ING-IND/06
FLUID DYNAMICS Labs

Aerodynamics

- **Subsonic Wind tunnel**, with a circular cross-section of about 1 m in diameter and a maximum air velocity of 50 m/s. Equipment: Multi-hole Pitot Tubes, Pressure Gauge, Particle Image Velocimetry System (PIV), Continuous and Pulse Laser, High-Speed Video Camera (up to 100,000 frames per second), PIV, video and photo cross-correlation video camera Commercial camera, 30-frame lenses and video camera, Laser Doppler Anemometer (LDA) systems, Hot Wire Anemometer (HWA) and Ultrasound Anemometer (UA), three-component dynamometer scale. Oil Pressure Generator (Laskin nozzle). Models of wings and ailerons, wind turbines (HAWT and VAWT), cars, MAV,and other geometries.

- **Anechoic wind tunnel**, with a standing chamber connected to a high pressure system. The section of the chamber is circular (diameter 50 cm) and the velocity of an input jet can range from 50 m/s to more than 450 m/s depending on the jet output diameter. Equipment: 8 microphones (1/4 in Bruel-Kjaer 4939) connected to a PULSE X-3570 scan system. Set of Absolute and Differential Pressure Gauges (MKS). Set of air and nitrogen flow meters (MKS). Nozzles of various sizes and shapes.

- **Shrinkage in water**, with a maximum speed of 10 m/s and an outlet section of 2 cm in diameter, has a square cross-section measuring area of 50 cm side and 80 cm length.
- **Water duct**, with a maximum output speed of 1 m/s and an outlet section of about 2 cm in diameter, has a square cross-section measuring area of 80 cm side and 120 cm length.
- **Water-jet orifice**, continuous and pulse configuration with a 3 cm output diameter , with a square cross-section area of 50 cm side and 60 cm length. It is equipped with remotely controlled linear gear to generate pulsed flows with assigned forcing.

Other equipment: magnetic flow-meters for water pipes.