Cold Climate Test Centre

Test and validation for the wind power industry

www.coldclimatetest.com

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Innventia, SP och Swedish ICT har gått samman i RISE för att bli en starkare forsknings- och innovationspartner för näringsliv och samhälle.
Partners

- **RISE** – the largest research institute in Sweden specialising in energy technology, material properties and safety, focusing on research, test and validation services to a variety of industries.

- **Vattenfall** – a utility company producing 4 TWh wind power per year, operating more than 1 000 wind turbines from the cold Nordic to places further south in Europe.

- **Skellefteå Kraft** – a regional developer and power utility operating more than 100 wind turbines, all in cold climate conditions, producing 930 GWh wind power per year.

- **Swedish Wind Power Technology Centre (SWPTC)** – a research centre formed by the technical universities of Chalmers and Luleå.

- **Vindkraftcentrum** – an organisation in the northern part of Sweden who promotes the establishment of wind power.

- **Vinnova** – the Swedish national research funding agency for innovation and sustainable growth.
Cold Climate Test Center

- Ice: Average 350 h or more (10g/h/m)
- Wind: Average 7 m/s or more at 80m

- IEA Ice Class 3 or higher
- IEC 61400 wind class III
Cold Climate Test

- Prototype testing with all permits in place
- Calibrated site for certification according to IEC 61400
- Test programs according to standards
- Measurement mast
  - Wind measurements
  - Temperature
  - Humidity
  - Liquid water content
- Service & Operation
  - On-site operation personnel
  - Safe access to test site & to the test pads
  - Crane access
- Forecasting
  - Subscription of detailed local weather forecasts
- Infrastructure
  - Grid connection
  - Fibre optic data connection & data storage
  - Workshop, offices, accommodation, ...
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Product Test

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- Product Test
- System Tests
- Material Tests
- Component Tests
- Part Tests

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Cold Climate Test

- Sensor technology development
- Development of improved models and simulation
- Improvement of forecasting
- Enhanced operation and remote tools
- Development of access solutions
- ...
Owners and operators want to purchase proven products
Suppliers need to prove suitability of their products
Devoloping safe routines for installation, operation and maintenance in harsh conditions
Field testing at production sites effects production at the site
R&D dependent on the site service personal at a real production site – low priority
There are limited degrees of freedom for R&D at a real production site
Influence and be part of the development of standards and regulations
Why industry needs the full-scale test site?

- Facilities and workshop customized for R&D
- Detailed metrological data for a test turbine at a test site
- Secure good HSE conditions and procedures for R&D activities
- Repeatability of tests, procedures and test conditions as parameters can be better controlled
- The independent centre allows cost splitting for i.e.
  - joint product validations
  - benchmark test
  - ...
- Do joint R&D projects
Why does the research community need full-scale test site?

Picture by Ville Lehtomäki (VTT)
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