


Event:  
Date:  
Place:

**ENERGY in BUILDINGS 2019**  
Saturday September 28, 2019  
Athens, Hellas



<b>#</b>	<b>Chrysa Politi</b> MSc Mechanical Engineer	
Title:	Researcher at National Technical University of Athens	
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Presentation title:	<b>An Empirical Methodology for Rating Building Thermal Mass as Energy Storage System</b>	
<p>Cities are facing unprecedented challenges in the fields of supply, exchange, and consumption of energy as the pace of urbanization has faced a significant increase. Simultaneously, the increasing demand for electrification by end-use sectors can lead to higher power fluctuations across the daily demand profile. It is documented that the building sector demands 40% of primary energy used within the EU. Managing energy consumption by introducing grid flexibility and offering various innovative approaches for optimal use in both buildings and districts are the keys for a sustainable urbanization in the upcoming years.</p> <p>According to research, Decentralized Energy Systems using Renewable Energy Sources (RES) offer an optimum solution for energy savings and grid flexibility. However, due to the intermittent nature of RES the need for energy storage systems is essential. Used with an optimized control strategy, a thermal mass maintains thermal comfort, stabilizes heating and cooling loads and mitigates peak power demand. This study introduces a flexible way to rate thermal storage capability and its exploitation potential as a short-term energy storage system, by using room temperature data and information of the building construction along with its Heating, Ventilation, and Air-Conditioning (HVAC) equipment. So far, complex procedures are followed, which require extensive input of historical data, human efforts and time by developing models on simulation software. This study presents an empirical methodology for rating and exploiting the building thermal inertia so to enhance RES penetration. The research is based on real data, harvested by an intelligent monitored building in Lavrion Technological and Cultural Park operated solely for research activities. The methodology will provide a tool for real time quantification and evaluation of building thermal mass. The whole system through Building Energy Management Systems will deliver to the market a low cost, reliable tool for efficient and precise control of the HVAC aiming to maximize RES penetration without compromising occupants' comfort levels.</p>		
Short CV:	<p>Chrysa Politi is a Mechanical Engineer and Researcher at the Raw Materials Exploitation &amp; Sustainable Energy Solutions Research Group at the School of Mining and Metallurgical Engineering in National Technical University of Athens. Her current research focuses on energy and her paper will discuss about the empirical methodology for rating building thermal mass as energy storage system.</p>	

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CV:

Chrysa Politi holds a Diploma in Mechanical Engineering from the School of Mechanical Engineering of the National Technical University in Athens. Since 2018, she is a Junior Researcher at the Raw Materials Exploitation & Sustainable Energy Solutions Research Group Laboratory of Metallurgy, School of Mining and Metallurgical Engineering at the same university.

Chrysa is an active member of the Technical Chamber of Greece (TEE) and a Certified Lead Auditor in ISO 14001:2015, ISO 9001:2015 and Customer Service by TÜV HELLAS - TÜV NORD. She is also the co-author of the paper "Performance Analysis of BIPV Prototype System Installed in Greece and Main Affecting Parameters" published at the peer reviewed Journal of Solar & Photoenergy Systems of the Laboratory of Metallurgy, School of Mining and Metallurgical Engineering National Technical University of Athens in Greece.

Keen researcher, Chrysa has attended several international professional and scholarly meetings among which is the Summer School TOP STARS 2019 hosted by the Department of Industrial Engineering University of Trento in focusing on EIT Raw Materials and supported by the EIT Regional Innovation Scheme (EIT RIS).

Among other projects, Chrysa has worked in SmArt BI-directional multi eNergy gAteway (SABINA), the H2020-LCE-01-2016-2017, the Prefabrication Recyclability and Modularity for cost reductions in Smart BIPV systems (PVadapt) and the LC-SC3-RES-6-2018 and Fuel Price Comparison for Consumers (FPC4C). Programme Support Action (PSA).

Chrysa, active in various academic and research fields, is interested in working on Renewable Energy Technology, Solar Energy, Wind Energy, Thermal Power Plants, Sustainability and Raw Materials while she is an expert in relevant software including AutoCAD, CARRIER HDPsyChart, CoolPack, Mathcad Matlab, and Solidworks.

In this year's ASHRAE conference, Chrysa Politi will present a paper entitled: "An empirical methodology for rating building thermal mass as energy storage system."