Technion-Israel Institute of Technology
Faculty of Mechanical Engineering

הטכניון-מכון טכנולוגי לישראל
הפקולטה להנדסת מכונות

סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה' 7.09.2017 (ט"ז באלול, תשע"ז), בניין דן-קאהן, אודיטוריום 1 , 13:30.

יצה: עדי אמיר

מנחה: פרופ"מ רנה ואן האוט

על הנושא:

Optimization of a nocturnal radiative cooling system for small scale industrial facilities

The seminar will be given in Hebrew

להלן תקציר ההרצאה:

The era we live in is characterized by exponential growth in both population and energy consumption per capita. These growths are predicted, by many researchers, to cause depletion of all fossil fuels in the near future. One of the approaches to solve the predicted energy crisis is sustainable energy. However, in our competitive world, sustainability must also be economically competitive in order to replace conventional technologies. Night Sky Radiative Cooling (NSRC) is a method of passive, sustainable, cooling. It harnesses the phenomenon that the sky temperature can be significantly lower than the ambient and therefore can be used as a heat sink for radiating heat. Here, a novel cooling system that is both sustainable and economical is presented. The system implements NSRC for small-scale industrial facilities rather than domestic use, as has previously been documented. Since reliability is a key issue in industrial applications, a hybrid system that included a heat pump was designed and a preliminary analysis showed its feasibility. A detailed thermal analysis taking into account actual meteorological conditions validated the working principles, simulated daily operation and evaluated performance. A simplified thermal analysis, that is capable of simulating multiple years and configuration with little computational resources, was implemented to allow for system configuration optimization such that for a specific site location the most cost effective system can be determined.

בברכה,

פרופ"א שאול אלוש

מרכז הסמינרים