FACTSHEET

LARGE CLIMATE CHAMBER

Extreme climate conditions on demand since 2010

The wind power industry is rapidly expanding in windy and remote areas where turbines have to work under extreme conditions.

Onshore and offshore wind turbines are usually designed to operate in temperatures ranging from -10 °C to +40 °C, but in locations such as Finland,Canada, Mongolia, and other cold climate regions temperatures drop to as low as -40 °C. On the other hand, turbines located in hot regions, such as some parts of India, can be exposed to temperatures of up to 55 °C. These harsh weather conditions form a huge challenge to the equipment itself and to the maintence and repair teams. Repairs may have to be postponed because of restricted access caused by weather conditions. This clearly impacts the turbine availability and profitability.

That is why the industry needs robust and validated components capable of withstanding extreme conditions. In response to this need, OWI-Lab has built a test facility at the Port of Antwerp featuring a large climatic chamber for wind turbine component testing in a wide range of temperatures.

Mechanical, hydraulic and electrical turbine components weighing up to 150 tonnes or more, such as gearboxes, transformers, generators, pitch & yaw systems, etc. can be tested in temperatures ranging from -60 °C to +60 °C.

Main purpose of the chamber

Testing and validating large, heavy or multiple wind turbine components, under extreme temperatures and humidity: gearboxes, transformers, yaw & pitch systems, hydraulic units, hydraulic drive trains,...

Other components from different industries can also be tested: heavy industry applications; aerospace components, power aggregates, radar systems, wave and tidal converters, etc.

Harsh environment testing & validation

Location

The large climatic test chamber is embedded in the OWI-Lab test facility located at the Port of Antwerp, near the Zuid-Natie breakbulk terminal. All logistics are available on site to handle large and heavy machinery. The quay has a load capacity of 45 tonnes/m2.

Maximum dimensions of test specimen

- Length: 10,5 m Width: 7 m Height: 8 m
- Total test volume: >580 m^3
- Large main entrance 7 m x 7 m (w x h)

One-stop-shop services

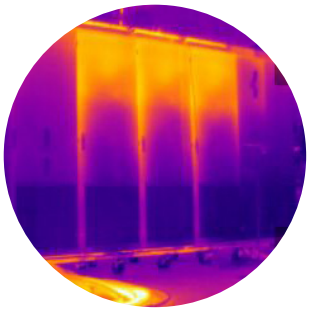
- Test planning, development and engineering
- Electrical energising of specimen up to 2 MVA
- Integrated data-logging of all industrial standard sensors
- Use thermal imaging with dedicated post-processing software
- Full remote follow-up of test campaign

Test auxiliaries

- Automated temperature/humidity cycling (IEC60068-2-14;2-30)
- No-load gearbox test bench up to 10.000 Nm
- Solar heat simulation up to 950W/m^2 (ISO 10263-6 ; 14269-3)

Controlled environment specifications

- Temperatures from: -60 °C to +60 °C (+/-1 °C after stabilisation)
- Relative humidity from: 2% to 95% (IEC 60068-2-30)
- Cooling/heating times



For the empty chamber From 10°C to	
-40°C	45min
-50°C	90min
-60°C	210min
60°C	65min

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