhD Thesis, UOIT, April 2018.

16. Lokendra Ramotar, Full Vehicle Simulation and Exploration of a Range Extended Electric Vehicle Battery Pack and Thermal Management System in Diurnal Operating Environments, PhD Thesis, UOIT, November 2018.

17. Md. Almostasim Mahmud, Miniaturization of features in microfluidic paper-based analytical devices for user-friendly testing and diagnosis using small sample volumes. PhD Thesis, UOIT, April 2019.

18. Anwar Hammad, Analysis and Assessment of Advanced Hydrogen Liquefaction Systems, PhD Thesis, UOIT, June 2019.

19. Maan Al-Zareer, Development and Modeling of Novel Battery Thermal Management Systems for Electric Vehicles and Hybrid Electric Vehicles. PhD Thesis, UOIT, April 2019.

20. Mahmoud Shaaban, Flow-excited Acoustic Resonance of Inline Arrangements of Cylinders in Cross-Flow, PhD Thesis, UOIT, August 2019.

21. Aida Farsi, Development and Modeling of a Lab-scale Integrated Copper-Chlorine Cycle for Hydrogen Production, PhD Thesis, UOIT, August 2020.

22. Omar Sadek, Numerical Investigation of The Fluidelastic Instability of Two-Phase Flow in a Parallel Triangular Tube Array, PhD Thesis, UOIT, May 2021.

ii) Master's Thesis

1. Mateusz Slowikowski, *Evaporative drying of cupric-chloride droplets in a thermo-chemical cycle of hydrogen production*, MASc Thesis, UOIT, July 2012.

2. Payam Esmaili, *Thermodynamic analysis of an integrated photovoltaic system for hydrogen and methanol production*, MASc Thesis, June 2012.

3. Abdullah Al-Zahrani, *Development and evaluation of solar-based integrated systems with organic Rankine cycle*, MASc Thesis, UOIT, December 2013.

4. Rafay Shamini, *Experimental and theoretical investigations of a new integrated solar tower system for photocatalytic hydrogen and power production*, MASc Thesis, UOIT, July 2013.
5. Janette Hogerwaard, *Comparative study of ammonia-based clean rail transportation in Greater Toronto Area*, MASc Thesis, UOIT, April 2014.

6. Jason Huang, *Development and investigation of new self can cooling methods*, MASc Thesis, UOIT, April 2014.

7. Nitin Varia, *Performance and emission characteristics of natural gas combined cycle power generation system with steam injection and oxyfuel combustion*, MASc Thesis, UOIT, August 2014.

8. Zia Saadatnia, *Nonlinear vibration and frequency response analysis of piezoelectric-based nanotube resonators*, MASc Thesis, UOIT, May 2015.

9. Noosheen Walji, *Characterization of fluid flow in paper-based microfluidic devices*, MASc Thesis, August 2015.

10. Md Almostasim Mahmud, *Analysis of heat transfer and fluid flow in an evaporating sessile droplet for evaporative cooling applications*, MASc Thesis, UOIT, August 2015.

11. Farshid Meshkinfam, *Design and Simulation of MEMS-Based Insulin Micro-Pump with Micro-Needle Array*, MASc Thesis, UOIT, November 2015.

12. Luping Zhang, *A Study of MHD and Monte Carlo Simulations of High-Current Plasma Beams in Industrial Applications*, MASc Thesis, UOIT, October 2015.

13. Reza Soltani, *Electrochemical Analysis of CuCl/HCl Electrolyser*, MASc Thesis, UOIT, October 2015.

14. Mohamed Almahdi, *Integrated heat pump options for heat upgrading in Cu-Cl cycle for hydrogen production*, MASc Thesis, March 2016.

15. Saeeda Sana, *Bi-directional AC-DC matrix converter with unity power factor for electric vehicle chargers*, MASc Thesis, January 2016.

16. Saadia Gauhar, *Advanced Control Schemes of Induction Machine Drives*, MASc Thesis, January 2016.

17. Ahmed Hasan, *Development and Analysis of novel pizza bags***,** MASc Thesis, April 2017.

18. Monu Malik, *Investigation of new phase change materials based thermal management systems for Li-ion batteries*, PhD Thesis, December 2016.

19. Mosfera Alam Chowdury, *Paper-based microfluidic device with a gold nanoparticle sensor for arsenic detection applied to groundwater in Bangladesh*, MASc Thesis, October 2016.

20. Azzam Abu-Rayash, *Development of a new integrated sustainability assessment model for energy systems,* MASc Thesis, UOIT, July 2017.

21. Tomasz Wajda, *Design and analysis of a thermolysis reactor for scale-up copper-chlorine hydrogen production cycle,* MASc Thesis, UOIT, October 2017.

22. Ghassan Chehade, *Development and investigation of an ammonia synthesis reactor,* MASc Thesis, UOIT, July 2018.

23. Huseyin Karasu, *Life cycle assessment of conventional and alternative fuels for vehicles,* MASc Thesis, UOIT, July 2018.

24. Arda Yapicioglu, *Experimental investigation and evaluation of fuel options for ammonia power generators,* MASc Thesis, UOIT, April 2018.

25. Osamah Siddiqui, *Development and investigation of alkaline electrolyte based direct ammonia fuel cells*, MASc Thesis, UOIT, July 2018.

26. Eren Sevinchan, *Investigation of thermal management options for robots,* MASc Thesis, UOIT, June 2018.

3. Graduate Thesis External & University Examiner

1. Sakah, M., Application of Laser Bessel Beams in Velocity Measurements, PhD Thesis, Laurentian University, Sudbury, June 2022.

2. Waleed A. A. Ahmed, Modeling and Analysis of Metal Cutting Process using Self-Propelled Rotary Tools, PhD Thesis, UOIT, January 2021.

3. Vinicius Albanas Marcis, Constant Temperature Constant Voltage Charging Method for Lithium-ion Battery Technology, MASc Thesis, UOIT, July 2020.

4. Sana Abd Alsalam Numerical Analysis of Film Cooling Performance of Micro Holes and Compound Angle Sister Holes, PhD Thesis, Ryerson University, Toronto, July 2019.

5. Thomas Lato, Passive Damping Mechanism of Herschel-Quincke Tubes for Pressure Pulsations in Piping Systems, MASc Thesis, UOIT, December 2018.

6. Siddhartha Anirban Singh, Design and implementation of single phase modified z-source inverter topology for photovoltaic/grid interconnected DC charging applications, PhD Thesis, UOIT, March 2018.

7. Navbir Sidhu, Hybrid electric energy storage with li-ion battery and bank switched supercapacitors, MASc Thesis, UOIT, June 2017.

8. Ian Wood, Design, Development, and Calibration of a Layerless Additive Manufacturing Stereolithography System to Improve Surface Integrity and Dimensional Accuracy in Fabrication, MASc Thesis, UOIT, June 2016.

9. Yasser Assolami, Probabilistic impact of charging plug-in electric vehicles on electric energy distribution systems. MASc Thesis, UOIT, June 2016.

10. Mayn Tomal, Optimal planning and operation of CHP within micro energy grids. MASc Thesis, UOIT, June 2016.

11. Jamil Jabbour, A Matrix-Free Numerical Bifurcation Method Applied to Sheared Annular Electroconvection. MASc Thesis, UOIT, June 2015.

12. Arun Damodharan, Single-Stage Boost Integrated Asymmetrical Half-Bridge AC-DC Power Converter with Dual Modulation for Indoor LED Lighting. MASc Thesis, UOIT, June 2015.

4. Chair of Graduate Thesis Committees

1. Saurabh Talwar, *Islanding detection in distribution system embedded with renewable-based distributed generation*, MASc Thesis, UOIT, November 2012.

2. Md. Islam, *Parallel design optimization of multi-trailer articulated heavy vehicles with active safety systems*, PhD Thesis, UOIT, April 2013.

3. Ahmed Omer, *Passive methods for suppressing acoustic resonance excitation in shallow rectangular cavities*. MASc Thesis, UOIT, August 2014.

4. Ankur Arora, *Prototype Development and Testing of Active Yaw Moment Control System Using Vehicle Momentum Wheel*, MASc Thesis, UOIT, January 2015.

5. Adam Reid, *Development and optimization of a wide base FEA truck tire model for prediction of tire-road interactions*, MASc Thesis, UOIT, April 2015.

6. Mohammad Jassas, *A framework for integrating wireless sensors and cloud computing*, MASc Thesis, UOIT, November 2015.

7. Janamejaya Channegowda, *DC Fast Charging Stations and Smart On-board Energy Management/Storage for Future Electric Transportation Vehicles*, PhD Thesis, UOIT, December 2015.

8. Shamim Mashrouteh, *Nonlinear Vibration Analysis of Viscoelastic Plates with Fractional Damping*, MASc Thesis, UOIT, June 2017.
   Since July 2017, I have chaired over 50 final thesis examination committees (not stated above) and over 20 PhD candidacy examination committees in my capacity as the Graduate Program Director.

5. Courses Taught

*My contribution to course development is stated as either **developed** or **revised.***

5.1 Undergraduate courses

- MECE 4153U: Wind and Hydro energy, Ontario Tech, Fall 2019 - 2021 **(Developed)**
- MECE 2860U: Fluid Mechanics, Ontario Tech, Winter 2012 – 2017, 2019 – 2020 **(Revised)**
- ENGR 3260U: Introduction to Energy Systems, Ontario Tech, Fall 2016 (**Revised)**
- ENGR 2230: Statics, Ontario Tech, Fall 2012 - 2015 **(Revised)**
- ENGR 2430: Dynamics, Ontario Tech, Winter 2012 **(Revised)**
- MECH 2260: Fundamentals of Fluid Mechanics, University of Manitoba, Winter 2008
- ENGR 4951U: Capstone Systems Design for Mechanical, Automotive and Manufacturing Engineering II; Project supervisor, Ontario Tech, Winter 2013 - 2022
- Capstone Systems Design for Mechanical, Automotive and Manufacturing Engineering I (ENGR 4950U); Project supervisor, Ontario Tech, Fall 2012 - 2021

5.2 Graduate courses

- ENGR 5320G: Automotive Aerodynamics, Ontario Tech, Winter 2016, Fall 2018, 2020, 2021 **(Developed)**
- ENGR 5120G: Advanced Fluid Mechanics, Ontario Tech, Fall 2011, 2018, Winter 2013 - 2015 **(Developed)**
- ENGR 5004G: Classical Fluid Mechanics (Directed Study), Ontario Tech, Fall 2014 **(Developed)**
- ENGR 5004G: Boundary layer theory (Directed Study), Ontario Tech, Fall 2013, Winter 2013 – 2017 **(Developed)**

6. Technical Seminars/Workshops Organized (not listed above)

S9. Aerodynamics of Free Fall Workshop, March 22, 2018, UOIT, Oshawa, Canada.

S8. Practical Road Vehicle Aerodynamics Workshop, January 28-29, 2017, UOIT, Oshawa, Canada.

S7. Basic Road Vehicle Aerodynamics SAE Event, April 04, 2016, UOIT, Oshawa, Canada

S6. Practical Road Vehicle Aerodynamics Workshop, November 28, 2015, UOIT, Oshawa, Canada.

S5. Turbulent Flows Around Different Surfaces and Geometries. Seminar, Faculty of Engineering and Applied Science, UOIT, February 2011, Oshawa, Canada.

S4. PIV Study of Turbulent 3D Wall Jets. Seminar, Department of Mechanical and Manufacturing Engineering, University of Manitoba, September 2010, Winnipeg, Canada.

S3. Experimental Study of Turbulent Wall Jets over Rough Surfaces. Seminar, Department of Mechanical and Manufacturing Engineering, the University of Manitoba, April 2008, Winnipeg, Canada.

S2. Experimental Study of Flow Through Porous Media Using Particle Image Velocimetry. Seminar, Department of Mechanical and Industrial Engineering, University of Manitoba, November 2004, Winnipeg, Canada.

S1. Gear Fault Detection Using Time-Domain Averaging. Syncrude/Reliability Lab Seminar, Department of Mechanical Engineering, University of Alberta, May 2002, Edmonton, Canada.

D) PROFESSIONAL SERVICE ACTIVITIES

1. External Service

- **Academic Aerodynamic Lead (Project Arrow),** This is the first, original, full-build zero-emission concept vehicle launched by The Automotive Parts Manufacturers' Association (APMA) of Canada

- **Symposium Chair**, Fluid Mechanics, 2021 CSME Congress, Charlottetown, PEI, Canada, June 2021

- **Associate Editor**, Journal of Environmental Accounting and Management, since 2021

- **Associate Editor**, Transactions of the Canadian Society for Mechanical Engineering, since July 2019

- **Associate Editor**, Transactions of the Canadian Society for Mechanical Engineering, 2015-2017

- **Editorial Board Member**, Energies, since 2020

- **Chair**, Fluid Mechanics Engineering Technical Committee, Canadian Society for Mechanical Engineering, since June 2019

- **Vice Chair**, Fluid Mechanics Engineering Technical Committee, Canadian Society for Mechanical Engineering, March 2018 – June 2019

- **Editorial Board Member**, International Journal of Global Warming, since 2018

- **Editorial Board Member**, Frontiers in Mechanical Engineering – Fluid Mechanics, since 2021

- **Co-organizer**, the Symposium on Fluid mechanics, CSME Int. Congress, London, ON, Canada, 2019

- **Session Chair,** Experimental Methods in Fluid Mechanics, CSME Int. Congress, London, Canada, 2019

- **Local Organizing Chair,** IEEE Conference on Smart Energy Grid Engineering, Oshawa, Canada; 2015, 2016, and 2017

- **Session Co-organizer/Chair,** Experimental Methods in Fluid Mechanics, Canadian Congress on Applied Mechanics, London, Canada, 2015

- **Session Chair,** Thermogravimetric Analysis of Hydrogen Production from Al-Mg-Li Particles and Water, International Conference on Hydrogen Production, Oshawa, Canada, 2015

- **Session Chair,** Thermal energy systems, IEEE Conference on Smart Energy Grid Engineering, Oshawa, Canada, 2015

- **Technical Program Chair,** International Conference on Smart Energy Grid Engineering, Oshawa, Canada, 2014

- **Grant Reviewer**, NSERC Discovery grants; Italian Research Assessment VQR (Similar to NSERC); Mitacs grants; OCE grants; RTI grants, since 2013

- **Peer Reviewer for a number of reputable international journals and conferences:**
  - Experiments in Fluids;
  - Int. Journal of Thermal Sciences;
  - Int. Journal of Heat and Fluid Flow;
  - Journal of Turbulence;
  - ASME Journal of Fluids Engineering;
  - Applied Thermal Engineering;
  - Applied Energy;
  - Journal of Power Sources;
  - Int. Journal of Heat and Mass Transfer;
  - Energy (An International Journal by Elsevier);
  - Journal of Cleaner Production;
  - Fluid Dynamics Research;
  - Int. Journal of Fluid Mechanics;
  - SAE Int. Journals;
  - Transactions of the Canadian Society of Mechanical Engineering;
  - Engineering Applications of Computational Fluid Mechanics;
  - Int. Journal of Aerodynamics;
  - Sustainability (An International Journal);
  - Int. Journal of Hydrogen Energy; Journal of Energy Storage;
  - Int. Journal of Vehicle Design;
  - Journal of Visualization;
  - Pure and Applied Geophysics;
  - World Electric Vehicle Journal;
  - Engineering Science and Technology (an International Journal);
  - Journal of Applied Fluid Mechanics;
  - American Society of Mechanical Engineers Summer Meetings;
  - Canadian Society of Mechanical Engineers Congress;
  - Canadian Congress of Applied Mechanics;
  - SAE World Congress and Exhibition;
  - AIAA Fluid Dynamics Conference;
  - ASTFE Thermal and Fluids Engineering Conference;
  - IEEE Conference on Smart Energy Grid Engineering.

2. Internal Service

- **Acting Department Chair**, Mechanical and Manufacturing Engineering:
  August 2021 (2 weeks), May 2022 (1 week).

- **Acting Department Chair**, Automotive, Mechanical and Manufacturing Engineering:
  August 2015 (1 week), December 2018 (1 week), July 2019 (1 week), August 2019 (1 week), October 2019 (1 week), December 2019 (1 week).

- **Academic Lead**, Aerodynamic and Aero-Acoustic Enhancement Project of the Automotive Centre of Excellence (ACE). This is a **$10 million project** funded by FedDev/Ontario Government, 2019 - 2021. I provided expert advice and active engagement with ACE's staff on the project from the grant application stage to implementation.

- **Coordinator/Stream leader**, Graduate Attributes for the Thermo-fluids Stream (CEAB Visits), Automotive, Manufacturing and Mechanical Engineering, 2013 – 2018.

- **Chair**, Department Graduate Committee, since 2017.

- **Member**, New Program Creation, Energy Engineering Program Committee, 2021.

- **Member**, University Tenure and Promotion Committee, 2018 – 2021.

- **Member**, Faculty Selection Committee, Scholarships and Awards, 2019.

- **Member**, UOIT Faculty Association Equity Committee, since 2018 .

- **Member**, Graduate Program Review, Engineering Management, 2018.

- **Member**, Graduate Studies Committee, since 2017.

- **Member**, FEAS Graduate Committee, since 2017.

- **Faculty Advisor,** UOIT Motorsports Electric, 2017 – 2019.

- **Member,** Undergraduate program review committee**,** Automotive, Mechanical and Manufacturing Engineering, FEAS, 2017.

- **Coordinator**, Student chapters and organizations for Manufacturing and Mechanical Engineering, 2016 – 2018.

- **Faculty Advisor,** UOIT National Design League, Since 2019.

- **Member**, Search committee for Assistant Professor Positions in Vehicle Propulsion Systems, Automotive, Manufacturing and Mechanical Engineering, 2016.

- **Member**, Search committee for NSERC Tier 1 Research Chair, Automotive, Manufacturing and Mechanical Engineering, 2016.

- **Member**, Research Day Organizing Committee, Automotive, Manufacturing and Mechanical Engineering, 2016.

- **Member**, Renewal committee for the Dean of the Faculty of Engineering and Applied Science, 2016.

- **Member**, Search committee for full-time teaching faculty and limited term academic associate, Automotive, Manufacturing and Mechanical Engineering, 2016.

- **Member**, Academic Integrity Committee Meeting (Academic Misconducts), FEAS, 2016.

- **Volunteer**, Ontario Universities' Fair; September 2015, 2016.

- **Founding Faculty Advisor**, CSME, UOIT Chapter, 2015.

- **Founding Faculty Advisor**, ASME, UOIT Chapter, 2017.

- **Member**, Search committee for Administrative Assistant, Clean Energy Research Lab, 2015.

- **Member**, Strategic Planning Committee, Automotive, Manufacturing and Mechanical Engineering, 2015.

- **Member**, Search committee for limited term academic associate, Automotive, Manufacturing and Mechanical Engineering, 2015.

- **Member**, Search committee for Department Program Assistant, Automotive, Manufacturing and Mechanical Engineering, 2015.

- **Member,** Graduate Program Committee, Automotive, Mechanical and Manufacturing Engineering, FEAS, 2014 - 2016.

- **Member,** Graduate Program Committee, Faculty of Engineering and Applied Science, 2013 - 2016.

- **Faculty Representative,** Faculty of Engineering and Applied Science, Undergraduate Students Awards, 2013.

- **Member,** Energy and Environment Graduate Program Committee, Faculty of Engineering and Applied Science, 2013.

- **Member**, Undergraduate Research Awards Committee, 2013.

- **Member,** Faculty Awards Committee, Faculty of Engineering and Applied Science, 2013.

- **Member,** CEAB Task Force, Automotive, Mechanical and Manufacturing Engineering, FEAS, 2013.

- **Member**, TA Committee, Automotive, Mechanical and Manufacturing Engineering, since 2013.

- **Faculty Advisor**, Engineers Without Borders, UOIT Chapter, 2012 - 2016.
- **Faculty Advisor**, Formula SAE Aerodynamic Dept., 2012 - 2014.

- **Member,** Graduate Attribute Committee, Automotive, Mechanical and Manufacturing Engineering, FEAS, 2012.

- **Member**, TA Committee, Faculty of Engineering and Applied Science, 2011 – 2012.

- **Volunteer**, Open House, Faculty of Engineering and Applied Science, Nov. 2011; Nov. 2012; Nov. 2013; March 2014; February 2015.

4. Professional Affiliation

- Professional Engineer, PEO, Ontario, since 2011
- Professional Engineer, APEGM, Manitoba, from 2010 to 2016
- Member, Canadian Society of Mechanical Engineers
- Member, American Society of Mechanical Engineers
- Member, American Institute of Aeronautics and Astronautics

E) ADDITIONAL INFORMATION

Selected Media Interaction/Appearance

CTV Toronto interviewed and profiled me on a project for which I was the Principal Investigator on a TV news item entitled: "*New highway barrier*", 2015 http://toronto.ctvnews.ca/video?clipId=579747

The Globe and Mail interviewed and quoted me in an article entitled: *"Do spoilers actually* improve a car's performance?*"* 2014. http://www.theglobeandmail.com/globe-drive/culture/commuting/do-spoilers-actually-improve-a-cars-performance/article21180268/

Durham Regional News interviewed me about a project for which I was the Principal Investigator in a news article entitled: "*Durham's UOIT collaborates to fight traffic pollution*", 2015.
http://www.durhamregion.com/news-story/5543994-durham-s-uoit-collaborates-to-fight-traffic-pollution/

Local news highlighted my research project:
Ontario Tech e-bike project exemplifies Mitacs' support of work-integrated student Learning, 2019.
https://news.ontariotechu.ca/archives/2019/10/ontario-tech-e-bike-project-exemplifies-mitacs-support-of-work-integrated-student-learning.php

CURRICULUM VITAE

NAME: **HANGAN**, **Horia Mihai**

DATE OF BIRTH: February 16, 1960

CITIZENSHIP: Canadian, Romanian

ACADEMIC RANK AND STATUS:

Professor and
Canada Research Chair
Tier 1 in Adaptive Aerodynamics — Ontario Tech University, Faculty of Engineering and Applied Science
- Department of Mechanical Engineering

Professor Emeritus — University of Western Ontario, Faculty of Engineering
- Dept of Civil and Environmental Engineering
- Dept of Mechanical and Materials Engineering (cross-appointed)

Founding Director — The WindEEE Research Institute, University of Western Ontario

DATE OF U.O.I.T APPOINTMENT:

First: **May 1, 2021**

DATE OF U.W.O. APPOINTMENT:

First: August 1, 1997
Current:
Retirement: 2021
Tenure: Tenured, July 2002

EDUCATION:

Degree	**Institution**	**Department**	**Year**
Ph.D.	University of Western Ontario	Wind Engineering	September 1996
Dipl. Eng.	Polytechnic University of Bucharest	Aeronautics	September 1985

PROMOTIONS, ACADEMIC-ADMINISTRATIVE APPOINTMENTS:

August 1997 – June 2002	Assistant Professor	University of Western Ontario
July 2002 – June 2009	Associate Professor/Tenured	University of Western Ontario
July 2009 – April 2021	Professor	University of Western Ontario
May 2021 – April 2028	Professor and CRC Tier 1	Ontario Tech University

ACADEMIC/PROFESSIONAL EMPLOYMENT:

July 2018	Invited Professor, Universidad de Granada, Spain
June 2018	Invited Professor, University of Genova, Italy
February 2018 – March 2018	Invited Professor, Institute de Mécanique des Fluides, Toulouse, France
July 2011 – Present	Director, WindEEE Research Institute, Western
November 2017	Invited Professor, Universidad de la Republica de Uraguay, Montevideo
May 2014 – June 2014	Invited Professor, Université Paris-Diderot, France
December 2012	Invited Professor, Indian Institute of Technology, Kanpur
July 2012 – October 2012	Scientific Consultant, Factory Mutual Global, Norwood, MA, USA
September 2007 – June 2011	Director, Boundary Layer Wind Tunnel Laboratory (BLWTL), Western
September 2000 – August 2007	Associate Research Director, BLWTL, Western
May 2005	Invited Professor, Ecole Supérieure de Physique et Chimie Industrielle (ESPCI), Paris, France
July 2003 – July 2004	Invited Professor, Ecole Normale Supérieure (ENS), Paris, France
July 2003 – July 2004	Invited Professor, Ecole Supérieure de Physique Chimie Industrielle (ESPCI), Paris, France
October 1996 – December 2000	Senior Research Engineer, BLWTL, Western
October 1996 – July 1997	Lecturer, Western, Engineering Science
	Postdoctoral Fellow, Laboratoire d'Études Aérodynamiques (LEA), Université de Poitiers, Poitiers, France
April 1996 – September 1996	
	(LEA), Université de Poitiers, Poitiers, France
September 1992 – March 1996	Teaching/Research Assistant, BLWTL, Western
	Senior Research Assistant, Laboratoire de Systèmes Énergétiques (LASEN), École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland
January 1991 – August 1992	
	Énergétiques (LASEN), École Polytechnique Fédérale de
	Lausanne (EPFL), Lausanne, Switzerland
September 1988 – September 1990	Senior Research Engineer, Aviation Institute, Bucharest, Romania
September 1985 – August 1988	Research Engineer, Institute of Aircraft Engineering, Brasov, Romania

PROFESSIONAL REGISTRATION:

SCIENTIFIC AND PROFESSIONAL SOCIETIES IN WHICH MEMBERSHIP IS HELD:

2017 - Present	Member of the ASCE/SEI Wind Speed Estimation in Tornadoes
2014 – Present	Project 111 of the Chinese Academy
2013 – Present	American Society of Civil Engineering (ASCE), Co-Chair of the Non-synoptic winds subcommittee
2013	Canadian Climate Forum
2008	American Institute of Aeronautics and Astronautics (AIAA-296572)
2007 – Present	Board of the Canadian Society of Mechanical Engineers, Technical Director
2006 – Present	Who's Who in America, Honorary Member, Register of Outstanding Professionals
2006	Canadian Applied and Industrial Mathematics Society (CAIMS)
2005, 2007	American Physical Society (APS-61021444)
1999 – Present	American Association for Wind Engineering (AAWE)
1998	American Society of Civil Engineering (ASCE), Aerospace Division, Elected Member of the Aerodynamics Committee and the subcommittee on Numerical Flow Modeling
1995 – Present	Computational Fluid Dynamics Society of Canada
1996	European Research Community on Flow Turbulence and Combustion (ERCOFTAC)

TEACHING ASSIGNMENTS:

a) Graduate (UOIT)

ENGR 5005G	Wind Energy	Fall 2021	UOIT
ENGR 5120G	Advanced Fluid Mechanics	Winter 2022	UOIT

b) Undergraduate (UWO)

ES 022	Engineering Statics	Summer 1998, 99, 2000, 02, 04	UWO
ES 222 B	Civil Eng. Numerical Methods	Winter 1999, 2000, 01	UWO
ES 224 A	Fluid Mechanics	Fall 2001, 02, 04, 05, 06, 07, 08, 09	UWO
ES 405 A	Air Pollution	Fall 1998, 99, 2000, 01, 02, 04	UWO
ES 448 B	Structural Theory II	Winter 1997	UWO

c) Graduate (UWO)

CEE 9526 A	Wind Engineering	Winter 1999, 2001, 03, 05, 07, 09, 11	UWO
		Fall 2013-2019	UWO
Math 553A	Wavelets and Applications (1/4)	Fall 2000	UWO
ES 639 B	Boundary Layers	Winter 2002, 06, 08	UWO
ES 9531B	Wind Energy	Winter 2014-2019	UWO

d) Graduate (International)

Novel Techniques in Wind Engineering	June 2018, June 2019, University of Genova, Italy
Novel Physical Simulations	November 2017, Universidad de la Republica, Uruguay
Classical and Modern aspects in Wind Engineering	May 2018, May 2019, University of Granada, Spain
Thunderstorm winds and their simulation	October 2017, 2018, IWES School Chonching, China

Course Evaluations:

Nr.	YEAR	COURSE	OVERALL EFFECTIVENESS
1	1998-1999	ES526b	6.4
2	1998-1999 – Summer	ES022	5.5
3	1999-2000	ES405	5.3
4	1999-2000 – Summer	ES022	5.7
5	1999-2000	ES222	5.0
6	2000-2001	ES405	5.3
7	2000-2001	ES222	4.9
8	2000-2001	ES526b	4.5
9	2001-2002	ES224a	4.2
10	2001-2002	ES405a	5.4
11	2001-2002	ES639b	6.3
12	2001-2002 – Summer	ES022	6.0
13	2002-2003	ES224a	4.5
14	2002-2003	ES405	5.5
15	2002-2003	ES526b	5.8
16	2003-2004 – Summer	ES022	6.0
17	2004-2005	ES224a	4.9
18	2004-2005	ES405a	5.1
19	2004-2005	ES526b	5.8
20	2005-2006	ES224a	6.2
21	2005-2006	ES639b	6.0

22	2006-2007	ES224a	5.3
23	2007-2008	ES224a	5.4
24	2007-2008	ES639b	6.2
25	2008-2009	ES2224a	5.5
26	2008-2009	ES9526b	5.5
27	2009-2010	ES2224a	5.1
28	2009-2010	ES9526b	6.1
29	2010-2011	ES9526b	4.9
30	2012-2013	ES9526b	5.0
31	2013-2014	ES9526a	5.8
32	2013-2014	ES9531b	5.3
33	2014-2015	ES9526a	5.7
34	2014-2015	ES9531b	6.2
35	2015-2016	ES9526a	5.9
36	2015-2016	ES9531b	6.4
37	2016-2017	CEE9526a	5.8
38	2016-2017	CEE9531b	6.3
39	2017-2018	CEE9526a	5.7
40	2017-2018	CEE9531b	6.4
41	2018-2019	CEE9526a	5.3
	AVERAGE		**6.0 (on a scale of 0 to 7)**

CONTRIBUTIONS TO THE TRAINING OF PERSONNEL

UNDERGRADUATE STUDENTS and PROJECT SUPERVISION:

ES 441	1998 – 1999	Miller, K. and Manson, S
	Aug.-Nov. 2001	Riz Garcia, J.L. (engineer with "Laboratorios Sparchim", Madrid, Spain)
	July-Oct. 2002	Sorendsen, T (Senior Research Engineer with LM Glassfiber, Denmark)
MME 499	2002 – 2003	Dimakos, J., Beaton, B and Arshinoff, M.
MME 499	2003 – 2004	Shipley, K., Haines, A., and Palombi, E.
ES 050	2004 – 2005	Furgala, M., Odeyemi, V., Aboujmeih, H., Naeem, A., Chim, D., Gangjee, J., Yuliao, C., Ahopelto, K., El-Madhoun, H.
Internship	2005	Kim, P. (RWDI) & Gettler, S. (BLWTL)
Sunstag	2006	Robert, B. and Coulter, L.
ES 441	2011	Lombardi, A.
UWO International Exchange Student (Canada-Brazil Scholarship Program)	May 27, 2013 to August 27, 2013	Lemos, L. (3rd year Mechanical Engineering student)
Magna supported summer internship from Ryerson University	May 6, 2013 to August 31, 2013	Gray, J. (3rd year Civil Eng.)
NSERC Summer Student	May 1, 2013 to August 30, 2013	Connell, N. (UWO Biomedical Eng.)
UWO International Exchange Student (Canada-Brazil Scholarship Program)	June 1, 2013 to August 31, 2013	Lins, J. (4th year Mechanical Engineering student, Universidad de Brasilia)
Summer Exchange Student, France	July 1 to August 31, 2014	Bouchet, R. (4th Year Aerospace student, Institute de Mechanique des Fluides (IMFT), Toulouse, France)

GRADUATE STUDENT SUPERVISION: (*P.S. = Principal Supervisor, C.S. = Co-Supervisor*)

Career Totals	**Number Successfully Completed**	**Number In Progress**
Doctoral Thesis	19	6
Master's Thesis	15	2
M.Eng.	0	0
Post-Doctoral Fellows	12	1
Total number of PhD Committees served on	15	0
Total number of Master's Committees served on	20	0

International – Other:

- Shoji, H. – January 2018 to December 2018. Structural Engineer, Shimizu Corporation, Japan.

International Graduate Students:

- Delgado Osorio, M.E. – May 2019 – November 2019, Universidad del Valle, Colombia
- Rouaix, Clement – June 2019 – August 2019, Toulouse University of Paul Sabatier, France
- Canepa, F. – February 2019 – August 2019, University of Genova, Italy
- Ballestracci, A. – January 2019 – July 2019, University of Genova, Italy
- Massimino, S. – July 2018 – August 2018, France
- Rossi, A. – January 2018 – May 2018 - Danish Technologishe University (DTU)
- Nicolini, E. – January 2018 to June 2018 – University of Genova, Italy
- Canepa, F. – January 2016 to June 2016 – University of Genova, Italy
- Lange, J. – July to November 2014; May – June 2015, Danish Technologishe University (DTU)

Ph.D.:

Ontario Tech University

- Rouaix C., - May 2021 – Present (CS with Dr. M. Braza, IMFT Toulouse)

Western University

- Canepa F – September 2019 – September 2021, co-supervised with Prof. Solari
- Narancio E.G. – September 2019 – Present (CEE – CONACYT-SENER) – P.S
- Ortiz, J.P. – January 2019 – Present (CEE – CONACYT-SENER) – P.S
- Ashrafi, A. – September 2017 – February 2021 (CEE) – P.S.
- Gairola, A. – September 2017 – Present (CEE) – C.S. with Dr. G. Bitsuamlak
- Enus, M. – May 2017 – December 2020 (CEE) – P.S.
- Kassab, A. – January 2017 – December 2020 (CEE) – P.S.
- Karami, M. – September 2015 – September 2019 (CEE) – P.S. Presently machine learning researcher at Mirametrix Inc.
- Parvu, D. – May 2014 – 2016 (CEE)– P.S., presently Research Engineer, Altran Co., Germany
- Romanic, D. – September 2012 – October 2016 (CEE)– P.S., presently Postdoctoral Associate, WindEEE RI
- Jubayer, C. – September 2010 – December 2014 (MME) – P.S., presently Research Scientist, WindEEE RI
- Refan, M. – January 2010 – December 2013 – P.S. (MME); Research Scientist WindEEE RI (2014-2016), Sr. Research Scientist, Florida International University (2016-2018), Director Wind Tunnels at RWDI (2018 – present)
- Boutanios, Z. – January 2009 – April 2014 – P.S. (MME)
- Hashemi-Tari, P. – September 2009 – September 2012 – P.S. (MME), Associate Professor, Shahid Beheshti University, Iran

- Lahouti, A. –September 2006 – September 2010 – P.S.- presently Sr. Product Design Engineer at Apple, USA
- Doddipatla, S. – May 2006 - December 2010 – P.S.- presently Research Scientist FM Global, USA
- Natarajan, D. – May 2006 - January 2011– P.S.-presently Research Engineer – Chrysler, USA
- Rasouli, A. – May 2006 – September 2010 – P.S.- presently Scientist, Apple, US
- Sultan, M.K. – September 2005 – August 2009 – C.S. with Dr. A. Straatman (guidance for experiments)
- Gammal, M. – May 2003 – August 2007 – P.S – presently Research Engineer, BOSH-USA
- Mihaiescu, A. – January 2003 – May 2007 – P.S. – presently postgrad. Cranfield University, U.K.
- Zhuyun, X. - September 2001 – December 2004 - P.S. – presently Project Engineer, VIPAC, Australia
- Bekele, S. – January 1999 – June. 2004 - P.S. – presently Principal Consultant, VIPAC, Australia
- Dobre, A. – January 1999 – March 2003 - P.S – presently Manager at PS Wind Management Romania and Assistant Professor Politehnica University Bucharest
- Havel, B. – 1999 – 2002 – C.S. with Dr. R. Martinuzzi (guidance for experiments and analysis) -presently a research engineer with Siemens Ltd., London, Ont.
- Kim, J.D. – September 1998 - September 2002 - P.S. – presently Manager, Samsung, Korea
- Yang, Y. – 1998 - Jan. 2002 – C.S. with Dr. E. Yanful (guidance for experiments and analysis) - presently R&D Engineer, New York, USA.

M.Sc.:

Ontario Tech University

- Farimah Hoseinnouri – May 2022 – Present – P.S.
- Eric Villeneuve – Sept 2022 – Present – C.S with Dr. Martin Agelin-Chaab

Western University

- Wolsey, S. – September 2020 – December 2022 - PS
- Arriaga, D.D. – September 2018 – December 2020 (CEE - CONACYT) – P.S
- Agirlo, K.S. – September 2018 – December 2020 (MME) – P.S.
- Chowdhury, J. – September 2016 – November 2018 (CEE) – P.S.
- Lotufo, J. – May 2015 – May 2017 (MME) – C.S. with Dr. K. Siddiqui (MME), presently Senior Engineer with Modern Niagara Toronto Company
- Samani, Z. – January 2014 - May 2016 (CEE) - PS
- Kilpatrick, R. – January 2014 – May 2016 - C.S. with Dr. K. Siddiqui (MME)
- Parvu, D. – September 2010 – November 2013 – PS
- Abiola-Ogedengbe, A. – September 2010 – February 2013 - C.S. with Dr. K. Siddiqui (MME)
- Shademan, M – May 2008 – May 2010 – P.S. presently PhD student at U. Windsor
- Refan, M. – September 2007 – December 2009 – P.S.
- Dragunas, A. – September 2007 – August 2009 – C.S. with Dr. V. Nolte, Kinesiology (guidance for experiments and analysis)
- Hashemi-Tari, P. – January 2006 – December 2007 – P.S.
- Hunt, G. – September 2002 - September 2004 – C.S. with Dr. B. Thompson, Mechanical Engineering (guidance for experiments and CFD), presently a Ph.D. student, UWO
- James, N. – January 2002 – September 2004 – C.S. with Dr. P. Yu, Applied Math (guidance for modeling and benchmarking), presently a Ph.D. student, Computer Science, McMaster
- Akomah, A. – September 2001 – January 2003, presently Research Engineer with RWDI, Guelph, ON
- Bailey, S. – 1998 – 2001 C.S. with Dr. R. Martinuzzi (guidance for data analysis)
- Yakimik, W. – January 1999 – January 2000 – P. S.

Postdoctoral Fellows:

Ontario Tech University

- Carvalhos M. – May 2021 – Present (CS with Dr. Marianna Braza IMFT Toulouse)

Western University

- Kasab, A. – May 2021- December 2021
- Romanic, D. – November 2016 – July 2020
- Elatar A. – September 2015 – February 2016

- Jubayer, C. – Jan. 2015 – April 2016, presently Research Engineer at CPP, Colorado
- Elatar A. – May 2014 – August 2015 – CS with Dr. G. Bitsuamlak
- Refan, M. – January 2014 – December 2015 P.S., presently Research Engineer at CPP, Toronto
- Kadari T. – January 2013 – September 2013 – P.S., presently Staff Engineer at Qualcomm Technologies, USA
- Rasouli, A. – January 2011 – April 2012 – P.S.
- Natarajan D. – October 2010 – April 2011 – P.S.
- Kim, J.D. – October 2007 – September 2008 – P.S.
- Xu, Z. – January 2004 – January 2005 - P.S.
- Pan, K. – 2001–2002 – C.S. with Dr. P. Yu (guidance for analytical model development)
- Roberts, D. – 2001 – November 2002 - P.S. – presently a Support Engineer with SharcNet, UWO
- Vernet, A. – 1998 - 1999 -C.S. with Dr. G. Kopp (guidance for analysis) – presently an Assistant Professor with the Universitat Rovira I Virgili, Tarragona, Catalunya, Spain

Thesis Examiner:

Ontario Tech University

Yannick Bmegaptche (Ph.D., Aerospace Engineering, 2022) IMFT, Toulouse – External Examiner

Western University

- Navneet Kaur (Ph.D., Chemical Engineering, 2023) - Chair
- Nolan Dyck (Ph.D., Mechanical Engineering, 2020) – External Examiner
- Qian Huang (Ph.D., Civil Engineering, 2020) – Departmental Examiner
- Pau Castell Marin (Ph.D., Inst. Mecanique Fluides de Toulouse/AIRBUS 2020) – External Examiner
- Chakravarty, R (Ph.D., Mechanical Engineering, Univ. of Saskatchewan 2018) – External Examiner
- Gariola, A., (M.Sc. Civil Engineering, 2017) – Departmental Examiner
- Getachew. Y. (Ph.D., Bus Admin, Gen Magmt, 2017)- Chair
- Sagi, P. (Ph.D., Geotech/Geoenviro, 2016) – Program Examiner
- Abedi, A. (Ph.D., Astronomy, PlnSci 2016) – Chair
- Mohammad A.-B (Ph.D, Mechanical Engineering, 2016) – University Examiner
- Moshtaba, A-B. (Ph.D University of Windsor, 2015) – External Examiner
- Mirzabeygi, P. (MSc. Mechanical Engineering, 2014) – External Examiner
- Maitri, R. (MSc., Mechanical Engineering, 2014) – External Examiner
- Lateb, M. (Ph.D. ETS, Montreal, 2013) – External Examiner
- Abdi, D. (Ph.D., Civil and Environmental Engineering, 2013)
- Parag J. Deshpande; (Ph.D., Indian Institute of Technology Bombay, 2012) - External Examiner
- Moharana A. K. (Ph.D., Electrical and Computer Engineering, 2012)
- Samar D. (M.E. Sc., Civil and Environmental Engineering,2011)
- Lin. C (Ph.D., Mechanical Engineering, 2010)
- Nistor, I. (M.E.Sc., Chemical and Biochemical Engineering, 2009)
- Baroi, C. (M.E.Sc., Civil and Environmental Engineering,2008)
- Patel, D. (M.E.Sc Electrical and Computer Engineering, 2008)
- Fadaeinedjad, R. (Ph.D., Electrical and Computer Engineering, 2008)
- Bahramanian, F. (Ph.D., Biomechanical Engineering, 2008)
- Gang Hu, H. (Ph.D., Mechanical Engineering, 2008)
- Ortiz, G.R. (Ph.D., Electrical Engineering, 2007)
- Pandher, R. (M.E.Sc., Mechanical Engineering, 2007)
- Karimian, M. (Ph.D., Mechanical Engineering, 2006)
- Shao, J. (M.E.Sc. 2005)
- Cui, J. (M.Sc. 2005)
- Siller, M.A. (M.ESc. 2004)
- Smith, C.J. (Applied Math) (M.Sc. 2004)
- Miranskyy, A. (Applied Math) (M.Sc. 2004)
- Saad, A. (Alexandria Univ.) (Ph.D. 2003)
- Swam, M. (M.Sc. 2002)
- Terres-Nicoli, J. (M.Sc. 2002)
- Bennet, C. (M.Sc., 2002)
- Darabad, R. (M.Sc., 2002)
- Zhou, H. (M.Sc., 2001)
- Mans, C. (M.Sc., 2001)

- Inculet, D. (Ph.D., 2001)
- Galsworthy, J. (Ph.D., 2000)
- Havel, B. (M.Sc., 1998)

COMMITTEE MEMBERSHIPS:

The Mayor's Sustainable Energy Council, Generation and Transportation Comm., London, Ontario

UOIT

2021	Deputy Provost Selection Committee
2021	Mechanical Engineering Strategic Committee
2021	University Research Chairs Review Committee

UWO

2017	Affiliate Member, Centre for Environment and Sustainability,
2015	Western Research Chair in Urban Resilience and Sustainability Appointments Committee
2015	Candidate for the Board of Governors
2015 – Present	P&T Committee Faculty of Science
2013 – Present	University Research Board
2014 – 2016	Faculty of Science, Appointments Committee

UWO Faculty of Engineering:

2020 – 2022	Dean's Advisory Committee on Major Awards
2011 – 2022	Director, WindEEE Research Institute (renewed twice)
2015, 2016	Western Research Chair in Urban Resilience & Sustainability, Selection Committee
2013, 2014	Member, Executive Committee
2012	CEE Chair, Selection Committee
2011	Member, Western Environmental Institute Selection Committee
2011	Member, Major External Awards Committee
2010 – 2011	Member, Nomination Committee
2004 – 2008	Member, Executive Committee
2006	Member, Western Engineering Research Development Fund Committee
2001 – 2011	Member, The Board of Directors of the Boundary Layer Wind Tunnel

Civil and Environmental Engineering Department:

2014 – Present	Member, CEE Appointments Committee
2010 – 2012	Member, CEE Selection Committee
2007 – 2011	Member, CEE Appointments Committee
2008 – 2010	Member, CEE Graduate Committee
2004 – 2007	Member, Promotion & Tenure Committee
2003 – 2007	Member, CEE Outreach Committee
2002 – 2006	Member, Nominating Committee
2001 – 2004	Member, CEE Appointments Committee
2001	Member, Geotechnical Group Senior Position Appointment Committee
1998 – 2005	Member, CEE Department's Long Range Planning Committee
1998 – 2001	Coordinator, Wind Engineering WEB page
2002 – 2003; 2001 – 2002; 1999 – 2000	CEE Organizer – Civil Seminar Series
2000	Salamander Chair Appointments Committee

National and International Committees:

2023	Reviewer, Fonds de recherche Nature et Technologie, NOVA Program, Quebec
2023	Member, Scientific Committee ERCOFTAC 2023, Toulouse, France
2022	Advisory Board for the NSF – NICHE Project, USA
2020	ASCE Wind Speed Estimation in Tornadoes Committee
2019	Reviewer, Agence Nationale de Recherche, France
2018	Member, Scientific Committee of the INVENTO XV Conference of the Italian Association for Wind Engineering, Napoli, Italy
2018	Reviewer, 9th International Symposium on Fluid-Structure Internactions, Flow-Sound Interactions, and Flow-Induced Vibration and Noise (FIV2018), July 8-11, 2018, Toronto
2018	Member, Scientific Committee of the 7th International Symposium on Computational Wind Engineering (CWE2018), Seoul, Korea
2017	Member, International Advisory Board, THUNDERR, ERC (PI: Solari), University of Genova, Italy
2017	Member, The Wind Science and Engineering Board, University of Genova, Italy
2016	Member, Tornado Wind Speed Estimations Committee, American Society of Civil Engineers
2016	External Reviewer, The University of Nantes Institute for Sustainability Program
2016	Scientific Reviewer, Ministry of Economic Development and Growth Review, JPF Proposal of RWDI
2015	European Wind Energy Academy
2015	Member, NIST Stakeholder Committee on Tornado Risk Mapping, ASCE Headquarters, Reston, Virginia
2014	Member, Scientific Committee of the Torque 2014 Conference, Copenhagen
2014	Member, Scientific Committee of the Computational Wind Engineering Conference, Hamburg
2014	Member, Scientific Committee of INVENTO Italian Wind Engineering Conference, Genova
2013, 2014	Member, ICLR Advisory Committee
2012	Member, NIST and NSF Technical Committee for the R&D Roadmap on Windstorm and Coastal Inundation Impact Reduction
2012	Member, National Authority for Scientific Research of the Romanian Government (ANCS)
2012	Member, Scientific Committee of the BBAA7 Conference, Shanghai, China
2010	Member, Advisory Committee of the Computational Wind Engineering Conference, USA
2009	Member, The Wind Engineering Panel for the US National Science Foundation
2008	Chair, Subcomittee on Computer Aided Wind Engineering of the Wind Effects Committee, American Society of Civil Engineers
2008	Member, International Advisory Committee – Asia Wind and Structure Conference, Korea (AWAS08)
2007 – Present	Member, Board of Directors, Canadian Society of Mechanical Engineers (CSME)
2007 – Present	Technical Chair, Environmental Engineering Division, Canadian Society of Mechanical Engineers (CSME)
2007	Member, International Program Committee of the International Association of Science and Technology Development, Montreal, Canada
2006	Member, Scientific Committee of the Computational Wind Engineering Conference, Tokyo
2006	Member, Scientific Committee of the Computational Fluid Dynamics Conference, CFD2006, Queens University, Canada
2005	Member, Scientific Committee of the Americas Wind Engineering Conference, Baton Rouge, USA
2004	Scientific Committee of the Bluff Body Aerodynamics and Applications, Ottawa
2004	Organizer, CSME Symposium on Experimental Fluid Mechanics, London, ON
2004	Organizer, Computational Wind Engineering Session of the ASCE Structures Congress, Nashville, USA

2003	Co-organizer, ASME/JSME Conference, Honolulu, July
2002	Member, Organizing Committee of the A. G. Davenport Specialty Conference in Wind Engineering
2001	Steering Committee, 1st Americas Conference on Wind Engineering
2000, 2001, 2002, 2003	Organizer, 1000 Islands Fluid Mechanics Meeting, Gananoque, Canada
1999 – Present	Member, The Aerodynamics Committee, Aerospace Division, American Society of Civil Engineers
1998 – Present	Member, The Subcommittee on Numerical Flow Modeling, Aerospace Division, American Society of Civil Engineers

HONOURS AND AWARDS:

2021	Atmospheric Science Librarians International (ASLI) 2021 CHOICE Honorable Mention award for *Oxford Handbook of Non-Synoptic Windstorms*
2020	Proposed by Western for Fellow of the Canadian Academy of Engineers
2019	Doctor Honoris Causa – University of Construction, Bucharest, Romania
2018	American Association of Wind Engineering – Best Paper Award
2017	American Association of Wind Engineering – Industry Innovation Award
2016	Canadian Society of Mechanical Engineering (CSME) Fellowship
2015	ENR News Maker of the Year Award
2010	ASME Lewis F. Moody Award
2006	Dean's Contract Research Award
2005	Faculty of Engineering Award of Recognition

SABBATICAL LEAVES :

July 2003 – July 2004	Ecole Normale Superieure and Ecole Superieure de Physique et Chimie Industrielle de Paris, Paris, France
July 2012 – Dec 2012	FM Global, Northeastern Univ.an Massachusetts Institute of Technology, USA
Feb 2018 – March 2018	Institute de Mecanique des Fluides de Toulouse (IMFT), France
April 2018	University of Genova, Italy

PATENTS:

Method and system for generating any type of wind fields – Provisional Patent – Application Nr.:61443646, 16-Feb-2011

RESEARCH GRANTS:
Grants previously held:

Title / PIs	Source	Total Amount	Year(s) funded
Active Flow Control on Axisymmetric Jet, **Hangan, H.**	Post-Doctoral Fellowship CNRS, France, 1yr	$ 37,000	1996
Development of the Computational Wind Engineering (CWE) Program at the Boundary Layer Wind Tunnel, **Hangan, H.**	BLWTL Internal Research Grant, 6 months	$ 5,000	1996
New Faculty Start-Up Fund Western, Civil Engineering, **Hangan, H.**	University of Western Ontario	$ 11,500	1997
Continuation of the CWE Program at the BLWTL, **Hangan, H.**	BLWTL Internal Research Grant, 6 months	$ 10,000	1997 – 1998
Wind Engineering/Environmental Turbulent Flows, **Hangan, H.**	NSERC Discovery Grant	$ 64,096	1998 – 2002
Hot-wire Anemometry Equipment for Identification of Coherent Structures in Turbulent Shear Flows, Kopp, G.A. & **Hangan, H. (50%)**	University of Western Ontario, Academic Development Fund	$ 30,000	1998
Wind Driven Rain Impact on Buildings.A C-FD-E Approach, **Hangan, H.**	University of Western Ontario, Vice-President Research Competition	$ 5,000	1998
Resuspension and Metal Release in Flooded Mine Tailings Yanful, E.K., **Hangan, H. (30%),** Isyumov, N. & Baddour, R.E.	NSERC Industrial Collaborative Program	$ 107,267	1998 – 2002
Integrated Investigation of Environmental Fluid Flow Problems, Kopp, G.A. & **Hangan, H. (50%)**	Canada Foundation for Innovation	$ 85,000	1998 – 1999
Integrated Investigation of Environmental Fluid Flow Problems, Kopp, G.A. & **Hangan, H. (50%)**	Ontario Research and Development Challenge Fund (New Opportunities)	$ 85,000	1999 – 2000
A Miniature 12-Wire Vorticity Probe for Measurements, Kopp, G.A. Martinuzzi, R.J. & **Hangan, H. (30%)**	NSERC Equipment Grant	$ 14,300	1999 – 2000
Aerodynamic Control of the Response of Cable-Supported Bridge Decks, **Hangan, H. (P.I.)** & Ricciardelli, F.	University of Naples Research Grant	$ 3,500	1999
Aerodynamic Control of the Response of Cable-Supported Bridge Decks, **Hangan, H. (P.I.)** & Ricciardelli, F.	BLWTL Internal Research Grant	$ 13,000	1999
An Up-grade of a Water Channel for Turbulence Research Kopp, G.A., Martinuzzi, R.J., **Hangan, H. (20%)**, Baddour, R.E. & Briens, C.L.	NSERC Equipment Grant	$ 44,000	2000 – 2001

Environmental Fluid Flows: Modeling and Experimentation Sullivan P., Kopp, G., **Hangan, H. (20%)** Martinuzzi, R., Briens C.L, Straatman, A.	Canada Foundation for Innovation (CFI) and Ontario Research and Development Fund (ORDCF)	$ 850,000	2000 – 2001
Shared Hierarchical Research Competitive Network (SharcNet) Michael Bower and approx. 50 other Researchers from 5 Universities and 3 Colleges	Canada Foundation for Innovation (CFI) and Ontario Research and Development Fund (ORDCF)	$13,200,000	2000 – 2004
Modeling of prediction and failure of transmission lines due to high intensity winds **–** Phase 1, Yu, P, **Hangan, H. (45%)**, Surry, D., & Ho, E.	NSERC CRD Grant with Manitoba Hydro	$ 225,000	2000 – 2003
Numerical Simulations of High Intensity Winds, **Hangan, H. (P.I.)**, Surry, D., Pei, Y	Institute for Catastrophic Loss Reduction (ICLR) Research Grant	$ 30,000	2001 – 2002
Wind-driven Rain Full-scale Measurements for Numerical Simulations, **Hangan, H.**	Academic Development Fund (ADF) Small Grant	$ 5,000	2001
Full-scale Wind, Rain and Temperature Instrumentation, **Hangan, H.**	BLWTL Internal Research Grant	$ 6,500	2001
The Royal Society Travel Grant. Frandsen, J., King, P., Kopp, G., **Hangan, H. (20%)**	The Royal Society Travel Grant	$ 5,000	2001
A Demonstration VHF Wind-Profiler Network for Ontario and Quebec, Hocking, W., Zawadzki, I., Taylor, P., McBean, G., Hopper, F., Sica, B., Klassen, G., Fabry, F., **Hangan, H. (10%)**, Barron, Mercer, Black, J.	Canada Foundation for Innovation (CFI) and Ontario Research and Development Fund (ORDCF)	$ 2,535,380	2002 – 2005
Experimental and Numerical Investigation of Unsteady Turbulent Shear Flows, **Hangan, H.**	NSERC – Discovery Grant	$ 89,800	2002 – 2006
Numerical Simulations of High Intensity Winds – Part 2, **Hangan, H.**	ICLR Research Grant	$15,000	2003 – 2004
Investigation of 3D back-step flow, **Hangan, H.**	Ecole Superieure de Physique et Chimie (ESPCI) Paris, France	$ 18,000	2003 – 2004
Wavelet Investigation of Intermittency in Atmospheric BL's, **Hangan, H.**	Ecole Normale Superieure, (ENS) Lab.de Meteorologie Dynamique, Paris, France	$ 4,500	2004
Stability analysis on the 3D back-step Flow, **Hangan, H.**	Ecole Superieure de Physique et Chimie (ESPCI) Paris, France	$ 4,500	2005
Spanwise Sinusoidal Perturbation Control for bridge decks, **Hangan, H.**	National Institute of Standards and Technology (NIST) –USA	$ 3,500	2005
Wind effects on a typical house house with and without internal insulation, **Hangan, H. (P.I.),** Inculet, D	Ontario Centres for Excellence (OCE) Grant	$ 26,000	2005
CFD Simulation of Topographic Flows,	BLWTL Research Grant	$ 35,830	2006

Hangan, H.

Thunderstorms: Climatology and Dynamics, **Hangan, H.**	BLWTL Research Grant	$ 41,430	2006
Artificial Atmospheric Vortex CFD Analysis, **Hangan, H.**	Ontario Centres for Excellence (OCE) Grant	$ 27,000	2006 – 2007
Tornado Vortex Chamber Simulator, **Hangan, H.**	ICLR Research Grant	$ 27,000	2005 – 2008
Modelling and prediction of failure of Transmission lines due to High Intensity Winds – Phase 2,Savory, E., **Hangan, H. (35%)**,El Damatty A, Galsworthy, J., Miller, C.	NSERC-CRD Grant with Manitoba Hydro	$ 350,946	2006 – 2008
Investigation of Turbulent Shear And Vortex Flows with applications to Wind Engineering and Wind Energy, **Hangan, H.**	NSERC Discovery Grant	$ 94,000	2007 – 2011
Flutter Derivatives for Slender Structures using CFD, **Hangan, H. (P.I.),** Kim, J-D.	Korean Wind Engineering Institute	$ 24,500	2007 – 2008
Canadian Wind Energy Network(WESNet), Chang L. and 26 researchers from 16 Canadian Universities, **Hangan, H. (5%)**	NSERC Strategic Grant	$ 5,000,000	2008 – 2012
Large-Scale Photovoltaic Solar Power Integration in Transmission and Distribution Networks Varma R. and 14 other researchers from Western and Waterloo, **Hangan. H. (7.5 %)**	Ontario Centres for Excellence (OCE) Research Grant	$ 6,000,000	2008 – 2011
Upgrade of a 2D PIV system to a 3D PIV system, Siddiqui, K, **Hangan, H. (25%) et al**.	NSERC Equipment Grant	$ 126,178	2009
An integrated field system for Innovated monitoring of Canadian wind farm, **Hangan, H**., **(30%)**, Newson T., Hong H.	ADF New Research	$ 92,000	2009
Urban rooftop wind energy Assessment Study for London, ON, Varma R. and **Hangan, H. (35%)**	London Hydro Grant	$ 75,000	2009
Investigation of flows in Model scale WindEEE Dome	MITACS, Networks of Excellence	$ 15,000	2010
Wind Effects on Cable Cars	VP Research Grant	$ 20,000	2010
Research Collaborative Fund with the Stuttgart University	OBW Faculty Exchange	$ 3,500	2011
WindEEE Going Global	Global Commerce Support Program	$ 18, 424	2012

The Wind Engineering, Energy and Environment (WindEEE) Dome, **Hangan, H. (P.I.),** Carriveau, R. Crowford, C., Hong, H., Kopp, G., Masson, C., Mitchel, S., Pattel, R., Pollard, A.,Siddiqui, K.	Canada Foundation for Innovation (CFI) and Ontario Research Fund (ORF)	$31,994,754	2009 – 2014
Development of software for analysis of transmission line structures ElDamatty (PI),Savory, Bitsuamlak**, Hangan, H (25%)**	Ontario Center of Excellence (OCE)	$ 395, 595	2012 – 2014
Development of Software for Analysis of Transmission Line Structures Under the Action of High Intensity Wind Loads, ElDamatty, Bitsuamlak, Savory**, Hangan (25%)**	Hydro One, NSERC-CRD	$ 874,296	2012
Investigation of Complex Shear And Vortex Flows with applications to Wind Engineering, Energy and Environment, **Hangan, H.**	NSERC Discovery Grant	$ 110,000	2012 –2017
Wind Sustainability and Resilience Index	Western Strategic Support for Research Accelerator	$ 40,000	2015 – 2016
Comparison of tornado simulators **Hangan H.**	Joint Usage Center for Wind Engineering Grant, Tokyo Poli	$ 7,140	2014 – 2015
Calibration of Tornado Simulators **Hangan H.**	Joint Usage Center for Wind Engineering Grant, Tokyo Poli	$ 3,927	2015 – 2016
Investigation of wake and topographic Effects on a wind farm performance P.I. Siddiqui K., **Hangan H. (50%)**	NSERC Interaction Grant	$ 25,000	2015
Enhancing the Resilience and Sustainability Of Critical Geotechnical Infrastructure, Tim Newson + 8 others; **Hangan** user	Canada Foundation for Innovation	$5,491,391	2015 – 2016
Downburst simulations (ThundeRR) PI: Solari, G., **Hangan, H. (HH portion: $18,600)**	European Research Council	$18,600 EU	2017
Determination of load differences between straight winds and tornadoes in the WindEEE Dome **Hangan, H** (PI), Hong, H., Bitsuamlak, G	NSERC CRD Grant	$ 540,000	2015 – 2018
Development of Tornado Design Criteria for Buildings and Shelters Subject to Tornado Induced Loads, Twisdale, L, **Hangan, H. (37%),** Vickery, P., Banik, S.	NIST – Disaster Resilience Research Grants Program	$412,718 US	2017-2018
The Wind Engineering, Energy and Environment (WindEEE) Dome, **Hangan, H. (P.I.),**	Infrastructure Operational Fund CFI + ORF	$3,635,891 total budget	2014 – 2019

Grants presently held:

Title / PIs	Source	Total Amount	Year(s) funded
Western University Non-stationary wind fields and their Applica-tion to wind engineering, Energy and environment	NSERC Discovery Grant	$ 330,000	2017 – 2023
Tornado Hazard and Exposure Model for Canadian Communities **Hangan, H.**	Mitacs Accelerate & Institute for Catastrophic Loss (ICLR)	$110,000	2019-2020
Multi-hazard Risk and Resilience. Goda, K. plus 20 Co-PIs; **Hangan.H. (5%)**	Interdisciplinary Development Initiatives Program (IDI) – Western University	$400,000	2020 – 2022
Urban disaster reduction from tree failure under windstorm **Hangan H.** (P.I.), Way D., Peerhossaini H.	(IDI) in Multi-hazard Risk and Resilience Interdisciplinary Development Initiative Seed Funding- Western University	$45,000	2020-2022
EVE Park Wind Study - Environmental and structural Impacts of Wind at Neighborhood Scale Bitsuamlak G., **Hangan H.** (50%)	Voucher for Innovation and Productivity (VIP)	$75,000	2020-2021
Ontario Tech University Canada Research Chair Tier 1 in Adaptive Aerodynamics **Hangan H.** (100%)	CRC Program	$1,400,000	2021-2028
Canada Foundation for Innovation For the CRC Tier 1 **Hangan H.** (100%)	CFI Program	$224,030	2021-2022
Environment and Climate Change Canada Improved multi-scale GHC emissions modeling from urban environments to enhance mitigation strategies Siddiqui, Bitsuamlak, **Hangan** (10%), Capretz, Aliabadi, Way, Krayenhoff, Grolinger, Moffat, Peerhossaini, Laid	ECC Program	$3,786,000	2022-2027
Behavior of Telecommunication Lattice Towers to Thunderstorms Winds (BOLT) Calotescu, Cosoiu, **Hangan** (33%)	European Research Infrastructures for European Synergies (ERIES)	$124,500	2023-2024

Grants applied for:

Title / PIs	Source	Total Amount	Year(s) funded
Experimental Tornado Resilience Analysis. **Hangan H.**	Ontario Research Fund (ORF)	$3,433,299	2019-2024

Smart “Wing”. Sheldon W. + 11other; **Hangan H. (8%)**	New Frontiers Research Fund (NFRF)	$24,000,000	2020-2026

Industrially-Funded Research (last 6 years)

Investigators[1]	**Project Name[2]**	**Contract Value ($ CDN)**	**Year**
Chowdhury, J. Romanic D., **Hangan, H.**	Tornadic Loads Research with FM Global Phase3	$94,100	2019-2020
Chowdhury, J. **Hangan, H.**	Performance test of HVAC unit for Bluewater Technology	$7,500	2019
Chowdhury, J., Bitsuamlak, G., **Hangan, H.**	S2E London, Ontario Development	$25,000	2019
Hangan, H.	Regional Power – Long Lake Hydroelectric Project	$57,300	2019 – 2021
Hangan, H.	Development of Tornado Design Criteria for Buildings and Shelters Subject to Tornado Induced Loads - Applied Research Associations (ARA)	$152,500 USD	2018 – 2019
Hangan, H.	ImpactWx	$130,750	2018
Chowdhury, J., **Hangan, H.**	Performance Testing of Ridgeblade industrial (RB2) Wind Turbine – Power Collective Inc.	$27,500	2017
Hangan, H.	Wind Effects on Transmission Lines in Complex Topography – Regional Power	$150,115 ($36,240)	2016-2017
Romanic, D., **Hangan, H.**	Wind Impact Studies for the Kansas Project.	$217,350	2016
Mathers, A. **Hangan, H**.	WindEEE Tests for Nu-Phase Technology	$4,500	2016
Jubayer, C., **Hangan, H**.	Wind Effects on Long-Lake Transmission Line Towers	$37,500	2015
Refan, M., **Hangan, H**.	Tornado Loss Prevention Task 1: Straight synoptic wind tests of generic hospital and industrial buildings	$65,000	2014
Hunegn T., Jubayer C., Mathers A., Bitsuamlak G., **Hangan H**.	Preliminary Report of Wind loading on Roof Mounted gravity restrained Photovoltaic Solar Panels at 20 degrees	$36,500	2014
Kadari, T. **Hangan, H.**	Aero devices optimization for a SUV	$45,000	2013
Natarajan, D., **Hangan**, **H**, Badour, R., King, P	CFD Hidrology Study for Doha Bay	$35,000	2011
Hangan, H	Solar Power Products Panel Mount System	$5,500	2010
Boutanios, Z., **Hangan**, **H.**, Mikitiuk, M. and Edey, R.T	A Study of Wind-Drive Rain Effects for Extell – 157 W 57th Street, New York, N.Y	$31,849	2010
Kong L., Edey R.T., Miller C., Boutanios Z., **Hangan H**., King J.P.C	A Study of Wind Effects for the Hoover Dam Bypass Project. Topographic Model and Computational Fluid Dynamics Studies	$285,000.	2009
Boutanios, Z., **Hangan, H.** & Galsworthy, J.	A Computational Wind Engineering Study for the G to 7 Line Transfer Station, Long Island City, New York	$15,000	2008
Kim, J-D., **Hangan, H.** & Galsworthy, J.	A Computational Wind Engineering Study for the G to 7 line Transfer Station, Long Island City, New York – HVAC: Solar Loads and Radiation	$17,000	2007
Lythe, G.R., Kim, J.D.*, Ho, TCE & **Hangan, H.**	A Study of Wind Effects for Crown Macau, China	$104,000	2007

Inculet, D., Oh, J.H. & **Hangan, H.**	A study of wind effects for Icynene Inc. House	$26,000	2005
Kim, J.D. & **Hangan, H.**	A Computational Fluid Dynamics (CFD) Wind-driven Rain Study for Torre Vallehermoso, Madrid, Spain	$20,000	2005
Kim, J.D. & **Hangan, H.**	A Computational Fluid Dynamics (CFD) Aeroacoustic Study for Torre Vallehermoso, Madrid, Spain	$10,000	2005
Kim, J.D. & **Hangan, H.**	A Computational Fluid Dynamics Study of Smoke Propagation from Typical British Columbia Designated Smoke Rooms (BC-DSR)", Ontario Campaign for Action on Tabacco (OCAT)	$8,500	2005
Xu, X. & **Hangan, H.**	Flow Visualization Study for the Sudbury Regional Hospital Phase II, Sudbury, Ontario	$18,800	2005
Kim, J.D. & **Hangan, H.**	A Computational Fluid Dynamics Study of Smoke Propagation from Designated Smoke Rooms", Ontario Campaign for Action on Tobacco (OCAT)	$10,000	2005
Kim, J. & **Hangan, H.**	A Study of Wind Effects for the Ocean Tower South Padre Island, Texas, USA	$33,800	2004
Bekele, S. & **Hangan, H.**	A Study of Wind Effects for Foundation for Contemporary Art Project, Paris, France	$47,400	2004
Ma, L., Bekele, S. & **Hangan, H.**	A numerical study of internal flow in the Safety Kleen system 200	$29,200	2003
Hangan, H.	Wind tunnel tests on the sinusoidal perturbation control of a vortex shedding induced response for a sectional bridge model	$7,500	2003

[1] The WindEEE Research Institute is a group consisting of professors, full-time research scientists, engineers, post-doctoral fellows, graduate students and technicians. The listed investigators are the authors of the final report (excluding students).
[2] The contracts are generally with a variety of insurance, utilities, manufacturing and consulting firms.

PUBLICATIONS: (* - designates graduate students or postdoctoral fellows)

1) **Life-time summary (count) according to the following categories:**

Books authored:	0
Books edited:	1
Chapters in books:	5
Papers in refereed journals	103
Papers in refereed conference proceedings:	142
Technical reports:	53
Abstracts and/or papers read:	11
Presentations at professional meetings/workshops and others:	61

Books:

Hangan, H., Kareem, A. (Editors), "The Oxford Handbook of Non-synoptic Wind Storms" (2021), Oxford University Press, 626 pages: oxfordhandbooks.com.

Chapters in Books:

1. Roberts S., "Wind Wizard: Alan G. Davenport and the Art of Engineering", pgs. 219-225 (2013), Princeton University Press

2. Refan, M., **Hangan, H**., Chapter 5: "Design of Horizontal Axis Wind Turbines", Publishers: Momentum Press, J. Abraham, B. Plourde (eds.), Small-Scale Wind Power: Design, Analysis, and Environmental Impact, (Environmental Engineering Collection), pp.198 (2014).

3. **Hangan, H**., Refan M., Jubayer, C., G., Parvu D., Kilpatrick, R., "Big Data from Big Experiments. The WindEEE Dome", Springer International Publishing Switzerland, A. Pollard et al. (eds.), Whither Turbulence and Big Data in the 21st Century?, DOI 10.1007/978-3-319-41217-7_12; 215-230 (2017).

4. Romanic D, **Hangan H.** 2019. The Interplay Between Background Atmospheric Boundary Layer Winds and Downburst Outflows. A First Physical Experiment. In: Ricciardelli F and Avossa AM (eds) *Proceedings of the XV Conference of the Italian Association for Wind Engineering*. Springer International Publishing, 652–664. DOI: https://doi.org/10.1007/978-3-030-12815-9_49.

5. Burlando M, Romanić D, **Hangan H**, Solari G. 2019. Wind Tunnel Experimentation on Stationary Downbursts at WindEEE Dome. In: Ricciardelli F and Avossa AM (eds) *Proceedings of the XV Conference of the Italian Association for Wind Engineering*. Springer International Publishing, 133–142. DOI: https://doi.org/10.1007/978-3-030-12815-9_11.

Papers in Peer-Reviewed Journals:

Submitted Papers:

1. Romanic D., Kassab A., Chowdhury J., **Hangan H.,** Doddipatla L., An analysis of the influence of a generic building on tornadic flow fields using high-frequency PIV and point velocity measurements, Journal of Fluids and Structures, submitted, February 2023.

2. Enus M., Costache A., **Hangan H.,** Mann J., Dellwik E., Trace Detection Velocimetry methods for large scale experimental flow field measurements, submitted to J. Flow Visualization, January 2022

3. Debwick E, Romanic D, Mann J, Enus M, **Hangan H**, Forest edge in turbulent inflow - Comparison between wind tunnel and full-scale experiments, Boundary Layer Meteorology, submitted, September 2020

Accepted / Published Papers:

4. Gariola A., Bitsuamlak G., **Hangan H**., Explaining the effect of surface roughness on "tornado-like" vortices, submitted to Journal Wind Engineering and Industrial Aerodynamics, October 2022

5. Davalos D., Jubayer C., **Hangan H**., Joint wind and ice hazard in mountainous terrain, Journal Wind Engineering and Industrial Aerodynamics, accepted, December 2022

6. Romanic D., Shoji H., **Hangan H**., Experimental Investigation of Surface Pressures, Velocities, and Dynamic Structural Analysis of Tornadic Winds on a Luminary Pole, accepted J. Fluids and Structures, November 2022.

7. **Hangan H.,** Agelin-Chaab M., Gultepe I., Elfstrom G., Komar J., Weather aerodynamic adaptation for autonomous vehicles. A tentative framework at Ontario Tech University, accepted CSME Transactions, 2022 https://doi.org/10.1139/tcsme-2021-0198

8. Ashrafi A., Chowdhury J., **Hangan H.,** Comparison of aerodynamic loading of a high-rise building subjected to boundary layer and tornadic winds, Wind and Structures, Vol. 34, No. 5, 2022

9. Canepa F., Romanic D., Burlando M., Solari G., **Hangan H**., Experimental investigation of the near-surface flow dynamics in downburst-like impinging jets, submitted to Environmental Fluid Mechanics. EFMC-D-21-00192, accepted May 2022

10. Canepa F., Burlando M., **Hangan H.,** Romanic D., Experimental investigation of the near-surface flow dynamics in downburst-like impinging jet immersed in ABL-like winds, Atmosphere -1620677, accepted April 2022

11. Canepa F., Burlando M., Romanic D., Solari G., and Hangan H., Downburst-like experimental measurements of two vertical-axis impinging jets at the WindEEE Dome, Scientific Data Nature, (Sci Data) Vol. 9, Issue 1; doi: 10.1038/s41597-022-01342-1.

12. Hassanzadeh A., Naughton, J., LoTufo J., Hangan H., Instrumentation Development and Testing of a Wind Turbine Blade for Sub-Scale Wake Studies, -AR-WTR2020-02241R3, Journal of Renewable and Sustainable Energy (JRSE), Vol 14, Issue 1, 2022

13. Lopez J-P., Hangan H., ElDamatty A., Experimental study of the loads induced by a large-scale tornado simulation on a HAWT model, Wind and Structures WAS Vol. 34, Issue 3, pg. 303-312, 2022

14. Kassab, A., Jubayer, C., Ashrafi, A., & Hangan, H. (2021). Surface pressure measurements in translating tornado-like vortices. *Wind and Structures*,*33*(6), 447–462. https://doi.org/10.12989/was.2021.33.6.447

15. Troldborg N., Sorensen N. N., Dellwik E., **Hangan H**., Immersed boundary method applied to ow past a tree skeleton, submitted to Agricultural and Forest Meteorology, accepted August 2021, AGRFORMET-D-21-00153R2

16. Nichol S., Carriveau R., Miller L., Ting D. S-K., Romanic D, Costache A., and **Hangan H**., Experimental Investigation of the Movement of an Offshore Floating Platform in Straight Wind, Tornadic Wind, and Downburst Conditions, Energies-1115571, accepted March 2021

17. Ashrafi A, Romanic D, Kasab A, **Hangan H.**, Nima Z., Experimental investigation of large-scale tornado-like vortices", Journal of Wind Engineering and Industrial Aerodynamics, Vol. 208. DOI.org/10.1016/j.jweia.2020.104449

18. Kshirzadeh K., **Hangan H**., Crawford C., Hashemi-Tari, P., Investigating the loads and performance of a model horizontal axis wind turbine under reproducible IEC extreme operational conditions, Wind Energy Science, Vol. 6, 477-489, 2021

19. Kshirzadeh K., **Hangan H**., Crawford C. (2020) Numerical and Experimental Simulation of Extreme Operational Conditions for Horizontal Axis Wind Turbines Based on IEC Standard, Wind Energy Science, accepted, November 2020

20. Enus M., Dwellik E., Mann J., **Hangan H**., Costache A., Three-dimensional measurements of tree crown movement with an infrared camera, Experiments In Fluids, accepted, September 2020

21. Romanic D., Ballestracci A., Canepa F., Solari G., **Hangan H**., Aerodynamic coefficients and pressure distribution on two circular cylinders with free end immersed in experimentally produced downburst-like outflows, Advances in Structural Engineering, (2020) https://doi.org/10.1177/1369433220958763

22. Romanic, D., **Hangan, H.,** "Experimental investigation of the interaction between near-surface atmospheric boundary layer winds and downburst outflows", Journal of Wind Engineering and Industrial Aerodynamics, 205:104323, (2020) https://doi.org/10.1016/j.jweia.2020.104323

23. Karami, M., Carassale L., **Hangan, H**., **"**Statistical and modal analysis of surface pressure fluctuations in tornado-like vortices, Physics of Fluids, 32: 075109, (2020). https://doi.org/10.1063/5.0012446

24. Romanic D, Junayed C., Jubayer C., **Hangan H**., Investigation of the transient nature of thunderstorm winds from Europe, United States and Australia using a new method for detection of changepoints in wind speed records. Monthly Weather Review, 148(9):3747-3771, (2020). https://doi.org/10.1175/MWR-D-19-0312.1

25. Alvise C, Jubayer C. Holger H., Arriaga D., **Hangan H**, "Combined effects of wind and atmospheric icing on overhead transmission lines", Journal of Wind Engineering and Industrial Aerodynamics, 204: 104271, (2020). DOI10.1016/j.jweia.2020.104271

26. Romanic, D., Nicolini, E., **Hangan, H**., Burlando, M., Solari, G., "A novel approach to scaling experimentally produced downburst-like impinging jet outflows", Journal of Wind Engineering and Industrial Aerodynamics, 196:104025, (2020). DOI10.1016/j.jweia.2019.104025

27. Hassanzadeh A., Naughton J.W., LoTufo J., **Hangan**,**H**., "Aerodynamic load distribution and wake measurements on a sub-scale wind turbine", Journal of Physics, Conference Series. 1452, NAWEA

WindTech 2019 14–16 October 2019, Amherst, MA USA, (2019) https://iopscience.iop.org/article/10.1088/1742-6596/1452/1/012059/meta

28. Karami*, M., **Hangan, H**., Carassale L., Peerhossaini H., "Coherent structures in tornado-like vortices", Physics of Fluids, **Editor's cover pick,** 31: 085118, (2019). https://doi.org/10.1063/1.5111530

29. Ashton, R., Refan, M., Iungo, V., **Hangan, H**., "Wandering corrections from PIV measurements of tornado-like vortices", Journal of Wind Engineering & Industrial Aerodynamics 189: 163-172, (2019). https://doi.org/10.1016/j.jweia.2019.02.010

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263. **Hangan, H.** "Large scale physical simulations of 3D, non-stationary and non-Gaussian wind flows with applications to moving/deformable structures", Keynote Lecture, IUTAM Symposium, Santorini, Greece, June 18-22, 2018.

264. **Hangan, H. "**Key Findings from Tornado and Downburst Research at WindEEE", Invited Lecture, FM Global Climate Change Round Table, Norwood, Boston, November 6, 2017.

265. **Hangan, H**., "New frontiers in wind engineering: Dynamic tools for dynamic systems", Invited Lecture, International Advanced School on Wind Engineering (IAS15), Chongqing China, October 16-18, 2017.

266. **Hangan, H**., "Non-synoptic wind systems", Invited Lecture, International Advanced School on Wind Engineering (IAS15), Chongqing China, October 16-18, 2017.

267. **Hangan, H.,** "Novel Techniques in Wind Engineering", Guest Speaker presentation as part of "Project 111", BJU Chongqing, China, October 14-15, 2017.

268. Romanic, D., **Hangan, H.**, "Influence of background winds and storm motion on downburst outflow", European and African Conference on Wind Engineering (EACWE), Liege, July 3-6, 2017.

269. Refan, M., Elatar, A**., Hangan, H.,** "Pressure distribution over a typical low-rise building under laboratory simulated tornado vortices", European and African Conference on Wind Engineering (EACWE), Liege, July 3-6, 2017.

270. Jubayer, C., **Hangan, H.**, "Multi-scale diverse flows at the WindEEE Dome", 53rd Annual Meeting, Subsonic Aerodynamic Testing Association, Wichita, Kansas, June 4-8, 2017.

271. **Hangan, H.** "Experimental Investigation of the impact of inflow on the flow field over a coastal escarpment", Wind Energy Science Conference (WESC17), June 26-29, 2017, Lyngby, Denmark.

272. **Hangan, H.**, "Effect of laboratory simulated dynamic and translating downburst on the pressure distributions of a low-rise building", 13th Americas Conference on Wind Engineering (ACWE), Gainesville, Florida, May 21-24, 2017.

273. Jubayer, C, **Hangan H**, Romanic D. Combined numerical and large scale experimental study of wind flow over a complex topographic terrain. 1000 Islands Fluid Mechanics Meeting (T.I.M. 2017), 21-23 April, 2017, Gananoque, On, Canada.

274. Karami M, Romanic D, Refan M, **Hangan H**. Modeling of tornado-like vortices. 1000 Islands Fluid Mechanics Meeting (T.I.M. 2017), 21-23 April, 2017, Gananoque, On, Canada.

275. Kassab A, Romanic D, Costache A, **Hangan H**. Simultaneous pressure and PIV measurements on low-rise building. 1000 Islands Fluid Mechanics Meeting (T.I.M. 2017), 21-23 April, 2017, Gananoque, On, Canada.

276. **Hangan, H**., "Tornado Research at the WindEEE Research Institute". Webinar organized by the American Society of Civil Engineers (ASCE) and the National Institute for Standards and Technology (NIST), Arlington, VA, USA, 2016.

277. Jubayer C*., **Hangan, H**, "Multiscale ABL simulations and applications", 1000 Islands Fluid Mechanics Meeting, TIM 2016, April 2016.

278. LoTufo J., Costache A., Parvu D., **Hangan, H**., Siddiqui K., "Intrusive and Non-intrusive full scale topography measurements", 1000 Islands Fluid Mechanics Meeting, TIM 2016, April 2016.

279. Romanic D., Parvu, D., **Hangan H.,** "A Downburst Turbulence Model: Concept and Implementation", 1000 Islands Fluid Mechanics Meeting, TIM 2016, April 2016.

280. **Hangan, H**., "New Frontiers in Wind Engineering". The 14th International Symposium in Structural Engineering, Beijing, China, 2016

281. Parvu D. *, Refan M*., **Hangan H.,** "Large scale physical simulations of downburst flow", 1000 Islands Fluid Mechanics Meeting, TIM 2015, May 2015.

282. Jubayer, C.*, Siddiqui, K, **Hangan H**., "Investigation of flow field around a ground-mounted solar panel using PIV", 1000 Island Fluid Mechanic Meeting, TIM 2015, May 2015.

283. **Hangan H.,** "Wind Engineering. Time for change?" Invited Lecture, University of Genova, Italy, July 2015

284. **Hangan, H.,** " Smart City, Smart Campus", The Crystal Siemens, London UK, September 2014

285. **Hangan, H.,** "Non-Synoptic Winds; The new frontier", Guest Speaker presentation as part of "Project 111", BJU Beijing, China, September 2014

286. **Hangan, H**., "Innovating in Wind. WindEEE Research Institute at Western", Universite de Marseille, Marseille, France, May, 2014

287. **Hangan, H**., "WindEEE Research Institute and German collaborations", Keynote Speaker, 11th Canadian German Wind Energy Conference, Toronto, April 2014

288. **Hangan, H**., "Wind Resilience and Sustainability", Northeastern University, Boston, MA, September, 2012

289. **Hangan H**., "Urban Wind: Sustainability and Resilience", Department of Urban Studies and Planning, Massachusetts Institute of Technology (MIT), August, 2012

290. **Hangan H.,** " A new generation of wind tunnels for wind engineering applications", Department of Mechanical and Aeronautical Engineering, Princeton University, September 2010

291. **Hangan. H**, "Three Dimensional Wake Dynamics and Control", Invited Speaker, Workshop on Bluff Body Wakes and Vortex Shedding Mitigation. CFD and Experiments", Polytechnica University, Bucharest, Romania, July, 2008.

292. **Hangan, H**., "High Power Computing in Wind Energy and Wind Environment", Workshop presentation at Transborder Research University Network (TRUN), Wayne University, USA, May 30, 2008.

293. **Hangan, H**., "From Wind Tunnel to the WindEE Dome", Seminar at the University of Victoria, April, 2008.

294. **Hangan, H.,** "Wind Energy Mapping in Complex Topographic Terrain", Seminar at the National Wind Technology Center (NWTC), NREL, Boulder, Colorado, March 5, 2007.

295. **Hangan, H.,** "The three-dimensional wake and vortex shedding control for Blunt and Divergent Trailing Edge Airfoils", Seminar at the National Wind Technology Center (NWTC), NREL, Boulder, Colorado, March 5, 2007.

296. **Hangan, H**., "Large wind tunnels and their applications to wind energy", Seminar in the Department of Mechanical and Aerospace Engineering, University of Wyoming, Laramie, Wyoming, USA, March 1, 2007.

297. **Hangan, H.,** "Coherent structures education in high Reynolds number turbulent flows", Invited talk at the Canadian Symposium on Fluid Dynamics (CSFD), York University, Toronto, June 19, 2006.

298. **Hangan, H.,** "High Reynolds number Wake Topology, Self-similarity and Passive Control", Seminar in the Department of Mechanical and Aerospace Engineering, University of Wyoming, Laramie, Wyoming, USA, March 3, 2006.

299. **Hangan, H**., "Topology, Self-similarity and Control of Bluff Body Wakes", Seminar at Laboratoire de Systemes Energetiques (LASEN), Ecole Polytechnique Federale de Lausanne, Switzerland, May 14, 2004.

300. **Hangan, H.,** "Boundary conditions and Scaling for Turbulent Boundary Layers", Seminar at the Department of Meteorology, University of Reading, UK, April 26, 2004.

301. **Hangan, H.,** "Corner vortices a peak pressures in fluid-structure interaction", Ecole Superieure de Physique et Chimie Industrielle (ESPCI), Paris, France, April 22, 2004.

302. **Hangan, H.,** "Wavelet Pattern Recognition for Coherent Structure Eduction in Bluff Body Wakes", LIMDSI Seminar, Ecole Polytechnique, Paris, France, March 31, 2004.

303. **Hangan, H.,** "Bluff body high Reynolds number wake topology, self-similarity and passive control", Fluid Mechanics Seminar, Mechanical Engineering, Concordia University, Montreal, Quebec, Feb. 6, 2004.

304. **Hangan, H.,** "Investigation of high Reynolds number boundary layers over rough surfaces", the Center for Turbulence Research and the Environmental Fluid Dynamics Group, Stanford University, Palo Alto, California, Dec. 4, 2003.

305. **Hangan, H.,** "The simulation of boundary layer and downburst winds over urban canopy", Ecole Normale Superieure de Paris, invited seminar, Oct. 16, 2003.

306. **Hangan, H.,** "3D topology and passive control of bluff body wakes at high Reynolds numbers", Ecole Superieure de Physique et Chimie Industrielle (ESPCI) Paris, ESPCI Seminar Series, Oct.3, 2003.

307. **Hangan, H**., "Topology and Control of Bluff Body Wakes", invited presentation, 2003 SIAM Annual Meeting, Montreal, Canada, June 2003.

308. **Hangan, H**. and Savory, E., "Large-scale simulation of downburst wind loading on housing", Mitigation Housing Losses in Extreme Natural Events, ICLR-CHMC-UWO Workshop, Toronto, Canada, December 2002.

309. Inculet, D.R., Vickery, P.J. and **Hangan, H.,** "Wind-driven rain on houses, moisture penetration, and the role of internal pressure", Mitigation Housing Losses in Extreme Natural Events, ICLR-CHMC-UWO Workshop, Toronto, Canada, December 2002.

310. **Hangan, H**., "Experimental and Numerical Investigation of Turbulent Shear Flows with Applications to Wind Engineering", Chalmers University of Technology, Turbulence Seminar Series, June 26, 2001.

311. **Hangan, H**., "Macro-scale, coherent and intermittent flow structures in bluff body aerodynamics", McGill University and CERCA, Montreal, April 12, 2001.

312. **Hangan, H.,"**Fluid-Structure Interaction Problems in Wind Engineering", Fluid-Thermal Workshop, McMaster University, January 26, 2001.

313. **Hangan, H**., "Numerical simulation of high intensity winds", Proceedings of the ICLR Workshop on "Extreme Events and the Assessment of Risk: Dealing with Disasters", London, Ontario, Canada, Nov. 24-25, 2000.

314. **Hangan, H.,** "Wavelet Methods for the Eduction of Turbulent Flow Structures", Applied Math. Colloquium, Dec 19, 2000, UWO.

315. **Hangan, H**.,"Experimental, Numerical and Analytical Models for Atmospheric Dispersion Studies", invited lecture, Aeronautical Research and Test Institute, Prague, Czech Republic, Sept. 18, 2000.

316. **Hangan, H**., "Bluff Body Wake Aerodynamics" - Rensselaer Polytechnic Institute, New York, USA, February 25, 2000.

317. **Hangan, H**., 2000, "Wavelets on Turbulence", Seminar, Univ. of Kyoto, Japan, Feb. 2000.

318. **Hangan, H.,** 1999, "Wavelet patterns in bluff body aerodynamics", Seminar - Eindhoven University of Technology, Netherlands, June 28.

319. **Hangan, H**., 1999, "Wind tunnel and numerical simulations in wind engineering", Lecture - University of Reggio Calabria, Italy, June 9.

320. **Hangan, H.,** 1999, "The aerodynamic control of civil structures", Lecture - University of Naples, Italy, June 7.

321. **Hangan, H**., 1999, "The use of wind tunnel testing for the design of large structures", Lecture - University of Naples, Italy, June 4.

322. **Hangan, H**., 1999, "Wavelet pattern recognition in near wakes", 1000 Islands Fluids Dynamics Meeting, Gananoque, Ontario, Canada, April 9-11.

323. **Hangan, H**., 1998, "Computational fluid dynamics in ventilation studies", Civil Seminar, University of Western Ontario, London, Canada, December.

324. **Hangan, H**., 1998, "C-FD-E Concept in Wind Engineering", Centre de Recherche en Calcul Applique (CERCA), Montreal, May (Seminar).

325. **Hangan, H**., 1997, "Experiment versus CFD for a dispersion study", Engineering Science, University of Western Ontario, London, Canada, May 8 (Seminar).

326. **Hangan, H.,** 1996, "Aerodynamique du sillage pour les corps non-profiles" - Centre d'Etudes Aerodynamiques et Thermiques (CEAT), Universite de Poitiers, Poitiers, France, June.

327. **Hangan, H**., 1996, "Wake aerodynamics for 2D bluff bodies" - Laboratoire des Systemes Energetiques, Ecole Polytechnique Federale de Lausanne, Switzerland, July 5 (Seminar).

328. **Hangan, H.,** 1996, "An approach to active flow control", Boundary Layer Wind Tunnel Laboratory, University of Western Ontario, London, Canada, October 25 (Seminar).

d) Abstracts *(stopped recording after 2007)*:

329. Hashemi-Tari, P*, Hangan, H. and Gurka, R., "Swirl ratio effects on tornado-like vortices", American Physical Society, Division of Fluid Mechanics Meeting, Salt-Lake City, Utah, November 2007 *(DFD Bulletin v.52 no.17 p.40).*

330. Hocking, W.K., Taylor, P., Klassen, B., Sica, R., McBean, G., Hangan, H., Barron, J., Mercer, R., Zawdzki, I. and Fabry, F., "The O-Qnet - a new 40-55 MHz Windprofiler network in Ontario and Quebec, Canada",poster 8.30-P, 7th International Symposium on Tropospheric Profiling, Boulder, Co.,USA, 11-16 June 2006.

331. El Gammal, M.* and Hangan, H.," Wake development and control for an airfoil with blunt and divergent trailing edge", APS 58th Annual Meeting of the Division of Fluid Dynamics (DFD05), Chicago, IL, USA, Nov. 2005 *(p.234)*.

332. Mihaiescu, A.*, Hangan, H., Straatman, A. and Weisfreid, E., "Flow structure and stability analysis for back-step flow" APS 58th Annual Meeting of the Division of Fluid Dynamics (DFD05), Chicago, IL, USA, Nov. 2005 *(p.122).*

333. Hangan. H. and Dobre, A.*, "Experimental 3D Topology and Control of Bluff Body Wakes", American Physical Society (APS), Division of Fluid Dynamics 56 Annual Meeting, New Jersey, Nov. 23-25, 2004 *(p.129).*

334. Xu, Z.*, Hangan, H., Hall, J.W.* and Ewing, D., "Impinging Jet Dynamics. Preliminary Results", 1000 Islands Fluid Mechanics Meeting, Gananoque, Canada, May, 2002.

335. Dobre, A.* and Hangan, H., "A 3-D Vortex Dynamics Analysis in Intermediate Square Cylinder Wake", DFD01 Meeting of the American Physical Society, Nov. 18-20, 2001 *(p.200).*

336. Castillo, L., Seo, J., Walker, D., Johansson, G. and Hangan, H. -"Turbulent Boundary Layer at Very Large Reynolds Number over Rough Surfaces and Its Relation to the Initial Conditions", DFD01 Meeting of The American Physical Society, Nov. 18-20, 2001 *(p.106).*

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e) <u>Other Publications- Technical Reports:</u>

340. Jubayer, C., **Hangan, H.** 2018. Phase 2; Part 1: Ways of measuring tornadic flows. FM Global.

341. Jubayer, C., **Hangan, H.** 2018. Phase 2; Part 2 and 3: Pressure coefficients in straight synoptic wind vs tornado. FM Global.

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343. Jubayer, C., **Hangan, H.** 2017. "Wind effects on transmission lines in complex topography". Ontario Centres of Excellence (OCE).

344. Jubayer, C., **Hangan, H.** 2017. "Performance Testing of Ridgeblade Industrial (RB2) Wind Turbine". Power Collective Ltd.

345. Romanic, D., **Hangan, H.** 2017. "Wind impact studies for the Kansas Project Phase II: Wind loads". Another Design Experiment Inc.

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349. Mathers, A., **Hangan, H**. 2016. "WindEEE Research Institute Test Report for Nu-Phase Technology" - Nu-Phase Technology.

350. Jubayer, C., **Hangan, H**., 2015. “Wind Effects on Long Lake Transmission Lines and Towers, Phase 1- Topographic Wind Study”- Regional Power Inc.

351. Hunegn, T., Jubayer, C., Mathers, A., Bitsuamlak, G., **Hangan, H**., 2014. "Preliminary evaluation of wind load on roof mounted gravity restrained single solar system with 20 degree slope" - German Solar Corporation.

352. Refan, M., **Hangan, H.**, “Tornado Loss Prevention, Task 1: Straight synoptic wind tests of generic hospital and industrial buildings”, WindEEE Report, 2014

353. **Hangan, H**., Kardari, T., “Aerodynamic Analysis of External Car Components – MAGNA International”, 2013.

354. **Hangan, H**., Jubayer, C., Rassouli, A., “Wind Environment Study for the CFH Hawaii Telescope – Phase 1 – National Research Council (NRC), 2012.

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356. Natarajan, D., **Hangan, H.,** Baddour, R. and King, P., “A Computational Fluid Dynamics (CFD) Study of Doha Bay (in collaboration with the Hydraulics & Fluid Mechanical Group, CEE, UWO, BLWTL-SS22, 2011 (2011)

357. Boutanios, Z., **Hangan, H.,** Mikitiuk, M. and Edey, R. T., “A Study of Wind-Drive Rain Effects for Extell – 157 W 57th Street, New York, N.Y., BLWT-SS3, 2010.

358. Boutanios, Z., and **Hangan, H.,** “A Computational Wind Engineering Study Addendum for the G to 7 Line Transfer Station, Long Island City, New York, BLWT-SS22-2009.

359. Kong L., Edey R.T., Miller C., Boutanios Z., **Hangan H.,** King J.P.C., “A Study of Wind Effects for the Hoover Dam Bypass Project. Topographic Model and Computational Fluid Dynamics Studies”, BLWT-SS9-2009, April 2009.

360. Lythe, G.R., Kim, J.D.*, Ho, T.C.E. and **Hangan, H**., “A Study of Wind Effects for Crown Macau, China”, BLWT-SS54-2007.

361. Natarajan, D.*, Kim, J.D. and **Hangan, H**., “A Computational Fluid Dynamics (CFD) Study of Artificial Atmospheric Vortex Generator, BLWT – SS22 – 2007, June 2007.

362. Holmes, J.D. and **Hangan, H.,** “Some Engineering Aspects of Convective Downdrafts”, BLWT-2-2006, July 2006.

363. Inculet D., Oh, J.H. and **Hangan, H**., “A study of wind effects for Icynene Inc. House”, BLWT – SS56 – 2005, November 2005.

364. Kim, J.D. and **Hangan, H.,** “A Computational Fluid Dynamics (CFD) Wind-driven Rain Study for Torre Vallehermoso, Madrid, Spain, BLWT – SS50/a – 2005, October 2005.

365. Kim, J.D. and **Hangan, H.,** “A Computational Fluid Dynamics (CFD) Aeroacoustic Study for Torre Vallehermoso, Madrid, Spain, BLWT – SS50/b – 2005, October 2005.

366. Kim, J. and **Hangan, H.,** “A Computational Fluid Dynamics Study of Smoke Propagation from typical British Columbia Designated Smoke Rooms (BC-DSR)”, Ontario Campaign for Action on Tobacco (OCAT), BLWT – SS27-2005, June 2005.

367. Xu, X. and **Hangan, H**., “Flow Visualization Study for the Sudbury Regional Hospital Phase II, Sudbury, Ontario”, BLWT-SS7-2005, February, 2005.

368. Kim, J.D. and **Hangan, H.,** “A Computational Fluid Dynamics Study of Smoke Propagation from Designated Smoke Rooms”, Ontario Campaign for Action on Tobacco (OCAT), BLWT –SS59-2004.

369. Kim, J.D. and **Hangan, H**., “A study of wind effects for The Ocean Tower South Padre Island”, Texas, USA, BLWT-SS58-2004.

370. Bekele, S.A., **Hangan, H**. and Ho, T.C.E., “A study of wind effects for Foundation for Contemporary Art Project”, Paris, France, BLWT-SS42-2004.

371. **Hangan, H.,** “Wind tunnel tests on the sinusoidal perturbation control of vortex shedding induced response for a sectional bridge model”, US Department of Commerce Report, 2003.

372. Ma, L.Z.*, Bekele, S.A.* and **Hangan, H**., “A numerical study of internal flow in the Safety Kleen system. Improving particle deposition in the hopper”, BLWT-SS1-2003.

373. Surry, D., **Hangan, H**., Mikitiuk, M. and Allen, K.N., “Wind shelter for a radar site”, BLWT-SS37-2002

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375. Bekele, S.A., **Hangan, H.,** Surry, D. and Vickery, B.J., “Wind Engineering Studies for the Cheju International Convention Center, Cheju, Korea”, BLWT-SS43-2000.

376. Oumejjoud, K.* and **Hangan, H**., “Numerical and experimental examination of a single stack release for Safety-Kleen Ltd., Corunna, Ontario”, BLWT-SS37-2000.

377. Chen, D., Surry, D., **Hangan, H.,** “A study of wind effects for the Crawford Medical Office Building and the Diagnostic and treatment facility, Atlanta, Georgia”, BLWT-SS28-2000.

378. Oumejjoud, K. and **Hangan, H**., “Numerical Simulation of Airflow and Concentration around a Medical Oxygen Mask for Southmedic, Barrie, Ontario”, BLWT-SS42-2000.

379. Bekele, S., **Hangan, H**. and Isyumov, N. “A Diffusion of Exhausts for the Shim Wolsong Site Nuclear Reactor Complex, Korea”, University of Western Ontario Research Report, BLWT-SS54-1999.

380. **Hangan, H**. and Vickery, B.J., “A study of plume entrainment for the Dupont Chimney, Waynesboro, Virginia, U.S.A.”, University of Western Ontario Research Report, BLWT-SS37-1999.

381. Bekele, S.A., **Hangan, H**. and Isyumov, N., “Flow visualization study for the Sudbury Regional Hospital, Sudbury, Ontario”, University of Western Ontario Research Report, BLWT-SS34-1999.

382. **Hangan, H**. and Surry, D., “Wind-driven rain study for the Governor’s Road project, Hamilton, Ontario”, University of Western Ontario Research Report, BLWT-SS13-1999.

383. **Hangan, H.**, Surry, D. and Edey, R.T., “A study of wind effects for the Whitehall Ferry Terminal, New York”, University of Western Ontario Research Report, BLWT-SS1-1999.

384. **Hangan, H.,** Edey, R. T. and Isyumov, N., “Wind engineering studies for the Mori Tower in the presence of an additional tower, Shanghai, China”, University of Western Ontario Research Report, BLWT-SS31-1997.

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388. **Hangan, H**. and Isyumov, N., “Wind engineering studies for the Mori Tower, Shanghai”, University of Western Ontario Research Report, BLWTL-SS21-1997.

389. **Hangan, H.,** Morrish, D. and Isyumov, N., "A study of diffusion of exhausts from a nuclear reactor complex", University of Western Ontario Research Report, BLWTL-SS06-1997.

390. **Hangan, H.,** Edey, R. T. and Isyumov, N., "A study of wind effects for the Centro Empresarial Nacoes Unidas (CENU), Sao Paulo, Brazil", University of Western Ontario Research Report, BLWTL-SS2-1997.

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392. **Hangan, H**., Delville, J. and Bonnet, J.P., "Active control on axisymmetric jet. Preliminary results", Rapport d'etudes CNRS - CEAT 9609-01, Laboratoire d'Études Aérodynamiques, Université de Poitiers, Poitiers, France, Sept.-1996.

SCHOLARLY ADDRESSES/PRESENTATIONS:

The majority of the papers listed in conference proceedings were presented [see publications]

CONSULTING WORK UNDERTAKEN:

WindEEE Research Institute, UWO
Boundary Layer Wind Tunnel Laboratory, UWO
Trillium Corporation, Canada
Magna International Inc.
FM Global, Boston Massachusetts, USA
M & I Air Systems Engineering, Mississauga, Ontario
Harper Gray Easton, Vancouver, B.C.
Southmed, Barrie, Ontario
SafetyKleen, Corunna, Ontario
US Department of Commerce, Gaithersburg, MD, USA
ORNL, USA

OTHER PROFESSIONAL ACTIVITIES:

Editor:

2022	Special Editor for CSME Bulletin Issue **"**Climate Change and Sustainability"
2018 – Present	Editorial Board of the Transactions of the Canadian Society for Mechanical Engineering
2017 – Present	Editorial Board of the Journal of Wind Engineering and Applied Aerodynamics
2015 – Present	Associate Editor of Wind Energy Science, a Journal of the European Wind Energy Academy
2008 – 2015	Editorial Board of Wind and Structures an International Journal
2013 – Present	Editorial Board of Current Urban Studies
2011 – Present	Editorial Board of the Journal Resources: Natural Resources and Management (ISSN 2079-9276, http://www.mdpi.com/journal/resources)

Reviewer:

- Journal of Fluid Mechanics, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020
- AIAA Journal, 2013, 2015, 2016, 2018
- Experiments in Fluids
- Fluids and Structures

- ASME Journal of Fluids Engineering, 2013, 2014, 2015
- ASME Journal of Solar (and Wind) Energy, 2015
- International Journal of Computational Fluid Mechanics
- Journal of Wind Engineering and Industrial Aerodynamics, 2000 - Present
- Journal of Wind and Structures, 2013, 2014, 2015
- The Royal Society, UK.
- Journal of Engineering Mechanics.
- International Journal of Heat and Fluid Flow
- Engineering Structures, the Journal of Earthquake, Wind and Ocean Eng.
- Transactions of the Canadian Society for Mechanical Engineering
- International Journal of Wavelets, Multiresolution and Information Processing
- International Journal of Modeling and Simulation
- AIAA Journal of Aircraft,
- ASCE Journal of Computing in Civil Engineering
- NSERC Discovery Grant reviewer, 2013, 2014, 2015, 2016, 2018
- Canada Foundation for Innovation (CFI) Grant reviewer, 2013
- Research Grant reviewer for the Health, Welfare and Food Bureau of Hong Kong Government
- Research Grant reviewer for Material and Manufacturing Ontario (MMO)
- Research Grant reviewer for Ontario Power Authority (OPA)

Invited External Examiner/Expert:

- Canada Research Chairs Program, 2020
- The University of Nantes, France, External Program Reviewer, 2016
- Ministry of Economic Development and Growth Review, JPF Proposal of RWDI, 2016
- The Louisiana Board of Regents' Research Competitiveness Subprogram, 2014
- The Wind Technology Roadmap of Canada, Montreal, November 2008
- Oxford Round Table on Sustainability, August 2008
- Boston Round Table on East Coast Environment and Energy, April, 2008
- USA Department of Energy – NREL, Research Directions for US Wind Energy, Boulder Colorado, January 2008
- University of Alexandria, Egypt, Ph.D. thesis: “Aeroelastic and Aerodynamic Analysis of Long-span Cable Supported Bridges in Skew Winds”, Sept. 2003
- Applied Math, UWO, M.Sc. thesis: “Pricing Defautable Bonds and Options in a CIR Risk & Default Framework”, Sept. 2004
- Applied Math, UWO, M.Sc. thesis: “Scalar Concentration Reduction in a Contaminant Cloud”, Sept. 2004

Press Interviews and Television Programs:

- “Inside the tornado maker at Western University”, Westerns *The Gazette*. October 22, 2019
- Ottawa tornado breaks new ground for London researchers, London Free Press, March 2019
- “Wild Canadian Weather”, CBC Wild Weather Productions, May 13, 2019
- “Stress testing drones in a high tech wind vortex”, Vice, Vice-Motherboard, May 9, 2016
- Engineering News Record, The Top 25 Newsmakers, January, 2015
- The Globe and Mail, Answers from the Wind, June 14, 2014
- Engineering News-Record, Twister Resistance (front page), June 9, 2014
- “WindEEE”, Wild Weather, BBC, May 1, 2014
- “Myths about tornadoes”, Weather Channel, May 1, 2013
- Canadian Geographic, A mighty wind, October 2013
- Business London, Weather permitting, October 2013
- Reuthers, New Storm Patterns Require New Wind Engineering, 2013
- Weather Channel, Myths about tornadoes, 2013
- Discovery Channel, UK, Advanced Tornado Vortex Engine renewable energy project, 2007, 2008
- Channel A, mini Dome, March 2011
- NHBC, London Free Press, WindEEE model, March 2011
- Weather Network, WindEEE model, April 2011
- CBC Radio, Tornado Vortex Engine, 2007
- Several press interviews with London Free Press, Wind energy related issues, 2007
- London NPHL, Vortices and Tornados, 2004

- Discovery Channel, Aerodynamics of rowing boats with Hudson Boats, 2003

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Date: September 01, 2022

Atef Mohany, Ph.D., P.Eng, FASME, FCSME

Professor, University of Ontario Institute of Technology, Ontario, Canada

+12896003732 atef.mohany@ontariotechu.ca Canadian citizen

EDUCATION

2002 – 2006 **Ph.D. in Mechanical Engineering, McMaster University, Canada.**

1999 – 2001 **M.A.Sc. in Mechanical Engineering, Cairo University, Egypt.**

1993 – 1998 **B.A.Sc. in Mechanical Engineering, Cairo University, Egypt.**

EMPLOYMENT

2021 – Present **Professor**
Faculty of Engineering and Applied Science
University of Ontario Institute of Technology, Oshawa, Canada

2015 – 2021 **Associate Professor**
Faculty of Engineering and Applied Science
University of Ontario Institute of Technology, Oshawa, Canada

2012 – 2015 **Assistant Professor**
Faculty of Engineering and Applied Science
University of Ontario Institute of Technology, Oshawa, Canada

2010 – 2012 **Assistant Professor**
Department of Mechanical Engineering
University of New Brunswick, Fredericton, Canada

2006 – 2010 **R&D Engineer**
Components & Systems Division
Atomic Energy of Canada Limited (AECL), Chalk River Laboratories, Canada

ADMINISTRATIVE POSITIONS

2020 – 2022 **Department Chair**
Department of Mechanical & Manufacturing Engineering (MME)
Faculty of Engineering and Applied Science, Ontario Tech University, Canada
- Developed a new undergraduate program in Industrial Engineering.
- Coordinated the CEAB accreditation for the Manufacturing Engineering program.

2017 – 2019 **Department Chair (2 years term)**
Department of Automotive, Mechanical & Manufacturing Engineering (AMME)
Faculty of Engineering and Applied Science
University of Ontario Institute of Technology, Oshawa, Canada
- Coordinated the CEAB accreditation for the Automotive Engineering program.
- Established the first department's newsletters that are issued semi-annually.

2014 – 2015 **Founding Graduate Program Director (1 year term)**
Faculty of Engineering and Applied Science
University of Ontario Institute of Technology, Oshawa, Canada
- Developed a handbook for graduate studies to streamline the different processes.

ACADEMIC APPOINTMENT

2014 – present **Adjunct Professor,** School of Engineering
University Guelph, Guelph, Canada

2012 – 2016 **Adjunct Professor,** Department of Mechanical Engineering
University of New Brunswick, Fredericton, Canada

RESEARCH INTERESTS

- Aeroacoustics
- Turbulent Flows
- Fluid-Structure Interaction
- Flow-Induced Vibration & Noise
- Noise & Vibration Control

RESEARCH OBJECTIVE

The main objective of my research is to provide fundamental understanding of the physics underlying the mechanisms of fluid-structure and sound interactions using experimental, analytical and numerical modeling in order to develop innovative techniques that can be used to alleviate and control the occurrence of acute noise problems and/or excessive vibrations in real-life industrial applications. The majority of my research projects addressed a wide range of practical engineering problems related to the design and operation of automotive, aerospace, and energy systems. My research group contributed significantly to the knowledge transfer through successful collaborations with industrial partners such as; Ontario Power Generation (OPG), Bruce Power (BP), CANDU Owners Group (COG), Bombardier Aerospace, Vibro-Acoustics, WEGU Manufacturing, VertiGo Digital Displays, Stoddard Silencers, and Curtiss Wright Nuclear.

RESEARCH GRANTS AND CONTRACTS

- NSERC Alliance, "Damping of pressure pulsations in CANDU fuel bundles", **$93,333 (2023 – 2026)**.
- CANDU Owners Group (COG) work package #22254 under the safety and licensing R&D program, "Damping of pressure pulsations in CANDU fuel bundles", **$126,000 (2022 – 2025)**.
- NSERC Alliance project with the Canadian Nuclear Laboratories (CNL), "Artificial intelligence enabled predictive maintenance digital twins for nuclear power plant assets", co-applicant **$120,000 (2022 – 2024).**
- NSERC Discovery Grant, "Flow-sound interaction mechanisms with application to bluff body wakes and separated shear flows", **$160,000** awarded for five years ($32,000 per year) from **2022 to 2027**.
- NSERC Alliance grant with BetterFrost Technologies Inc., "Investigation and implementation of pulse-electro de-icing in commercial electric vehicles", principal applicant **$120,000 (2021 – 2023)**.
- NSERC CRD grant with COG (CANDU Owners Group), "Investigation of the dynamic characteristics of CANDU fuel bundles", principal applicant **$363,150 (2020 – 2023)**.

- NSERC Engage Grant with Curtiss-Wright nuclear, "Investigation and mitigation of over-testing behaviour in an industrial seismic qualification table", **$25,000 (2019-2020)**.
- OCE VIP I and NSERC Engage Grant with BetterFrost Technologies Inc., "Investigation and implementation of pulse-electro de-icing in automotive applications", **$50,000 (2018-2019).**
- Research Infrastructure Fund (RIF), "Particle image velocimetry (PIV) system for high-speed flow visualization and measurement", co-applicant with 3 other colleagues, **$130,000 (2018)**.
- Canadian Nuclear Safety Commission (CNSC), "Regulatory guidance on Replacement steam generators-An experimental study of the effects of flat bar supports on streamwise fluidelastic instability in nuclear steam generators", co-applicant with 3 colleagues, **$178,500 (2017 – 2019)**.
- OCE VIP I and NSERC Engage Grant with Stoddard Silencers of Canada Inc., "Experimental and theoretical investigation of the acoustical attenuation characteristics of innovative compact silencers", **$50,000 (2016-2017).**
- NSERC CRD grant with COG (CANDU Owners Group) and UNENE (University Network of Excellence in Nuclear Engineering), "Investigation of the dynamic response of CANDU fuel bundle due to acoustic pressure pulsations in the HTS piping system", principal applicant **$530,660 (2016 - 2019)**.
- NSERC Discovery Grant, "Flow-sound interaction mechanisms and control strategies", **$174,000** awarded for five years ($29,000 per year) from **2016 to 2022 (with 1 year COVID extension)**.
- Contract from General Dynamics Land Systems, "Suspension development in LAV III vehicles", co-applicant with one colleague, **$33,000 (2015)**.
- OCE VIP I Grant with Vibro-Acoustics, "Vibro-Acoustics noise flanking issues that affect low frequency noise measurements", **$25,000 (2015)**.
- NSERC Engage Grant with WEGU Manufacturing, "Flow-sound interaction of automotive pressure release vents", **$25,000 (2015).**
- NRC/IRAP Grant with VertiGo, "Noise characterization and reduction in digital display units", **$77,236 (2014 – 2015).**
- NSERC Engage Grant with Vibro-Acoustics, "Investigation of flanking noise transmission in concrete and multilayered composite structures", **$25,000 (2014)**.
- NSERC Engage Grant with OPG, "Design of passive noise control devices for attenuation of pressure pulsations in piping systems", **$25,000 (2013)**.
- NSERC Engage Grant with Bombardier Aerospace, "Assessment of dynamic seat comfort for aerospace applications", **$25,000 (2012)**.
- FedDev Grant, "Performance characterization of a five-blade vertical axis wind turbine", **$52,252 (2012)**.
- NSERC Discovery Grant, "Flow-sound interaction of multiple bare and finned cylinders in cross-flow", **$115,000** awarded for five years ($23,000 per year) from **2011 to 2016**.
- NSERC RTI Grant, "High-speed centrifugal blower for experimental aeroacoustics", **$15,142 (2011)**.
- New Brunswick Innovation Foundation (NBIF) Emerging Technology Grant, "Acoustic resonance of multiple bare cylinders in cross-flow", **$25,000 (2011)**.

SUMMARY OF CONTRIBUTIONS TO RESEARCH AND DEVELOPMENT

Patents……1
Papers in refereed journals…..……...91
Papers in conference proceedings……..……....…...…62
Technical reports…….……...…...24
Invited lectures/seminars..…….…….…....12

HONOURS AND AWARDS

- Elected Fellow, American Society of Mechanical Engineers. **2022**
- Elected Fellow, Canadian Society for Mechanical Engineering. **2022**
- Editor's pick award, Physics of Fluids. **2020**
- The ASME Journal of Pressure Vessel Technology (JPVT) Literature Award for co-authoring a technical paper with significant emphasizes on application and novel design of pressure vessel components. **2020**
- Reviewer of the year award, ASME Journal of Pressure Vessel Technology. **2020**
- Honorary Award for scientific contribution from the World Energy Strategies Congress and Exhibition (WESCE 19), Yildiz Technical University, Istanbul, Turkey. **2019**
- The Achievement Increment Award (AI) from the Faculty of Engineering and Applied Science in recognition of outstanding teaching and research activities, UOIT. **2014 & 2016**
- Nominated for the inaugural C. D. Dan Mote Jr., Early Career Award governed by ASME's Technical Committee on Vibration and Sound. **2014**
- Editor's Choice Award from the ASME Journal of Pressure Vessel Technology for co-authoring a technical paper with significant contributions to the design, analysis and development of pressure vessel components in nuclear power plants. **2013**
- Achievement Award from Chalk River Laboratories, Atomic Energy of Canada Limited for outstanding contribution to the safety and reliability of CANDU power plants. **2008**
- Pathways to Higher Education (PHE) Honorary Award, Cairo University. **2008**
- Dean's Award for Excellence in Graduate Research, McMaster University. **2006**
- Ontario Graduate Scholarship (OGS), McMaster University. **2004/05 & 05/06**
- C. W. Sherman Prestigious Scholarship, McMaster University. **2002/03 & 03/04**
- Best Master's Thesis Award, Cairo University. **2002**
- Postgraduate Tuition Scholarship, Cairo University. **1998/99 & 99/2000 & 2000/01**
- The Egyptian Engineers' Syndicate Medal for Academic Excellence. **1998**
- Industrial Distinction Award from El Mohandes Khamis Group. **1998**
- Graduation Award for outstanding academic performance, Cairo University. **1998**
- The Governor of Giza Award in Science and Technology. **1995/96 & 96/97 & 97/98**
- Industrial Distinction Award from the Egyptian-German Company for Air Treatment. **1996 & 1997**
- The Egyptian Government Award for Excellent Academic Achievements, (four times) **1994 – 1998**
- The Ministry of Education Excellence Fellowship, Cairo University. **1993**

PROFESSIONAL AFFILIATIONS

- Professional Engineer, Ontario, PEO no. 100135561
- Canadian Society of Mechanical Engineers (CSME)
- Canadian Nuclear Society (CNS)
- The Scientific Research Society (Sigma XI)
- American Society of Mechanical Engineers (ASME)

COURSES TAUGHT

- Kinematic & Dynamics of Machines
- Quality Control
- Heat and Mass Transfer
- Engineering Thermodynamics
- Mechanical Vibrations
- Machine Design
- Mechanics of Materials

DEVELOPMENT OF GRADUATE COURSES

- Flow-Induced Vibration
- Advanced Acoustics & Noise Control
- Automotive Noise, Vibration & Harshness
- Industrial AeroAcoustics

SUMMARY OF ACADEMIC SUPERVISION

- Post-Doctoral Fellows……..…..…...4
- Visiting Researchers……...……..…….....2
- Ph.D. Students……..……..……....…..…..…13
- M.A.Sc. Students.……..……..……..…....16
- M.Eng Students……..……..…….....2
- Undergraduate Research Assistants.……..……17
- B.Sc. Senior Capstone Design Students...……..…..…….112

ACADEMIC SUPERVISION

Post-Doctoral Fellows:

1. *Mohammed Alziadeh*, "Flow-Excited Acoustic Resonance of Jet Flow", Feb 2023 – present. (**ongoing**, sole-supervision)
2. *Mahmoud Shaaban*, "Fluid-Structure Interaction in Piping System Components", May 2019 – May 2021. (**completed**, sole-supervision)
3. *Nadim Arafa*, "Flow-Sound Interactions of Bluff Bodies in Cross-Flow", May 2017 – December 2018. **(completed**, sole-supervision**)**
4. *David Arthurs*, "Numerical and Experimental Investigation of Sound Sources in the Wake of Cylinders in Cross-Flow", January 2013 – July 2013. (**completed**, sole-supervision)

Visiting Researchers:

1. *Mahmoud Abd-Elmaboud*, "Vibration Control and Dynamic Comfort in Vehicles", April 2014 – July 2014 (**completed**, sole-supervision)
2. *Ahmed Khalil*, "Autonomous Ground Vehicles", April 2014 – July 2014 (**completed**, sole-supervision)

Ph.D. Students:

1. *Rasha Noufal*, "Active Control of Acoustic Resonance in Separated Shear Flows", May 2020 – present (**in progress**, sole-supervision).
2. *Thomas Lato,* "Control of Acoustic Pressure Pulsations in Piping Systems", January 2019 – present (**in progress**, sole-supervision).
3. *Mohammed Alziaded, "*Flow Characteristics and Acoustic Resonance Excitation of Finned Cylinders in Cross-Flow", September 2017 – present (**in progress**, sole-supervision).
4. *Sherif Rashwan*, "Modeling and Experimental Investigation of Ultrasonic Hydrogen Production", January 2018 – April 2021 (**completed**, co-supervision).
5. *Waleed Ahmed,* "Modelling and Analysis of Metal Cutting Process using Self-Propelled Rotary Tools", September 2017 – April 2021 (**completed**, co-supervision).
6. *Osama Elbanhawy,* "Investigation of the Dynamic Response in CANDU Fuel Bundle due to Acoustic Pressure Pulsations", January 2017 – September 2021 (**completed**, co-supervision).
7. *Moamen Abdel-mwgoud*, "Investigation of Flow-Sound Coupling and its Control in Cavities", September 2015 – April 2021(**completed**, sole-supervision).
8. *Omar Sadek*, "Modelling of Two-Phase Flow Induced Vibrations in Heat Exchanger Tube Bundles", January 2014 – April 2021 (**completed**, co-supervision).
9. *Mahmoud Shaaban*, "Flow-Excited Acoustic Resonance of Inline Arrangements of Cylinders in Cross-Flow", September 2013 – December 2018 (**completed**, sole-supervision).
10. *Nadim Arafa*, "Effect of Fins on the Acoustic Resonance Mechanism of Single Cylinder in Cross-Flow", September 2011 – April 2017 (**completed**, sole-supervision). ***Received the best PhD thesis award, Faculty wide***.
11. *Yasser Selima,* "Modeling of Fluidelastic Instability of Two-Phase Flow in Tube Bundles", September 2012 – April 2018 (**completed**, co-supervision).
12. *Ibrahim Naeem*, "Development of New Polymeric Materials with Enhanced Sound Proofing Properties" September 2013 – August 2016 (**completed**, co-supervision).
13. *Mohamed Elkasaby*, *"*Applications of Polymer Based Nano-Composites in Reduction of Thermal and Acoustic Emissions", January 2014 – December 2016 (**completed**, co-supervision).

M.A.Sc. Students:

1. Abdalrahman Alsaka, "Damping Acoustic Pressure Pulsations in CANDU Fuel Bundles", September 2022 – present (**in progress**, sole-supervision).
2. Khaled Abbaoui, "On the use of Machine Learning for Prediction of Resonance Excitation in Tube Bundles", September 2021 – present (**in progress**, sole-supervision).
3. Omar Hammad, "Energy Harvesting from Vortex-Induced Vibrations", September 2021 – present (**in progress**, sole-supervision).
4. Ahmed Shoukry, "Flow-Sound Interaction of Twin Jets and their Application in Aircraft", September 2021 – present (**in progress**, sole-supervision).
5. Marc Hanna, "Shear Layer Instability Over Circular Side Branches", September 2020 – present (**in progress**, sole-supervision).
6. Ali Saudy, "Flow-Induced Vibration of CANDU Fuel Bundle", September 2020 – present (**in progress**, sole-supervision).

7. *MD Rashidul Islam,* "Effect of Diameter Ratios on the Flow-sound Interaction of the Straight Circular Finned Cylinders", May 2017 – December 2019 (**completed**, sole-supervision).
8. *Thomas Lato*, "Passive Damping Mechanism of Herschel-Quincke Tubes for Pressure Pulsations in Piping Systems", May 2017 – December 2018 (**competed**, sole-supervision).
9. *Karim Sachedina,* "Attenuation of Pressure Pulsations in Piping System using Helmholtz Resonators", September 2016 – August 2018 (**completed**, sole-supervision).
10. *Mohammed Alziadeh*, "Investigation of the Flow-Sound Interaction Mechanism from Spirally Finned Cylinder in Cross-Flow", May 2015 – August 2017 (**completed**, sole-supervision). ***Received the best MASc thesis award, University wide***.
11. *Omar Afifi*, "Parametric Investigation of Flow-Sound Interaction Mechanism of Circular Cylinders in Cross-Flow", September 2014 – November 2016 (**completed**, sole-supervision).
12. *Ahmed Omer*, "Passive Methods for Suppressing Acoustic Resonance Excitation in Shallow Rectangular Cavities", May 2013 – August 2014 (**completed**, sole-supervision).
13. *Alexader Miller*, "Development of a Semi-Autonomous Directional and Spectroscopic Radiation Detection Mobile Platform", September 2012 – April 2014 (**completed**, co-supervision).
14. *Jason Elliott*, "Active Vibration Control of Flexible Two-Link Manipulator", September 2011 – April 2014 (**completed**, co-supervision).
15. *Hakan Ciloglu*, "Experimental and Numerical Investigation of the Dynamic Seat Comfort in Aircrafts", September 2012 – December 2013 (**completed**, sole-supervision).
16. *Burns Anderson*, "Modelling Fluidelastic Instability Forces in Tube Arrays", September 2010 – December 2011 (**completed**, co-supervision).

M.Eng. Students:

1. *Nishanth Karkera*, "Fluid-Structure Interaction of Automotive Pressure Release Vents", January 2015 – December 2015 (**completed**, sole-supervision).
2. *Nicholas Sparkes,* "Investigation and implementation of pulse-electro de-icing in automotive applications", September 2018 – August 2019 (**completed**, sole-supervision).

Undergraduate Research Assistants:

Supervised 17 different undergraduate research students during the summer terms. The students were trained in various aspects of flow-induced vibrations with a focus on practical engineering applications. Many of these students have gone on to graduate schools.

B.Sc. Senior Capstone Design Students:

Supervised and co-supervised over 112 senior undergraduate students in their 4th year capstone design projects (full year projects). Some of the projects have won international awards; such as **the first place award in Customer Insight category** at the 2016 PACE (Partners for the Advancement of Collaborative Engineering Education) global competition that was held in Cincinnati, USA; **the second place award in Customer Insight category** and **the third place award in Product Engineering category** at the 2015 PACE global competition, Sao Paulo, Brazil.

LIST OF PUBLICATIONS

Patents:

1. Patent Title: Pressure Relief Valve for Automobile
   Date of Patent: May 14, 2019
   Patent No.: US10286754B2
   Patent Status: Granted
   Inventor: Atef Mohany

Journal Articles *(names of the students are in bold italic)*:

1. ***M. Alziadeh*** and A. Mohany, **(2023)**, "Flow Structure and aerodynamic forces of finned cylinders during flow-induced acoustic resonance", **Journal of Fluids and Structures,** 119, 103887.
2. A. Mohany, ***M. Alziadeh***, M. Hassan, **(2023)**, "Vorticity Shedding and Acoustic Resonance Excitation of a Square Tube Array: Effect of Flow Approach Angle", **Journal of Pressure Vessel and Technology,** 145(1), 011401.
3. ***M. Alziadeh*** and A. Mohany, **(2022)**, "Vortex Shedding Characteristics and Aerodynamic Forces of a Finned Cylinder in Cross-Flow", **Physics of Fluids,** 34 (9), 095110.
4. ***M. Alziadeh*** and A. Mohany, **(2022)**, "Vortex Dynamics of Tandem Bare and Spiral Finned Cylinders in Cross-Flow and their Susceptibility to Acoustic Resonance Excitation", **Physics of Fluids,** 34 (4), 045105.
5. ***M. Alziadeh*** and A. Mohany, **(2022)**, "Applicability of the Equivalent Diameter Approach to Estimate Vortex Shedding Frequency and Acoustic Resonance Excitation from Different Finned Cylinders in Cross-Flow", **Journal of Pressure Vessel and Technology,** 144(4), 041406.
6. ***Utkarsh***, ***N.A. Syed***, ***M. Tariq***, A. Mohany, R. Pop-Iliev, G. Rizvi, **(2022)**, "Experimental investigation of low-frequency sound absorption characteristics of electro-spun Polyvinylpyrrolidone (PVP) membranes", **Polymer**, Vol. 245, 124704.
7. ***M. Shaaban*** and A. Mohany, **(2022)**, "Flow-Acoustic Coupling around Rectangular Rods of Different Aspect Ratios and Incidence Angles", **Experiments in Fluids,** 63(2), 1-15.
8. ***O. Sadek***, A. Mohany, M. Hassan, **(2022)**, "The Flow-Structure Couplings of Fluidelastic Instability and the Effect of Frequency Detuning in Triangular Tube Bundles Subjected to a Two-Phase Flow", **Journal of Pressure Vessel and Technology,** 144(5), 051401.
9. ***M. Shaaban*** and A. Mohany, **(2021)**, "Synchronous Vortex Shedding from Aerodynamically Isolated Side-by-Side Cylinders imposed by Flow-Excited Resonant Acoustic Modes", **Experiments in Fluids,** 62(10), 1 – 17.
10. ***O. Sadek***, A. Mohany, M. Hassan, **(2021)**, "The Prediction of Fluidelastic Forces in Triangular Tube Bundles Subjected to a Two-Phase Flow: The Effect of the Flow Approach Angle", **Journal of Fluids and Structures,** 106, 103386.
11. ***M. Abdelmwgoud*** and A. Mohany, **(2021)**, "Control of the Self-Sustained Shear Layer Oscillations over Rectangular Cavities using High-Frequency Vortex Generators", **Physics of Fluids,** 33 (4), 045115.
12. ***M.R. Islam***, and A. Mohany, **(2021)**, "Flow-Induced Acoustic Resonance of Finned Cylinders with Varying Fin Heights", **Journal of Pressure Vessel and Technology**, 143 (4): 041405.
13. ***Y. Selima***, M. Hassan, A. Mohany, W. Ahmed, **(2021)** "Modelling of Fluidelastic Instability in Tube Bundles under Two-Phase Bubbly Flow Conditions", **Journal of Fluids and Structures,** 103, 103256.

14. M. Abdelmwgoud, M. Shaaban, ***A. Mohany***, **(2021)**, "Shear Layer Synchronization of Aerodynamically Isolated Opposite Cavities due to Acoustic Resonance Excitation", **Physics of Fluids,** 33(5), 0055112.
15. ***S.S. Rashwan***, I. Dincer, A. Mohany, **(2021)**, "A Review on the Importance of Operating Conditions and Process Parameters in Sonic Hydrogen Production", **International Journal of Hydrogen Energy**, 46(56):28418 - 28434.
16. ***W. Ahmed***, H. Hegab, A. Mohany, H. Kishawy, **(2021)**, "Analysis and Optimization of Machining Hardened Steel AISI 4140 with Self-Propelled Rotary Tools", **Materials,** 14 (20), 6106.
17. ***S.S. Rashwan***, A. Mohany, I. Dincer, **(2021)**, "Development of Efficient Sonoreactor Geometries for Hydrogen Production", **International Journal of Hydrogen Energy**, 46(29):15219 - 15240.
18. ***W. Ahmed***, H. Hegab, A. Mohany, H. Kishawy, **(2021)**, "On Machining Hardened Steel AISI 4140 with Self-Propelled Rotary Tools: Experimental Investigation and Analysis", **International Journal of Advanced Manufacturing Technology**, 113, 3163 – 3176.
19. ***O. Elbanhawy***, M. Hassan, A. Mohany, **(2021)**, "Modelling of Fully Flexible Fuel Bundles", **Nuclear Engineering and Design,** 378, 111014.
20. H.A. Kishawy, ***W. Ahmed***, A. Mohany, **(2021)**, "Analytical Modeling of Metal Cutting Process with Self-Propelled Rotary Tools", **CIRP Journal of Manufacturing Science and Technology,** 33, 115 – 122.
21. ***M. Alziadeh*** and A. Mohany, **(2021)**, "Vorticity Shedding and Acoustic Resonance Excitation of Two Tandem Spirally Finned Cylinders in Cross-Flow", **Journal of Pressure Vessel and Technology**, 143 (2): 021405.
22. ***W. Ahmed***, H. Hegab, A. Mohany, H. Kishawy, **(2021)**, "Sustainability Assessment of Difficult-to-Cut Materials Using Rotary Tools: A Step Towards Sustainable Machining Environment", **Procedia Manufacturing,** 53, 92 – 98.
23. ***O. Afifi*** and A. Mohany, **(2021)**, "Parametric Investigation of the Flow-Sound Interaction Mechanism for Single Cylinders in Cross-Flow", **Journal of Pressure Vessel and Technology**, 143(2): 021404.
24. ***W. Ahmed***, H. Hegab, H. Kishawy, A. Mohany, **(2021)**, "Estimation of Temperature in Machining with Self-Propelled Rotary Tools using Finite Element Method", **Journal of Manufacturing Processes**, Volume 61, pp: 100 – 110.
25. ***P. Karimipour-Frd***, ***I. Naeem***, A. Mohany, R. Pop-Iliev, G. Rizvi, **(2021)**, "Enhancing the Accuracy and Efficiency of Characterizing Polymeric Cellular Structures Using 3D-based Computed Tomography", **Journal of Cellular Plastics**, 57(5), pp. 623–642.
26. ***S.S. Rashwan***, I. Dincer, A. Mohany, **(2021)**, "A Journey of Wastewater to Clean Hydrogen: A Perspective", **International Journal of Energy Research,** 45(5), 021405.
27. ***M.R. Islam***, and A. Mohany, **(2020)**, "On the Three-Dimensional Flow Development around Circular Finned Cylinders", **Physics of Fluids**, 32 (11), 115116. **Chosen to be a Featured Article by the Editors of the Physics of Fluids.**
28. ***M. Abdelmwgoud***, ***M. Shaaban***, A. Mohany, **(2020)**, "Flow Dynamics and Azimuthal Behaviour of the Self-Excited Acoustic Modes in Axisymmetric Shallow Cavities" **Physics of Fluids**, 32(11), 115109.

29. ***S.S. Rashwan***, I. Dincer, A. Mohany, **(2020)**, "The Role of CO2 in Improving Sonic Hydrogen Production", **International Journal of Energy Research**, Volume 44(13), pp: 9804-9807.
30. ***A. Elhelaly***, M. Hassan, A. Mohany, S. Moussa, **(2020)**, "Effect of the Flow Approach Angle on the Dynamics of Loosely-Supported Tube Arrays", **Nuclear Engineering and Design**, 368, 110802.
31. ***M.R. Islam***, ***M. Shaaban***, A. Mohany, **(2020)**, "Vortex Dynamics and Acoustic Sources in the Wake of Finned Cylinders during Resonance Excitation", **Physics of Fluids**, 32(7), 075117.
32. ***M.R. Islam*** and A. Mohany, **(2020)**, "Vortex Shedding Characteristics in the Wake of Circular Finned Cylinders", **Physics of Fluids**, 32(4), 045113. (**Received the Editor's Pick Award**).
33. ***M. Shaaban*** and A. Mohany, **(2020)**, "Experimental Study of the Self-Excited Resonance Effect on the Dynamic Lift and Flow Structure around Inline Cylinders", **Journal of Fluids and Structures,** 96, 103015.
34. ***S.S. Rashwan***, I. Dincer, A. Mohany, **(2020)**, "A Unique Study on the Effect of Dissolved Gases and Bubble Temperatures on the Ultrasonic Hydrogen (sonohydrogen) Production", **International Journal of Hydrogen Energy**, Volume 45(41): 20808 – 20819.
35. ***O. Elbanhawy***, M. Hassan, A. Mohany, **(2020)**, "Simulation of Motion-Dependent Fluid Forces in Fuel Bundles", **Nuclear Engineering and Design**, 356:110373.
36. ***S.S. Rashwan***, I. Dincer, A. Mohany, **(2020)**, "An Investigation of Ultrasonic Based Hydrogen Production", **Energy**, Volume 205, 118006.
37. ***K. Sachedina***, ***T. Lato***, A. Mohany, M. Hassan, **(2020)**, "Effect of Incident Acoustic Pressure Amplitude on the Transmission Loss of Helmholtz Resonators", **Vibrations**, 3(1), pp: 34 – 41.
38. ***S.S. Rashwan***, I. Dincer, A. Mohany, **(2020)**, "Investigation of Acoustic and Geometric Effects on the Sonoreactor Performance", **Ultrasonics Sonochemistry**, Volume 68: 105174.
39. ***K. Sachedina***, A. Mohany, M. Hassan, **(2020)**, "Experimental Study on Damping Acoustic Pressure Pulsations in Pipeline System using Helmholtz Resonators", **Journal of Pressure Vessel and Technology**, 142 (2): 021405.
40. ***S.S. Rashwan***, A. Mohany, I. Dincer, **(2020)**, "Investigation of Self-Induced Thermoacoustic Instabilities in Gas Turbine Combustors", **Energy**, Volume 190: 116362.
41. ***O. Sadek***, A. Mohany, M. Hassan, **(2020)**, "Numerical Simulation of Streamwise Fluidelastic Instability of Tube Bundles Subjected to Two-Phase Cross Flow", **Journal of Fluids and Structures**, 92:102816.
42. ***T. Lato*** and A. Mohany, **(2019)**, "A Passive Damping Device for Suppressing Acoustic Pressure Pulsations: The Infinity Tube", **Journal of the Acoustical Society of America**, 146(6), 4534 – 4544.
43. ***M. Shaaban*** and A. Mohany, **(2019)**, "Characteristics of Acoustic Resonance Excitation by Flow around Inline Cylinders", **Journal of Pressure Vessel Technology**, 141(5): 051301. **Received the 2020 Literature Award from the ASME JPVT.**
44. ***S.S. Rashwan***, I. Dincer, A. Mohany, B. Pollet, **(2019)**, "The Sono-Hydro-Gen Process (Ultrasound Induced Hydrogen Production): Challenges and Opportunities", **International Journal of Hydrogen Energy**, 44(29): 14500 - 14526.
45. ***N. Arafa*** and A. Mohany, **(2019)**, "Wake Structure and Acoustic Resonance Excitation of a Single Finned Cylinder in Cross-Flow", **Journal of Fluids and Structures,** (86), 70 - 93.

46. ***M. Alziadeh*** and A. Mohany, **(2019)**, "Passive Noise Control Technique for Suppressing Acoustic Resonance Excitation of Spirally Finned Cylinders in Cross-Flow", **Experimental Thermal and Fluid Science,** (102), 38 – 51.

47. ***S.S. Rawshwan***, I. Dincer, A. Mohany, **(2019)**, "Analysis and Assessment of Cascaded Closed Loop Type Organic Rankine Cycle", **Energy Conversion and Management,** (184), 416 – 426.

48. ***S.S. Rashwan***, I. Dincer, A. Mohany, **(2019)**, "Sonication to Hydrogenization: Sono-Hydro-Gen", **International Journal of Energy Research,** (43), 1045 – 1048.

49. ***M. Shaaban*** and A. Mohany, **(2019)**, "Phase-Resolved PIV Measurements of Flow over Three Unevenly Spaced Cylinders and its Coupling with Acoustic Resonance", **Experiments in Fluids**, 60 (4), 71.

50. ***T. Lato*** and A. Mohany, **(2019)**, "Passive Damping of Pressure Pulsations in Pipelines Using Herschel-Quincke Tubes", **Journal of Sound and Vibration,** (448), 160 – 177.

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9. A. Omer and A. Mohany, "Investigation of flanking noise transmission in Vibro-Acoustics reverberation room", Vibro-Acoustics, **2014** September.
10. O. Sadek, M. Shaaban, A. Mohany, "Development of passive control devices in piping system". OPG, **2014** July.
11. A. Mohany, "Mitigation of the Heat Transport Flow Signal Problems at Darlington Nuclear Power Plant", AECL Technical Memo 153-63101-401-000, **2010** July.
12. A. Mohany, "High Vibration and/or Excessive Noise of Condenser Steam Discharge Valves (CSDVs)" AECL Technical Memo 153-127460-401-000, **2010** February.
13. A. Mohany, "Hydraulic Test Report of Orifice Assemblies for Shin-Kori Nuclear Power Plant Units 3 and 4" GNP-30922-TR-001 Revision D1, **2009** December.
14. A. Mohany and J. Pietralik, "Local Heat Transfer in the Shin-Kori Orifice Assemblies", AECL Technical Memo GNP-30922-401-000, **2009** October.
15. A. Mohany, "Plan for Testing of Orifice Assemblies for Shin-Kori Nuclear Power Plant Units 3 and 4" GNP-30922-TP-001 Revision 0, **2009** July.
16. A. Mohany and C. S. Schefski, "CHECWORKS Primary Side Model at Gentilly 2 Generating Station" COG-07-4095, **2008** April.
17. A. Mohany and C. S. Schefski, "CHECWORKS Primary Side Model at Bruce Power Generating Station" COG-07-4031, **2008** February.
18. C. S. Schefski, J. M. Pietralik and A. Mohany, "CHECWORKS Primary Side Model at Point Lepreau Nuclear Generating Station" COG-06-4027, **2007** April.
19. P. Feenstra and A. Mohany, "Millstone 3 Hydraulic Performance of Replacement Containment Sump Strainers" Dominion, MIL3-34325-AR-001 Revision D1, **2006** December.

Invited Seminars (Sample):

1. "Fundamentals of Acoustics with Application to Flow-Sound Interactions", two invited lectures, EDF Lab Paris-Saclay - Centre R&D, IMSIA, France, 2020 July.
2. "Flow-Sound Interaction Mechanisms and Control Strategies", LadHyX, Ecole Polytechnique, Paris, France, 2020 May.
3. "An Outlook at the Future of Nuclear Energy", Yildiz Technical University, Istanbul, Turkey, 2019 August.
4. "Field Experience with some NVH Issues in Heavy Vehicles", Tongji University, Shanghai, China, 2014 October.
5. "Thermal Fatigue in CANDU Steam Generator", The SG Workshop on Thermal Margin, Atomic Energy of Canada Limited (AECL), Chalk River Laboratories, Canada, 2010 June.

PROFESSIONAL ACTIVITIES

Editorial Activities & Organization of Scientific Events:

- Editorial Board Member, Ultrasonic Sonochemistry, Elsevier Science Ltd. (2021 – present) https://www.journals.elsevier.com/ultrasonics-sonochemistry/editorial-board
- Co-Chair of the Fluids, Structures, and Sound Symposium in Honour of Dr. David Weaver. June 16 – 17, Guelph, Canada.
- Member of the scientific technical committee of the 2020 international conference on flow-induced vibration. FIV 2020, July 6 – 9, Paris-Saclay, France (postponed). https://fiv2020.sciencesconf.org/resource/page/id/4
- Sessions Developer and Co-Developer in the area of Piping and Acoustics, and FIV in Tube Arrays for the ASME Pressure Vessels and Piping Conference. July 14-19, 2019. San Antonio, Texas, USA.
- Co-Organizer, the 9th International Symposium on Fluid-Structure Interactions, Flow-Sound Interactions, Flow-Induced Vibration & Noise (FSI2 & FIV+N 2018). July 8 – 11, 2018, Toronto, Canada. http://www.fiv2018.com
- Sessions Developer and Co-Developer in the area of Piping and Acoustics, and FIV in Tube Arrays for the ASME Pressure Vessels and Piping Conference. July 16-20, 2017. Waikoloa Village, Hawaii, USA.
- Member of the Editorial Board, Journal of Acoustics: https://joa.hapres.com/EditorialBoard.aspx
- Member of the Editorial Board, Vibrations: http://www.mdpi.com/journal/vibration/editors
- Member of the Editorial Board, Pipeline Science and Technology: http://en.pipeline-science.ru/
- Member of the scientific technical committee of the 2016 international conference on flow-induced vibration. FIV 2016, July 4 – 6, The Hague, Netherlands. http://www.fiv2016.com/page/8/committees/
- A symposium Co-Organizer in the area of "Fluid-Structure Interactions" for the 2016 World Congress on Advances in Civil, Environmental, and Materials Research (ACEM 16). August 28 to September 1, 2016. Jeju Island, South Korea.
- Session Developer and Co-Developer in the area of Noise and Acoustics, and Bluff Bodies and VIV for the ASME Pressure Vessels and Piping Conference. July 19-23, 2015. Boston, Massachusetts, USA.
- Guest Editor for a special issue in the Journal of Science and Technology of Nuclear Installations. Special issue title: Nuclear Power Plants Safety and Maintenance. 2014 https://www.hindawi.com/journals/stni/2014/758685/
- A Session Co-Developer in the area of "Control of FIV and Noise" and "Flow-Sound and Fluid-Structure-Acoustical Interactions" for the ASME Pressure Vessels and Piping Conference. July 20-24, 2014. Anaheim, California, USA.
- A symposium Co-Organizer in the area of "Flow-Induced Vibration (FSI-2)" for the ASME Pressure Vessels and Piping Conference. July 14-18, 3013. Paris, France. http://www.asmeconferences.org/PVP2013/Organizers.cfm

Academic & Professional Service

- Member of the National Standard Committee ISO/TC 11 on Boilers and Pressure Vessels (2021 – present).
- Member of the National Standard Committee ISO/TC 43 on Acoustics and subcommittee ISO/TC43/SC1 on Noise (2021 – present).
- Member of the Multi-disciplinary Assessment Committee (MAC) of the Canada Foundation for Innovation Fund (July 2020 – present).
- FSI Honors and Awards representative, the American Society of Mechanical Engineers (ASME) (July 2020 – 2022).
- Secretary of the FSI committee, the American Society of Mechanical Engineers (ASME) (July 2021 – present).
- Warden of Camp 1, the Calling of an Engineer, (July 2017 – present).
- Member of the American Society of Mechanical Engineers (ASME) PVPD Fluid-Structure Interaction (FSI) Technical Committee (July 2009 – present).
- Elected Member of the University Academic Council, UOIT, (Sept. 2016 – June 2017) and (Sept. 2018 – June 2019).
- Member of the FEAS graduate committee, UOIT, (July 2016 – June 2017).
- Graduate student advisor for the Master of Engineering program in Mechanical Engineering, UOIT, (Sept. 2012 – August 2014).
- Member of the FEAS Dean's renewal committee, UOIT, (April 2016 – June 2017).
- Member of the Automotive Engineering curriculum committee, UOIT, (July 2016 – June 2017).
- Stream leader for the Solid Mechanics courses, UOIT, (Sept. 2014 – June 2017).
- Academic advisor for the ASME student chapter at UOIT, (July 2012 – June 2017).
- Founder and academic advisor for the STLE student section at UOIT, (April 2013 – June 2017).
- Member of the FEAS academic integrity committee, UOIT, (Sept. 2012 – August 2016).
- Member of the Mechanical Engineering curriculum committee, UOIT, (Sept. 2012 – Sept. 2013).
- Member of the undergraduate program review committee for Automotive Engineering, UOIT, (Sept. 2012 – Sept. 2013).
- Member of the CEAB accreditation task force committee for Mechanical Engineering, UOIT, (Sept. 2012 – January 2014).
- Member of the NSERC scholarships Faculty ranking committee, UOIT, (Sept. 2013 – Dec. 2013).
- Member of the UOIT research excellence awards committee for 2013.
- Member of the hiring committee for different faculty positions in Automotive, Mechanical and Manufacturing Engineering at UOIT.
- Member of the apparent cause analysis committee, Components and Systems Division at AECL, (July 2009 – September 2010).
- Designate Quality Assurance (QA) representative of the Inspection, Monitoring & Dynamics Branch, Atomic Energy of Canada Limited (AECL), (April 2009 – Sept. 2010).

OntarioTech Engineering & Applied Science

May 8, 2023

Dear Dr. Jacobs,

It is with great pleasure that I write this letter of support for the Aerodynamic and Climatic Adaptation Research (AeroClimar) Centre. As Dean of Engineering and Applied Science at Ontario Tech University, I am aware of the vital role this research centre can play in advancing the field of aerodynamics and other related areas.

Ontario Tech has the largest research lab in a Canadian University, the Automotive Centre of Excellence (ACE), in which this centre will capitalize on and provide Ontario Tech not only the ability to test but to provide solutions and advanced knowledge. Bringing together experts from different fields will not only foster the exchange of ideas but also promote multidisciplinary collaboration. I believe this centre will have significant impact on industry and will push the boundaries of knowledge in the field of aerodynamics as well as help us build productive partnerships with industry.

I am also excited about the potential for this research center to provide valuable opportunities for our students. By exposing them to the latest research and technologies, they will be better prepared to enter the workforce and make significant contributions to the field.

Regards,

H. A. Kishawy

Hossam Kishawy, PhD, PEng
Dean and Professor