

Lunedì 28 maggio 2018 ore 09:00-11:00

Aula 3 – Polo Scientifico Tecnologico (Cattedrale)

Università degli Studi di Ferrara

Challenges and Opportunities in Lithium ion Batteries as the Future in Energy Storage

Seminario tenuto dal

Prof. Marcello Canova - Center for Automotive Research, The Ohio State University

all'interno del corso "Sistemi di conversione dell'energia da fonti rinnovabili"

Introduce

Prof. Mirko Morini – Dipartimento di Ingegneria e Architettura, Università degli Studi di Parma

Abstract

Lithium ion batteries (LIB) are today the key technical solution to design the Energy Storage System (ESS) for electrified transportation and stationary power applications. On the other hand, commercial Lithium ion batteries today feature energy density in the range of 250-300Wh/kg and costs in the order of \$250/kWh at the cell level. Significant advancements in the development of new materials, as well as progress in system integration, control and management solutions are necessary to increase the energy density and lower costs, key requirements to accelerate the growth of electrified propulsion systems and overcome the current limits in power or range.

This seminar presents a broad overview of the key R&D challenges and opportunities in Lithium ion battery technology, with focus on automotive (BEVs, PHEVs, HEVs) and aerospace (hybrid-electric aircrafts) transportation. Additionally, the seminar will introduce new development in LIB materials that promise energy density above 350Wh/kg (Lithium metal, Lithium Sulfur and Lithium Silicon), as well as innovative application of LIB as secondary storage units for fast charging and extreme fast charging (XFC) stations.

Note biografiche



Marcello Canova is Associate Professor in Mechanical Engineering and Associate Director of the Center for Automotive Research, at The Ohio State University. He earned his Diploma di Laurea “Summa Cum Laude” and his Ph.D. in Mechanical Engineering from the University of Parma (Italy).

Dr. Canova conducts research in the area of thermal sciences and energy systems, with emphasis on modeling, optimization and associated control problems. His research has been funded by, among others, Ford, General Motors, Fiat Chrysler Automobiles, Cummins, the National Science Foundation, the US Department of Energy and ARPA-E.

Dr. Canova is a 2016 NSF CAREER Award recipient, and he has earned the Kappa Delta Distinguished Faculty Award (2011), the SAE Vincent Bendix Automotive Electronics Engineering Award (2011), the Lumley Interdisciplinary Research Award (2012), the SAE Ralph Teetor Educational Award (2016), the Lumley Research Award (2016) and the Michael J. Moran Award for Excellence in Teaching (2017). He has published over 120 articles in peer-reviewed journals and conference proceedings.