



S4B WT test rig

Identification of the installation/facility :

Country : France
City: Modane
Name of the facility: S4B
Date of construction or of acquisition or of main refurbishment ~1970
Owner Onera/French MOD
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Internet site <http://windtunnel.onera.fr>

Technical characteristics:

1 - Type of infrastructure : Model engine calibration

2 - Main technical characteristics:

Vacuum chamber for engine simulator thrust calibration. Typical tests

- Nozzle thrust tests with altitude simulation.
- Direct or reverse jet model engine calibration, with simulation of the wind tunnel test conditions.
- Through Flow Nacelles calibrations.
- Thrust reversers calibrations and jet angularities.

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 measurements and unsteady measurements
- Steady pressures
- Temperature measurement
- Load measurement by six components balances (decoupling device for air flow crossing through)
- Sonic throat mass flow meters for the primary and fan jets.

Accuracy:

- the uncertainties in the 4" test rig with the Ø 100 mm reference nozzle are (from test campaigns between 1987 and 2009),
- flow coefficient: $\pm 0,1$ % in 86 % of the test cases,
- Thrust coefficient: $\pm 0,15$ % in 81 % of the test cases.

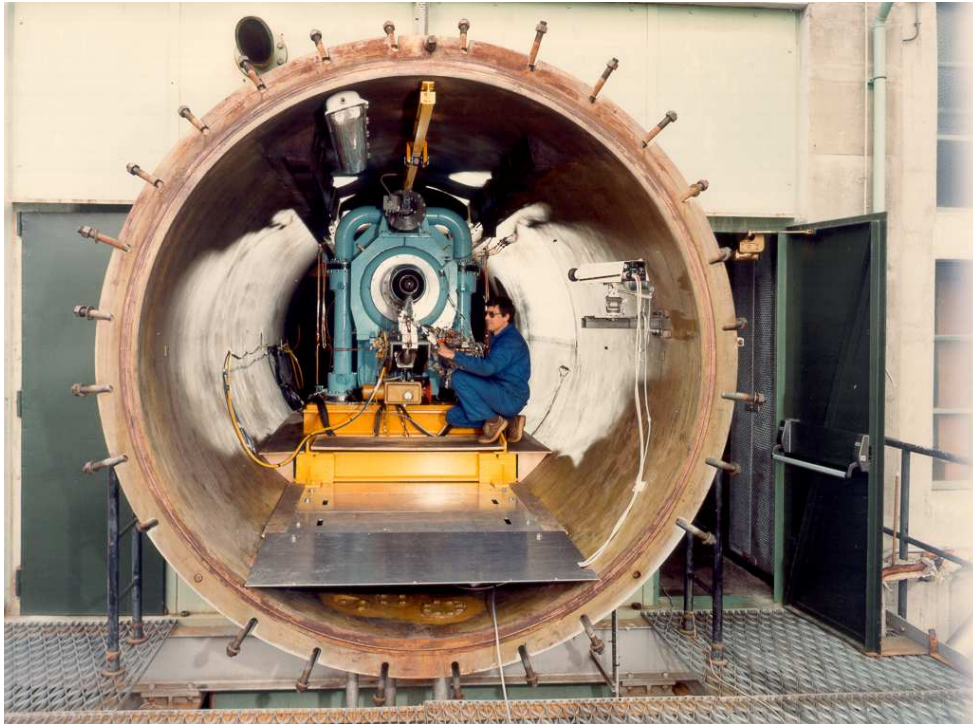
5 - Operational status - Fully operational.

Financial elements:

Replacement cost (MEuros): 20-30



6 - Picture:



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