MECHANICAL ENGINEERING

DIMEAS - Analisys of Renewable Energy Sources, Design Operation and Maintenance

Funded By	Dipartimento DIMEAS
Supervisor	BRACCO GIOVANNI - giovanni.bracco@polito.it
Contact	BRACCO GIOVANNI - giovanni.bracco@polito.it CARAPELLESE FABIO - fabio.carapellese@polito.it
Context of the research activity	The research objectives include mathematical modeling and experimental testing of renewable energy systems, with a focus on structural modeling for design and maintenance, service operation design and scheduling, and the application of innovative materials.
Objectives	The PhD candidate will investigate structural and dynamic aspects of renewable energy systems, with particular attention to wind energy applications. The research will focus on the modeling, analysis, and experimental validation of structural behavior under operational and environmental loads, aiming at the development of advanced structural health monitoring techniques and predictive models for damage detection, performance assessment, and remaining useful life estimation. The activity will integrate numerical simulations, data-driven approaches, and experimental testing to support improved reliability, maintenance planning, and lifecycle management of renewable energy infrastructures.
Skills and competencies for the development of the activity	Candidates should have a strong background in modelling of energy conversion systems as well as a high motivation to learn through advanced research. Expertise in dynamics and development of simulation tools. Practical attitude for problem-solving skills are also appreciated.