


Event:  
Date:  
Place:

**ENERGY in BUILDINGS 2019**  
Saturday November 3, 2019  
Athens, Hellas



<b>#</b>	<b>Marcello Aprile</b> PhD in Energy Engineering	
Title:	Politecnico di Milano Researcher, Milano, Italy	
email:	marcello.aprile@polimi.it	•
Presentation title:	<b>Heat4Cool: Smart Retrofitting of Heating and Cooling Systems in Buildings</b>	
<p>Heat4Cool is an ongoing EU project started in October 2016 that brings together engineering companies, manufacturers from the HVAC industry, research institutions and one industry association. The project aims to develop <u>renewable-based solutions</u> for the <u>retrofit of heating and cooling systems at building scale and district scale</u> and to demonstrate energy savings with an attractive payback period. The developed solutions are briefly presented, including 1) new fast simulation tool for the selection of the best energy system configurations, 2) adsorption chiller with new adsorbent; 3) dual ported PCM storage with options of different melting temperatures, 3) wastewater heat recovery system with self-cleaning features for district heating and cooling, 4) building energy management system to track user's preferences and behavior. Next, different pre-configured systems under construction in four demo sites are presented. They are very diverse in terms of boundary conditions, like climate, construction year, heating and cooling demand. Three (Sofia, Valencia, Chorzow) are multifamily houses in which PV and solar thermal energy and heat pumps are combined for heating and cooling, and one (Budapest) is a district heating and cooling system based on a wastewater heat recovery system and a large capacity heat pump. The expected performances are promising: about 30% energy savings with payback period of about 10 years for the average EU market conditions.</p>		
CV:	<p>Dr. Eng. Marcello Aprile is currently Researcher and Adjunct Professor at the Department of Energy of Politecnico di Milano. He has obtained a Master degree in Mechanical Engineering at Politecnico di Milano in 1995, a Master of Science degree in Solar Engineering at Dalarna University (SE) in 2006, PhD on Energy Engineering at Politecnico di Milano in 2010. His main research interests are: building physics, HVAC systems for low energy houses, solar assisted air-conditioning and refrigeration, solar thermal technologies, thermally driven heat pumps, performance assessment of heating and cooling systems in real operating conditions, district heating and cooling. From 2006 to 2018 he has been involved in the activities of Task 38 and Task 48 of the Solar Heating and Cooling programme of the International Energy Agency (IEA-SHC) on solar cooling issues, and Annex 43 IEA-HPP on fuel driven sorption heat pumps. He is member of CEN TC299 and co-author of about 50 scientific papers. He has been involved in several research and innovation EU funded and national projects since 2006 focusing on the integration of energy efficient heating and cooling systems combined by renewable energy sources (PV, solar thermal) in buildings and district heating and cooling networks.</p>	