

סמינריון

הנדך מוזמנת/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות שתתקיים ביום ב' 22.06.2020
(ל' בסיון תש"פ), בשעה 14:30 באמצעות הזום .

הסיסמה לפגישה בזום : 096151

<https://technion.zoom.us/j/96311593234?pwd=UmJlSkliM2VvMDUzMHBpTXV1UEdlldz09>

מרצה : אמיר הילמן

מנחה : פרופ' מיכאל שפירא

על הנושא :

Energy Infrastructure Model Development for Sustainability of Urban Districts – A Case Study of the Technion Campus in Haifa

The seminar will be given in English

תקציר ההרצאה :

The increasing rate of global urbanization incurs rapid growth of the cities' share (over 65%) of global energy consumption. As such, the cities are currently responsible for over 70% of global greenhouse gas emissions. The further growth of these shares, expected in the next decades, raises the requirement for a systematic holistic approach for the design of urban energy infrastructure, in order to ensure its sustainability. In this research, we attempted to develop a model for rational design of sustainable energy infrastructure for urban districts. The model is based on a four-step methodology, which includes: characterization of an urban district, technological survey for distributed generation and energy storage, selection of suitable technologies according to social and technical criteria, and simulations of different energy infrastructure formations to find the most suitable formations based on economic and environmental criteria. The research includes a case study in which the model was implemented to design sustainable energy infrastructure for the Technion campus in Haifa. We found photovoltaic (PV) generation and lithium-ion batteries to be the most suitable distributed generation and energy storage technologies to use inside the campus, according to the social and technical criteria. Furthermore, we found an optimal energy infrastructure formation which includes covering 40% of the roof area of the buildings inside the campus with PV modules. Selling residual generated energy to the national grid and buying back up energy from the national grid, showed the best economic results. Applying this infrastructure formation could save the campus over 34 million NIS over a life cycle of 20 years, compared to the current formation which includes buying all needed energy from the national grid. In addition, we found that applying this infrastructure formation could reduce the campus contribution to greenhouse gas emissions by over 26%. The developed model proved to be an efficient and versatile tool for designing urban energy infrastructure.

בברכה,

ד"ר איתי סאס

מרכז הסמינרים