



DIPARTIMENTO DI INGEGNERIA INDUSTRIALE

DEVELOPING HI-TECH DEVICES: AN INDUSTRIAL POINT OF VIEW

Abstract: The seminar will focus on how research and development activities unfold within an industrial frame, considering the radically different cases of a) designing a completely new device or b) improving the characteristics of an existing device, from first development stages to performance verification, lifetime testing and pre-series production. The following aspects will be covered:

- Designing new device: Market Study, Differences between Academic and Industrial Research, Patent and Intellectual property analyses, Design of Experiment, the role of mathematical and physics models. Specific examples will be provided on the case of circuit breakers: arc mobility, exothermal reaction overpressure, metal erosion, plastic evaporation, new simulating tools.
- Developing an existing device: state of the art analysis, Digital twin and calibration of the model on test result, strategies to limit developing times reducing the number of prototypes to be tested. Specific examples will be provided on the case of circuit breakers: digital twin 3D cad model, mechanical analyses, analyses of different mechanism FEM models, dynamic analyses, dimensioning of components and choice of materials (plastics and metals), simulation environments (e.g. Ansys Fluent, Ansys Maxwell).



Speaker bio: Eng. Dr. Gianmatteo Cantoro is lead engineer of the "Arc Modelling Simulations Centre of Excellence" team at the Eaton European Innovation Centre in Prague (Eaton EEIC)

He is responsible for leading projects of new design devices Low Voltage and Medium voltage switch gears dealing with core design and analysis, breakdown and arc simulations.

Eng. Dr. Gianmatteo Cantoro holds a master degree in Mechanical Engineer and a PhD in Mechanics of material and process technology.

Program:

Date: 14th November 15.00-18.00

Where: room TA10, Ingegneria - Plesso Terracini, via Terracini 28, Bologna ([Teams link](#))

Date: 16th November 15.00-18.00

Where: room TS01, Ingegneria - Plesso Terracini, via Terracini 28, Bologna ([Teams link](#))

Date: 21st November 9.30-12.30

Where: room TS01, Ingegneria - Plesso Terracini, via Terracini 28, Bologna ([Teams link](#))

Date: 23rd November 15.00-18.00

Where: room TS01, Ingegneria - Plesso Terracini, via Terracini 28, Bologna ([Teams link](#))