



TURMA

Identification of the installation/facility :

Country: France

City: Modane

Name of the facility: TURMA

Date of construction or of acquisition or of main refurbishment ~2005

Owner Onera/French MOD

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Internet site <http://windtunnel.onera.fr>

Technical characteristics:

1 - Type of infrastructure : Wind tunnel for turbine development

2 - Main technical characteristics

A test bench dedicated to turbine development and understanding. Test rig for two stage turbine, co or contrarotative turbines.

The maximum mass flow is 11 kg/s, supplied by two of three 9 bar air compressors of the CMA. The pressure ratio of the two stages is such that the discharge is at a pressure lower than the atmospheric pressure, which requires the extraction of the air by means of a compressor of 2.5 MW. The bench can accommodate a range of models corresponding to present or future designs having actual size or slightly sub-scale. The energy supplied by the turbines is absorbed by hydraulic brakes, with the following characteristics:

3 - Research domains which can be addressed (refer to ACARE taxonomy <http://www.acare4europe.com/docs/ASD-Annex-final-211004-out-asd.pdf>): turbine design, aerodynamic research.

4 - Main (or specific) associated measurement techniques :

- Steady and unsteady pressure measurements between turbine stage.

5 - Operational status - Fully operational

6 - picture





Financial elements:

Replacement cost (MEuros): 20 M€

Practices concerning:

Access policy (contract, voucher, free access for research, etc...) : contractual relationships with customers based on a quotation of a test matrix

Support (regional, national, European, private, ...) : self-sustaining facility for operation purposes. Investments and upgrades partially funded by national and local supports.

Origin of information: Patrick Wagner, Director Wind Tunnel Division at ONERA – March 2011