TECHNOLOGY OVERVIEW

Electricity Generation from Any Heat Source

Background

There is currently a high demand for reliable and sustainable sources of energy to tackle the increasing threat of climate change. It is becoming increasingly popular for individuals and communities, particularly in remote settings but expanding to other settings as well, to have a small-scale generation of heat and electric power as an alternative to centralized grid power, which is termed “microgeneration.” There is a need for sustainable solutions that have more flexibility in their energy sources to ensure a steady supply of energy, such as external heat engines. External heat engines, such as the Sterling engine, have high potential since they are capable of operating at the maximum obtainable efficiency for thermodynamic cycles (Carnot efficiency) and because they can operate with a wide range of heat sources.

Overview

Developed an external heat engine with piston arrangements that involve two embedded pistons linked to arms that follow cam profiles, allowing for a very compact piston arrangement with piston motion that can be optimized since they can follow any path determined by the cam shape. This design is useful for external heat engines, such as Stirling and Ericsson engines, to enable the engines to closely follow the ideal cycle (where constant volume and/or pressure requirements can be met), and to provide more power in a compact design. Our embedded piston design with a cam-driven motion will finally enable these engines to provide compact power in a sustainable way and compete with traditional engines (particularly diesel engines) with substantial worldwide demand.

Business Opportunity

Ontario Tech University looks to work with companies in a way that helps develop a relationship that is tailored to their interests. Thus, are happy to explore collaborations, licenses, options, assignments, etc. It is the belief that only through enabling the company to utilize its business model will Ontario Tech University technology be able to make an impact within the marketplace.

Inventors:

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US Patent: US20200291778
Canadian Patent: CA3075188A1
World Intellectual Property Organization: WO2019046951A1
Efficiency Reduction in Stirling Engines Resulting from Sinusoidal Motion

About Ontario Tech University

Ontario Tech University conducts high-quality, rigorous research designed to meet the research and development needs of business and industry and benefit society. Whether the focus is on developing hydrogen-from-nuclear or fuel-cell technologies, improving network security, or understanding youth crime, we are committed to interdisciplinary research and development that addresses social, environmental, health, and economic challenges.