



WT S2 MA Onera France

Identification of the installation/facility :

Country France
City Modane
Name of the facility S2MA
Date of construction or of acquisition or of main refurbishment ~1950
Owner Onera/French MOD
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Internet site <http://windtunnel.onera.fr>

Technical characteristics:

1 - Type of infrastructure : Wind tunnel

2 - Main technical characteristics

Continuous-flow wind tunnel, Variable pressure, Mach 0.1 to Mach 3.1. Continuous pressurized sub/trans/supersonic - 55 MW - Test section: Transonic 1.75x 1.77 m² and supersonic 1.75 x 1.93 m².

An S2MA experiment is capable of providing an initial data-base within a matter of 3 to 4 months . Global measurement approach using techniques such as 360° PSP and MDM. Fast configuration changes. Wall corrections validated with the large S1MA tunnel. Extensively used by a number of worldwide.

Typical test: longitudinal and lateral force tests, air intakes (steady and unsteady measurement), Store release (jettison test and captive trajectory system), Dynamic stability tests, Buffeting and flutter tests, nacelle/pylon/wing interference (blow/TPS nacelles), fuselage aft end test (geometry effects, sting and jet interference), transverse jet simulation on rolling models, parietal pressures.

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 : steady and unsteady measurements, 6 component aerodynamic loads (balances), wall mounted balance, hinge moments, Model Deformation Measurement (MDM), Pressure sensitive paint (PSP), Infra-red, wall and sting interference effects, automated models, real time data processing, highly complex models,

5 - Operational status - Fully operational, has been extensively used over the last decade for missile and business jet studies



6 - Picture:

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Financial elements:

Replacement cost (MEuros): 60-100 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