Identification of the installation/facility:

Country: Germany
Location (city): Göttingen
Name of the facility: DNW-TWG
Date of construction or of acquisition or of main refurbishment: 1964/2010
Owner: DNW
Contact point: H.B.Vos
Internet site: www.dnw.aero

Technical characteristics:

1 - Type of infrastructure

Wind tunnel	[X]
Propulsion bench	[ ]
Structures facility	[ ]
Material facility	[ ]
Simulator (ex. Flight simulator, tower, …)	[ ]
Flight test bed (aircraft, embedded facilities, …)	[ ]
Supercomputers	[ ]
Other	[ ]

2 - Main technical characteristics

Closed circuit, continuous, sub-, trans- and supersonic wind tunnel with three exchangeable test sections

Main features

Test sections

- 1 m x 1 m with adaptive walls
- 1 m x 1 m with perforated walls
- 1 m x 1 m with flexible Laval nozzle

Operating range

- $0.3 \leq Ma \leq 2.2$
- $30\ kPa \leq P \leq 150\ kPa$
- $Re_{0.1/(S)} \leq 1.8 \times 10^6$
- $293\ K \leq T \leq 315\ K$

Model support

- Sword with integrated roll support
- Remotely controlled roll adapters
- Dynamic roll adapter
- Remotely controlled static and dynamic 2D/half-model supports

Auxiliary systems

- Vacuum system
- Pressurized air supply

Typical tests

- 2D airfoil tests with flow control devices (e.g. vortex generators, suction, blowing, ventilation, trailing edge devices, MEMs), helicopter blades
- Configuration studies, data set determination of 3D models (missiles, fighters, spacecraft).
- Air intake surveys for fighters and missiles
- Drag bookkeeping with through-flow ducts
- Dynamic tests: free and forced pitch oscillation of dynamically scaled flexible 2D and half-models; flutter and limit cycle oscillation; dynamically linked substructures (nacelle, flap); forced and free-to-roll maneuvers
- Air data system and probe calibration

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

1. Flight Physics
    a. Aeronautical Propulsion Integration
    b. Airflow Control
    c. High Lift Devices
    d. External Noise Prediction
3. Propulsion
    a. Performance (Nacelle/Thrust reverser/nozzle design)
10. Innovative Concepts and Scenarios
    a. Unconventional configurations and new aircraft concepts

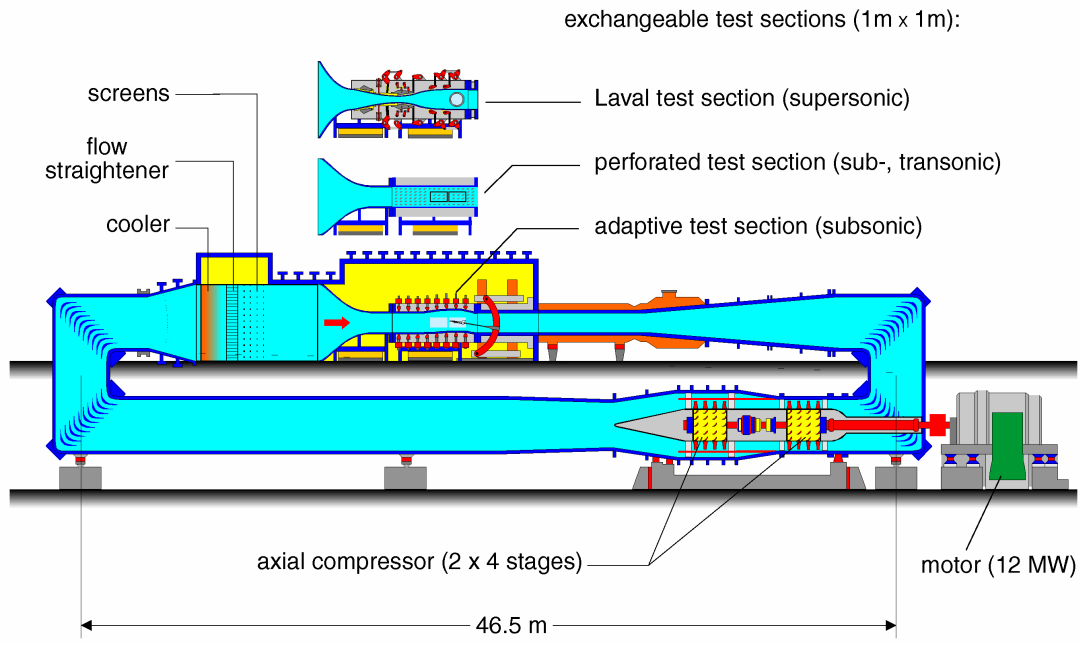
4 - *Main (or specific) associated measurement techniques*

Load measurement (strain gauge balances)
Pressure measurements (static and dynamic)
Particle Image Velocimetry (PIV)
Pressure Sensitive Paint (PSP)
Temperature Sensitive Paint (TSP)
Infrared Technique
Background Oriented Schlieren (BOS)
Laser Light Sheet (LLS)

Image Pattern Correlation (IPC)

5 - Operational status
- Fully operational 800 hrs available per year

6 - Picture:



Financial elements:

Replacement cost (M€uros)

Less than 10	☐
10 to 30	☐
30 to 60	☒
60 to 100	☐
More than 100	☐

Practices concerning:

Access policy : contract

Support : national

Comments:

Origin of information (‘signature’): author and date

Georg Eitelberg, Director DNW,
7 December 2011