

#	<p>DIMITRIOS APOSTOLOU BSc Electrical Engineer MSc in Energy</p>	
Title:	Research Assistant - Tutor Lab of Soft Energy Applications & Environmental Protection Piraeus University of Applied Sciences	
Presentation title:	<p>Experimental Investigation of a Fuel Cell Hybrid System for Transport Applications</p>	
<p>Hydrogen is one of the most abundant molecules in the universe and comprises the lightest and simplest element of the periodic table. During the last decades it has been widely used in the industrial sector including among others oil refineries and metallurgical processes via chemical procedures. On the other hand, due to its properties it presents a highly sustainable behavior and thus it can be used in several non-fossil fuel applications as an energy medium.</p> <p>A typical H₂ based system consists of three main parts: the production, the storage, and the utilization configuration. This paper investigates the performance of a H₂ based system by utilizing an advanced experimental unit at the Soft Energy and Environmental Protection Laboratory (SEALAB) of the Piraeus University of Applied Sciences. The experimental setup is appropriate, among others, for evaluating the operation of a fuel cell hybrid system used in contemporary pilot fuel cell electric scooters (FCES). Similar to these city-oriented FCES, the hydrogen system comprises a storage module of metal hydride canisters, a Proton Exchange Membrane (PEM) fuel cell, a power management module (DC/DC converter), a battery bank module, a DC load simulator and a computer control unit.</p> <p>Through the control unit's software, the DC load module can be programmed to simulate a DC motor that is used by small city FCES at different operating conditions. These programmable load profiles are based on the simulated power demand of a 1.5 kW city FCES through the discrete Markov process by using the Worldwide Harmonized Light Vehicles Test Procedures (WLTP) Class 1, found in the peer-reviewed literature. The obtained results indicate the operational parameters of the hybrid system concerning the efficiency, the hydrogen production and the overall fuel cell behavior under different loads met in the transportation sector.</p>		
CV:	<p>Apostolou Dimitrios MSc. holds an Electrical Engineering Degree from the Piraeus University of Applied Sciences (TEI of Piraeus) and an MSc in Energy Degree from Scotland's Heriot Watt University. Currently, he belongs to the research team of the Laboratory of Soft Energy Applications & Environmental of the Piraeus University of Applied Sciences. He has experience in electrical maintenance and installations concerning the building sector and the Audio Engineering industry. His main research activity includes Hydrogen-based Systems for stationary (e.g. renewable energy storage) and mobile (e.g. fuel cell cars) applications. In the recent years he has been studying the evolution of Hydrogen technologies and their penetration possibilities in the energy and green vehicle markets.</p>	