



DEPARTMENT OF
AEROSPACE ENGINEERING

TECHNION
Israel Institute
of Technology



Grand Technion
Energy Program

תכנית האנרגיה ע"ש גרנד

Guest MSc Seminar

Wednesday, 24-07-2019, 16:30

Aerospace Engineering, Classroom 165, Library

Thermodynamic and Experimental Demonstration of Inverted Brayton Cycle in Heat Recovery Applications

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Abstract

A deregulated electricity supply market, based on the implementation of renewable energy power plants, vastly promotes the emerging “distributed power generation” concept. Therefore, numerous small and efficient power units are progressively introduced to the market in order to satisfy the new demands and replace large outdated power plants. Hence, significant potential lies in the further improvement of small-scale power production technologies such as micro gas turbines, especially in cogeneration systems.

The presented work deals with increasing the efficiency of energy generation in decentralized energy supply through utilizing waste heat. Waste heat typically contains one third of the total combustion energy and is largely unused in contemporary small-scale power units. The current effort investigates a new concept for the simultaneous production of hot water and electrical energy, based on the inverted Brayton cycle – expansion of hot exhaust gas at atmospheric pressure to sub-atmospheric conditions, extraction of heat in a recuperator and re-compression of the cooled gas back to atmospheric pressure. This heat recovery cycle generates power via expansion of the isobaric lines and can be used to drive an electric generator, while the heated coolant can be further used directly for combined heat and power generation.

The presentation will address the design and construction of a functional prototype where the inverted Brayton cycle is experimentally demonstrated.

Work towards MSc degree under the supervision of Asst. Prof. Beni Cukurel

The talk will be given in English

Gathering is at 16:00

Light refreshments will be served before the lecture

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