



Identification of the installation/facility:

Country: **POLAND**
Location (city): **ZIELONKA**
Name of the facility: **Cold Flow Turbine Test Facility "Polonia Aero"**
Date of construction or of acquisition or of main refurbishment: **2013 - 2015**
Owner: **Avio Aero**
Contact point: **Monika Soltys;**
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Phone +48 22 34 88 017
Internet site: **www.polonიაaero.com**

Technical characteristics:

1 - Type of infrastructure

Wind tunnel	<input type="checkbox"/>
Propulsion bench	<input type="checkbox"/>
Structures facility	<input type="checkbox"/>
Material facility	<input type="checkbox"/>
Simulator (ex. Flight simulator, tower, ...)	<input type="checkbox"/>
Flight test bed (aircraft, embedded facilities, ...)	<input type="checkbox"/>
Supercomputers	<input type="checkbox"/>
Other (Cold Flow Turbine Test Facility for experimental testing of Low Pressure Turbine prototypes)	<input checked="" type="checkbox"/>

2 - Main technical characteristics

For wind tunnels: max velocity (or Mach number), test section area, max Rey/m, special features (power if continuous, pressure and temperature if blow down, ...)

For aeroby propulsion bench: air mass flow, temperature, pressure, type of fuel,...

For solid combustion bench: max force,...

- Max External Diameter of Test Article: 1900 mm
- Max Weight of Test Rig: 50 kN
- Max Flow Rate: 80 kg/s
- Max Inlet Total Pressure: 750 kPa
- Min Exit Total Pressure: 24 kPa
- Max Inlet Total Temperature: 650 K
- Max Shaft Power: 16 MW
- Max Torque: 67 kNm
- Max axial Thrust: 75 kN
- Max Shaft Speed: 5000 rpm (10000 rpm after installation of gearbox).

3 - Research domains which can be addressed (refer to ACARE taxonomy

<http://www.acare4europe.com/sites/acare4europe.org/files/document/ASD-Annex-final-211004-out-asd.pdf>)



- Performance
- Computational methods

4 - Main (or specific) associated measurement techniques

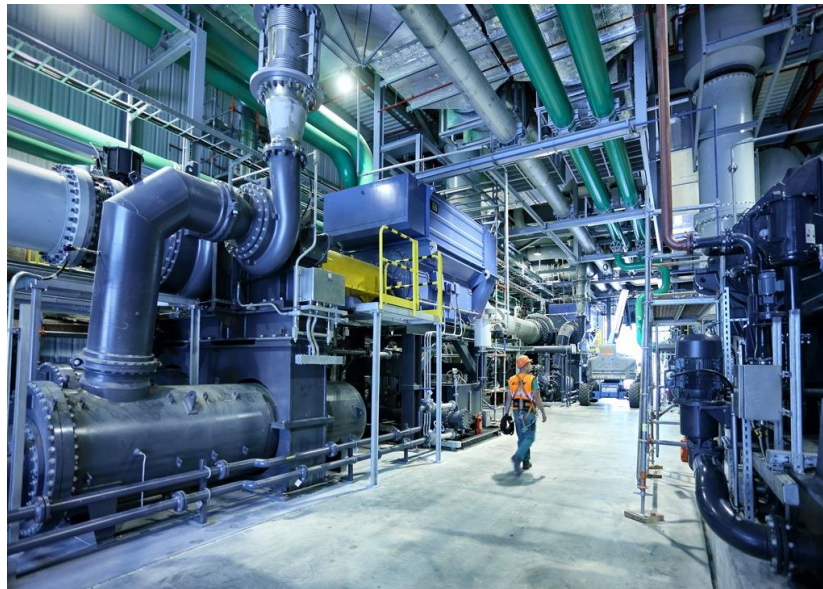
Integrated Low Frequency System, High Frequency System and Traversing System.

- Low Frequency System comprises 880 Input channels (max. sampling rate 100 Hz) for acquisition of pressure and temperature (E/K/J thermocouples and four wire Resistance Temperature Detectors - RTD's);
- High Frequency System allows acquiring following signals (with sampling up to 500 kHz):
 - Pressures measured by piezo-resistive transducers positioned on turbine stator parts;
 - Pressures from telemetry (piezo-resistive transducers positioned on rotor parts);
 - Vibrations arriving directly from wire-strain gages;
 - Vibrations from telemetry (wire-strain gages positioned on rotor parts);
 - Hot films and hot wires devices;
 - Accelerometers, tachometers, clearancemeters or proximity devices, Key phasors;
 - Microphones;
 - Rakes of Kulites for acoustic measurements located downstream the Test Rig;

5 - Operational status

- **Fully operational** (starting from January 2016)
- Sleeping but possible to reactivate within 6 months (or a reasonable time frame)
- Not used since 5 years or more

6 - Pictures





Aero_Agosto 2015_Cold Flow

Financial elements:

Replacement cost (M€uros)

- Less than 10
- 10 to 30
- 30 to 60
- 60 to 100
- More than 100



AirTN
Air Transport Net



Practices concerning:

Access policy (contract, voucher, free access for research, etc...): contract

Support (regional, national, European, private, ...): regional, national, European, private (all interested entities)

Origin of information ('signature'): Filip Sęk (Test Engineer) and Monika Sołtys (Administrative and Promotion Coordinator); February 2016