



**University of Pavia**

**Ph.D. School of Electrical and Electronics Engineering and Computer Science**

## **SEMINAR**

### **Design criteria for high power salient-pole generators: sizing and electromagnetic calculation**

***Eng. Pietro Sforzini***  
***former Project Manager at Alstom***

24 May 2016, h 14:00÷17:00

Seminar Room, floor E

Polo Didattico Ingegneria

Università degli Studi di Pavia – Via Ferrata 5 - Pavia

**Abstract:** The seminar will be focused on insights related to the salient-pole synchronous generators of high power, employed in the hydroelectric energy production. First of all, the main methods for the design of this kind of electrical machine will be presented: in particular, the classical theory, the Finite Element Analysis and the magnetic flux maps will be analyzed. Afterwards, the construction aspects will be illustrated, with particular reference to: stator, rotor, miscellaneous parts and cooling technologies. Moreover, the basic tools for the electromagnetic and thermal calculations will be presented and numerical examples for hydro-generators in a wide range of poles number will be discussed. Finally, the major diagrams related to the different working conditions of the salient-pole generators will be analyzed: characteristics at no-load and in short circuit, active and reactive power diagrams, V curves.

**Bio:** Pietro Sforzini obtained his MSc degree in Electrical Engineering at the University of Pavia in 1977. He joined Ercole Marelli in 1978: this firm changed his property in ABB (1988) and, subsequently, in ALSTOM (2000), where he has been working until the retirement (April 2015). His main fields of activity have been the following: design of synchronous generators, in particular turbo-generators, as specialist in electromagnetic and thermal calculation (1978-90); responsible of Manufacturing Engineering (1990-96); project management and sales (1996-99); customer service for the Generator Engineering Dept. (1999-2015). He collaborated with Politecnico di Milano for some esercitations in 1982 and with University of Pavia, since 1984 until today, for esercitations, seminars, lessons and theses. He published some papers on specialized journals.

#### **Organizer**

Dr. Lucia Frosini

#### **Ph.D. Coordinator**

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Seminar in Italian

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