



Identification of the installation/facility:

Country: France
Location (city): Saclay
Name of the facility: R6
Date of main refurbishment: 2004
Owner: DGA Aero-engine Testing
Contact point: Franky Le Mézo
Internet site: <http://www.defense.gouv.fr/dga/la-dga2/expertise-et-essais/dga-essais-propulseurs>

Technical characteristics:

1 - Type of infrastructure

Wind tunnel	☐
Propulsion bench	☒
Structures facility	☐
Material facility	☐
Simulator (ex. Flight simulator, tower, ...)	☐
Flight test bed (aircraft, embedded facilities, ...)	☐
Supercomputers	☐
Other	☐

2 - Main technical characteristics

Dimensions:

- Overall length: 30 m
- Internal diameter: 5 m

Operating range:

- Inlet temperature: from -65°C up to 100°C (-85°F up to 212°F)
- Inlet pressure: from 5 kPa up to 350 kPa (0.7 psi up to 50 psi)
- Air flow: up to 140 kg/s (up to 306 lb/s)
- Icing Cloud diameters: 0.7 / 0.82 / 0.9 / 1.3 / 1.8 m (2.3 / 2.7 / 2.9 / 4.2 / 5.9 ft)

3 - Research domains which can be addressed

Propulsion - Performance
Propulsion - Combustion
Propulsion - Air-breathing propulsion
Propulsion - Engine controls
Integrated Design & Validation (methods & tools) - Flight/Ground Tests

4 - Main (or specific) associated measurement techniques

The measuring capability of the rig is up to 1,500 measurements.
The maximum acquisition frequency is 100 Hz.

Characteristics:



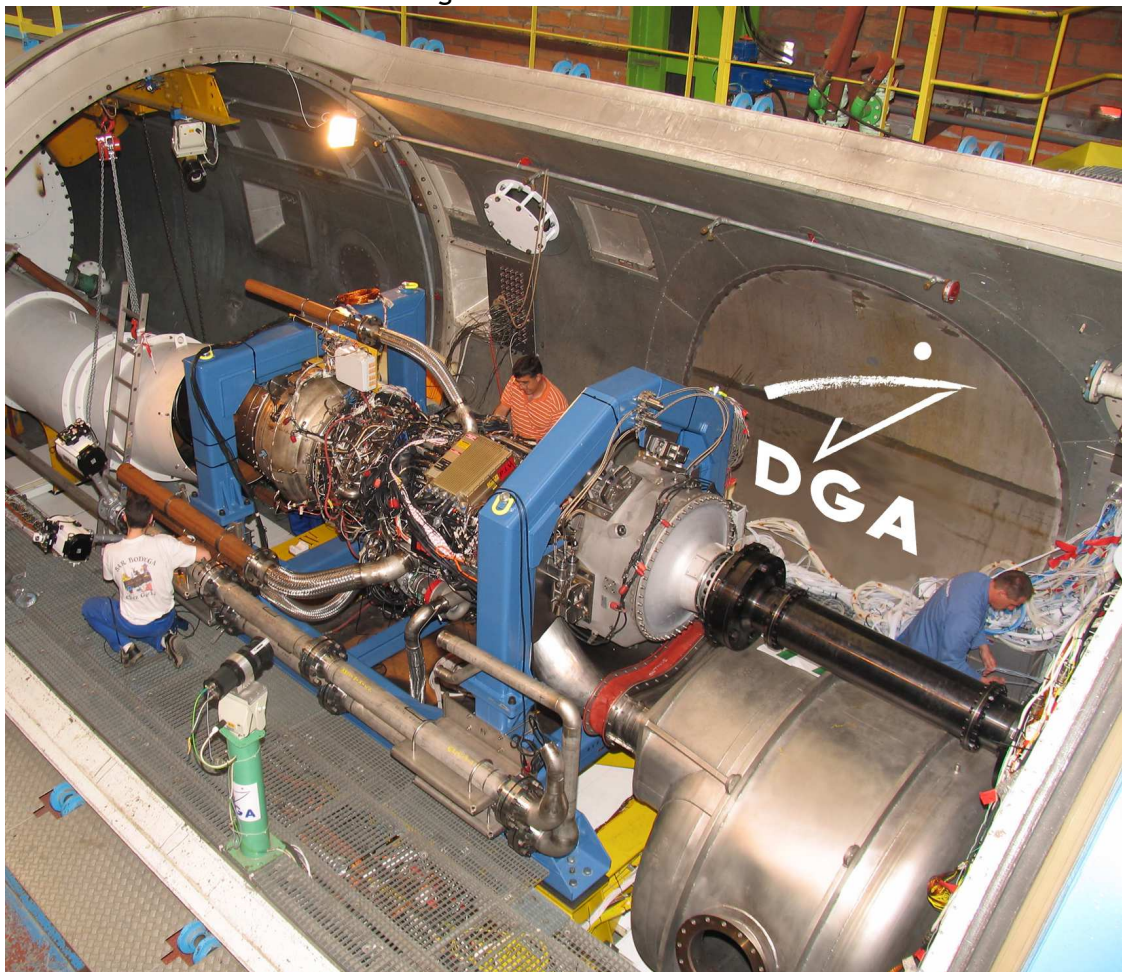
- Pneumatic pressures: 60 by single channels, 600 by multiplexed channels.
- Hydraulic pressures: 60 by single channels.
- Temperatures: 480 by thermocouples of all types, 60 by platinum probes.
- Electrical signals (voltages, amperages, etc.) : 50 channels
- Velocities - Flow rates: 30 channels
- Humidity: 1 measurement.
- Dynamic: 16 x 3-pin, 32 x 12-pin («12-pin» can be divided into 4 x 3), 2 28-track magnetic recorders.
- Video: fixed cameras - 4 cameras with framing capability, capability of connecting up to 8 VCRs.
- Photography: 4 photographic sequence options, manual shots on request.
- Thrust measurement stand for jet engine configuration.
- Torque measurement system for turboprop configuration.
- Aerodynamic measurement stand, with an automatic system for the variation of the profile angle of attack during the test.
- Droplets size distribution measurement.
- IR measurement on request.
- Icing shape measurements

5 - Operational status

- Fully operational in 2013

6 - Picture

Figure 1: Internal view





AirTN
Air Transport Net



Financial elements:

Replacement cost (M€uros)*

Less than 10 ☐

10 to 30 ☐

30 to 60 ☐

60 to 100 ☐

More than 100 ☒

* : air supply and exhaust facilities, shared with other test facilities, excluded
(replacement cost: 500 Meuros)

Practices concerning:

Access policy: contract

Comments:

Test bench with simulated altitude capabilities.

Turbojet, turboshaft and turbo-propeller engines (with brake), in free jet or connected mode including icing flight conditions, with or without air intakes.

Origin of information: Franky Le Mézo – Avril 2013