



WT S3MA

Identification of the installation/facility :

Country: France

City : Modane

Name of the facility: S3MA

Date of construction or of acquisition or of main refurbishment ~1950

Owner Onera/French MOD

Contact point : jean-pierre.foucault@onera.fr / stephen.wolf@onera.fr

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

Technical characteristics:

1 - Type of infrastructure : Wind tunnel

2 - Main technical characteristics

Blow down pressurized wind tunnel, from Mach 0.1 to Mach 5.5

Test section: transonic $0.76 \times 0.68 \text{ m}^2$ - Supersonic $0.76 \times 0.80 \text{ m}^2$

Stagnation pressure: from 0.2 bar to 7.5 bar (depending on nozzle and Mach number). Stagnation temperature generated by electrical storage heater: maximum 530 K.

Typical test:

- Force and/or pressure measurements on missile models.
- Air intakes (steady and unsteady measurements).
- Models equipped with cold jet (compressed air) or hot jet (rocket engine).
- Optronic systems.
- Radome erosion by rain or sand.
- Airfoil or helicopter blade aerodynamic data.
- Unsteady measurements on pitch oscillating profile model.
- Heat transfer measurements.

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

4 - Main (or specific) associated measurement techniques :

- Schlieren visualization
- Flow meter for air intake tests.
- Temperature measurement by thermocouples or infrared thermography.
- Load measurement by ONERA 6 component balance and hinge moment balance.
- Laser velocimetry on request.

5 - Operational status - Fully operational



6 - Picture:



S3 Modane

Financial elements:

Replacement cost (MEuros): 40 - 60 Meuros

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