

TECHNOLOGICAL LABORATORY

Tech Lab is the structure which deals with the manufacture of components and equipments

Laboratory Manager: Ing. Silvio Ferragina



DIPARTIMENTO DI SCIENZE E TECNOLOGIE AEROSPAZIALI

Description

Tech Lab is divided into three main areas:

- Conventional technological processes.
- Composite and SMART Structures.
- Non-Destructive testing.

Area 2 is able to produce components and structures made of composite materials, through filament winding or clean room lamination plus autoclave, oven or heated-platen press curing. Area 3 evaluates the properties of a component without causing damage.

Accredited Staff

N.1 qualified technician to optical stereo-microscopy.

References

Most of the laboratory work is done toward departmental research.

Laboratory Manager

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Instrumentation & Facilities 5-axis CNC machining centre.

- Autoclave (450 °C, 16bar, 1m diameter, 2.5m length)
- 100.000-class clean room (-18 °C refrigerated warehouse).
- Curing oven (200 °C, 1x1x5m dimensions).
- 3 d.o.f. filament winding machine (mandrel 5m long)
- Heated-platen press (200 °C, 10bar, 0.5x05m platens dimensions).
- Optical stereo-microscopy (magnification range 10X-120X) provided with digital image analyzer.
- Immersion transmission and time-of-flight ultrasonoscopy (1.5x0.8x1.0 tank dimensions).
- Opaque-enhanced dye penetrant stereo-radiography (voltage 70 keV, 0.4 beryllium focal spot).
- Thermography (spectral range 3-5_m, temperature range from -20 to +250 °C).

Activities

Design, modeling and production, with dedicated software, on specifications provided

Manufacturing of components, semi-finished products, and tools in the mechanical and aerospace sector using:

- Traditional processing techniques typical of metallic materials.
- Processing techniques typical of composite materials (autoclave, curing oven, heated-platen press or 3 d.o.f. filament winding machine).

Manufacturing of scale prototypes for wind gallery testing

Manufacturing of equipment for the implementation of structural tests

Manufacturing of equipment (molds) in order to obtain parts in composite materials

Manufacturing of specimens for characterization tests (metallic and composite materials)

Polymerization cycles for composite materials (autoclave, curing oven or heated-platen press)

Non-Destructive tests (stereo-radiographic and thermographic analyzes, penetrating fluids)

