

Tuesday 12 February 2019

10:15 – 12:15

P2-216, University of Lille

Sustainable development on Energy Storage using Supercapacitors

Prof. Philippe Barrade
University of Applied Sciences of Sion
Switzerland

Abstract:

Energy storage is not a new topic. A lot of devices developed in electrical engineering from more than one century are accumulators: batteries, hydro-pump facilities, etc... However, R&D activities on energy storage are still activities of a great importance, regarding the actual and futures needs for an improved and efficient energy management in various systems, from low power applications up to large scale installations. It is worse to underline that the universal accumulator still does not exist. For a given application, one has to choose upon a large family of different technologies the particular accumulator that matches the specified requirements. A promising storage technology that exists today is based on the use of supercapacitors. These accumulators offer a high power density coupled with a high energy density. This seminar will present such components, their main principle and properties. The design of a supercapacitive tank will be discussed, that must take into account energy and power requirements, but also some thermal considerations. The needed power electronics interfaces will be introduced. Finally, the typical applications for supercapacitors will be presented from various examples.

About the Speaker



Dr. Philippe Barrade was born in Cahors, France, on March 12, 1968. In 1997, he received the Ph.D. degree in Electrical Engineering from INP, Toulouse, France. In 1998, he was working at SAFT, in the field of power electronics and energy management for UPS applications. From 1999 to 2014, he was First Assistant, Lecturer at Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland. Since 2015, he is Professor at University of Applied Sciences of Sion, Switzerland. His main research fields are power electronics applications, energy management and storage, including multiphysics finite element analysis.

In 2011, He was co-chair of the EMR'11 Summer School at EPF Lausanne, and lecturer at EMR'09, EMR'12, EMR13, EMR'15 and EMR'17.