HISTORY OF THE DEPARTMENT

The University "Politecnico di Milano" was founded in 1863. Its mission is to teach technologies and educate students to become researchers. The University is continuously updating its tradition as a school that focuses on quality and innovation in teaching and research. Scientific research at Politecnico di Milano has always been oriented toward innovation and quality, always seeking a strong relationship with the industrial world through technology transfer. Attuning to the needs of the industrial sector helps research to continuously explore new areas and stay at the leading edge of science and technology.

The scientific community of Politecnico di Milano is made of more than 1,300 professors and research fellows, with 38,200 students (2013 update). According to QS World University Rankings 2012/2013, Politecnico di Milano ranked 28th worldwide in the area of Engineering and Technology. On a worldwide scale, it is the first Italian university entering the QS ranking among the top 30 technical universities. Furthermore, Politecnico di Milano participates in the coveted "club" of universities ranked in the top 100 in the world in the most prominent international rankings, along with only 15 other European universities.

Politecnico di Milano is currently articulated in 12 departments, where research is co-ordinated and carried out, and 6 schools, where education is co-ordinated and implemented. Several service Centres provide support for technical and administrative purposes.

DIPARTIMENTO DI SCIENZE E TECNOLOGIE AEROSPAZIALI

The Dipartimento di Scienze e Tecnologie Aerospaziali (Department of Aerospace Science and Technology, DAER-PoliMi) was established within Politecnico di Milano as an autonomous institute in the 1950s. The personnel of DAER-PoliMi currently consists of 43 faculty, 27 technical and administration staff, 70 research assistants and Ph.D. students. The main activity within the Department is scientific research.

The Department itself is the main reference body for the B.Sc. (Laurea) course in Aerospace Engineering, the M.Sc. (Laurea Magistrale) course in Aeronautical Engineering and Space Engineering, and the Ph.D. (Dottorato di Ricerca) course in Aerospace Engineering. M.Sc. and Ph.D. courses are offered in English. Each year, about 250 students complete the B.Sc., 180 the M.Sc., and 15 the Ph.D. In parallel, DAER-PoliMi staff is strongly involved in several research activities with academia, industries and research bodies worldwide. Politecnico di Milano Department of Aerospace Science and Technology (DAER)

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DOVE SIAMO

CAMPUS BOVISA - La Masa e Candiani

LA MASA Aerodin Experimental Tes and Technologica B12 Dipartimento di Scienze e Tecnologie Aerospaziali nace Propulsion B13 Educational Labs CANDIANI <mark>B6</mark> La S.T



DIPARTIMENTO DI SCIENZE E TECNOLOGIE AEROSPAZIALI

SCIENTIFIC LAB

FMSIab - Flight Mechanics & Flight Systems Laboratory



SCIENTIFIC LABS

DEPARTMENT OF AEROSPACE SCIENCE AND TECHNOLOGY (DAER)

Research activities within the Aerospace Science and Technology Department (DAER) of Politecnico di Milano are organized in scientific laboratories. These laboratories represent the core of the research competences developed at DAER over the years. They are highly specialized, agile and vital competence centers.

SCIENTIFIC LABS

The Department has formed 14 research laboratories, which contribute to the majority of research activities.

- AMATECH Aerospace MAterials and TECHnologies
- ASCL Aerospace Systems and Control Lab
- ASDL AeroStructures Design Lab
- AVLab Aeroelasticity and Vibroacoustics Lab
- CrashLab
- FlowCon Instability and Flow Control Lab
- FMSlab Flight Mechanics & Flight Systems Lab
- FRAME Fixed and Rotary-wing Aircraft Multidisciplinary Eng.
- PFDLab Physical Fluid Dynamics Lab
- POLI-Wind Wind Energy Lab
- RAL Rotorcraft Aerodynamics Lab
- SIAMS Structural Integrity of Advanced Materials and Structures
- SME Space Missions Engineering
- SPLab Space Propulsion Laboratory and Nanoenergetics

FMSLAB

FLIGHT MECHANICS & FLIGHT SYSTEMS LABORATORY

The FMSlab specializes in the development of design, analysis and testing methodologies of aircraft and rotorcraft systems and operations.

Areas of research include: fixed- and rotary-wing aircraft conceptual/preliminary design, modelling and simulation; performance and handling qualities analysis; design, analysis and testing of onboard sensor systems, actuator systems and cockpit instrumentation; mission planning, trajectory optimization; flight testing. Several collaborative projects in the recent past have been carried out with rotorcraft manufacturers (Leonardo Helicopters, K4A, Aermatica), airplane manufacturers (Pipistrel, Elytron, Ing. Nando Groppo), aerospace system manufacturers (Umbra-Group, Logic, MBVision).

Research activities include participation in a number of programs sponsored by the EU (FP6, FP7, Clean Sky H2020), the U.S. Army, the Italian Ministry of Industry, and Regione Lombardia.



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ONGOING ACTIVITIES

- Innovative contactless rotor flapping measurement systems.
- New cockpit instrument for rotorcraft noise monitoring (Pilot Acoustic Indicator).
- Modelling, control and dynamics of innovative twobladed helicopters.
- Simulation of low-noise rotorcraft terminal trajectories.
- Flight testing for the development and certification of a new ultralight aircraft.
- Automated flight test procedures for UAVs.
- Innovative flight test instrumentation system for light aircraft.
- Optimal design of flying wing aircraft.
- Innovative solutions for the Italian aerial firefighting system.
- Optimal trajectory planning for agricultural and environmental aerial missions.
- Optimal deployment of aircraft fleets with operational and economic constraints.

FUTURE PLANS

- Hybrid propulsion solutions for aviation.
- Enhancement of performance of comprehensive rotorcraft simulation tools.
- Validation of a novel formulation for airplane trim and stability through flight testing.

ERC KEYWORDS

- PE8_1 Aerospace engineering
- PE8_4 Computational engineering
- PE7_1 Control engineering
- PE7_3 Simulation engineering and modelling

FREE KEYWORDS

- Aircraft design.
- Fixed-wing aircraft modelling and simulation.
- Rotary-wing aircraft modelling and simulation.
- Trajectory optimization.
- Onboard sensor systems.
- Cockpit instrumentation.
- Flight testing.