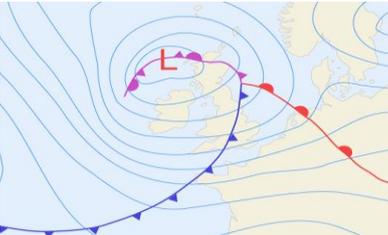


# Anemos Wind Power Predictions

- Wind-Weather Predictions
- World-Wide Installations
- Multi-Model Approach
- Ramps and Extreme Events
- Prediction Uncertainty
- More than 50 GW Installed
- 100% Reached Availability
- 24/7 Standby Team
- Research and Development
- Generic Benchmark Platform
- Offshore Wind Farms



### Predictions world-wide

Today, most energy economy sectors are reliant on predictions of future wind energy input. Power plant scheduling, power trading and grid operations can only be carried out optimally when an exact and reliable prediction of wind power is available for the next hours and days. With the Anemos wind power prediction system, we provide a solution which is accurate, reliable, flexible, and cost-effective. The Anemos system is a commercial spin-off of various research and development activities and is today implemented on a world-wide scale. This system is operated by Overspeed and further developed by a group of six consortium partners.

### Predictions with High Accuracy

The high accuracy of Anemos wind power predictions rests on a consistent multi-model approach. Each prediction involves combining multiple weather models as well as different physical and statistical wind power prediction models in such a way that an optimal accuracy is achieved at every point in time. In the process, we have the ability to draw on models from several partners ranking among the top prediction providers in Europe and in total responsible for predicting over 50 GW of wind power installations and over 40 GW of solar power. The fast implementation of knowledge from current research into commercial use leads to the continuous improvement of our predictions.

Any prediction should always include a specification of the related statistical uncertainty. Through an advanced statistical analysis of past behavior, we are in a position to specify the current accuracy of our predictions on a reliable basis.

### Quality and Reliability

For our customers, predictions are an essential component of their business processes. For this reason, we do our utmost to ensure a high availability of our systems. With our years of experience, mirrored server systems, quality management and a support team available 24/7, we achieved 100%

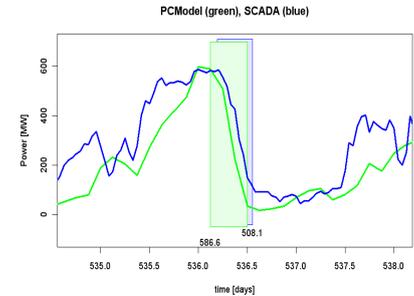


*Wind energy in the control center*

availability in the last 8 years. This applies to server solutions operated by us for our customers as well as to systems integrated on-site into the IT infrastructure of our clients. In recent years our prediction system was intensively tested by customers both for stability and the maintaining of No-Single-Point-of-Failure criteria.

### Ramps and Extreme Events

Managing extreme events such as storm fronts, is becoming an ever more important task in light of increasing amounts of wind energy in the electricity grid. We tackle this challenge with specialized models for ramp prediction, coupled with an alarming system for extreme situations which informs the user of expected power surges, declines or shut-down events as early as possible.



*Time response of a predicted (green) and actually occurring ramp (blue)*



### Contact Person

Dr. Hans-Peter (Igor) Waldl  
 Phone +49 441 939400-00  
 h.p.waldl@overspeed.de

Overspeed GmbH & Co. KG  
 Im Technologiepark 4  
 26129 Oldenburg  
 Germany  
 info@overspeed.de

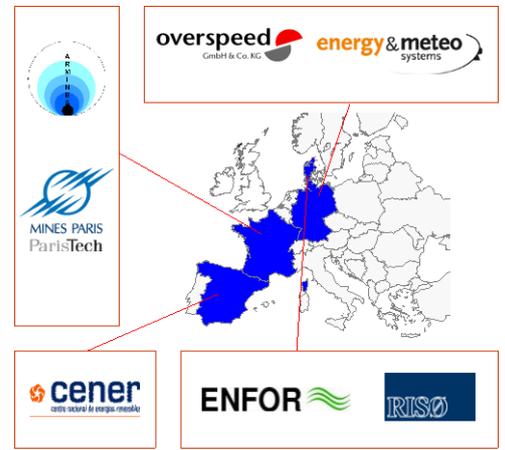
overspeed.de  
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## Research and Development

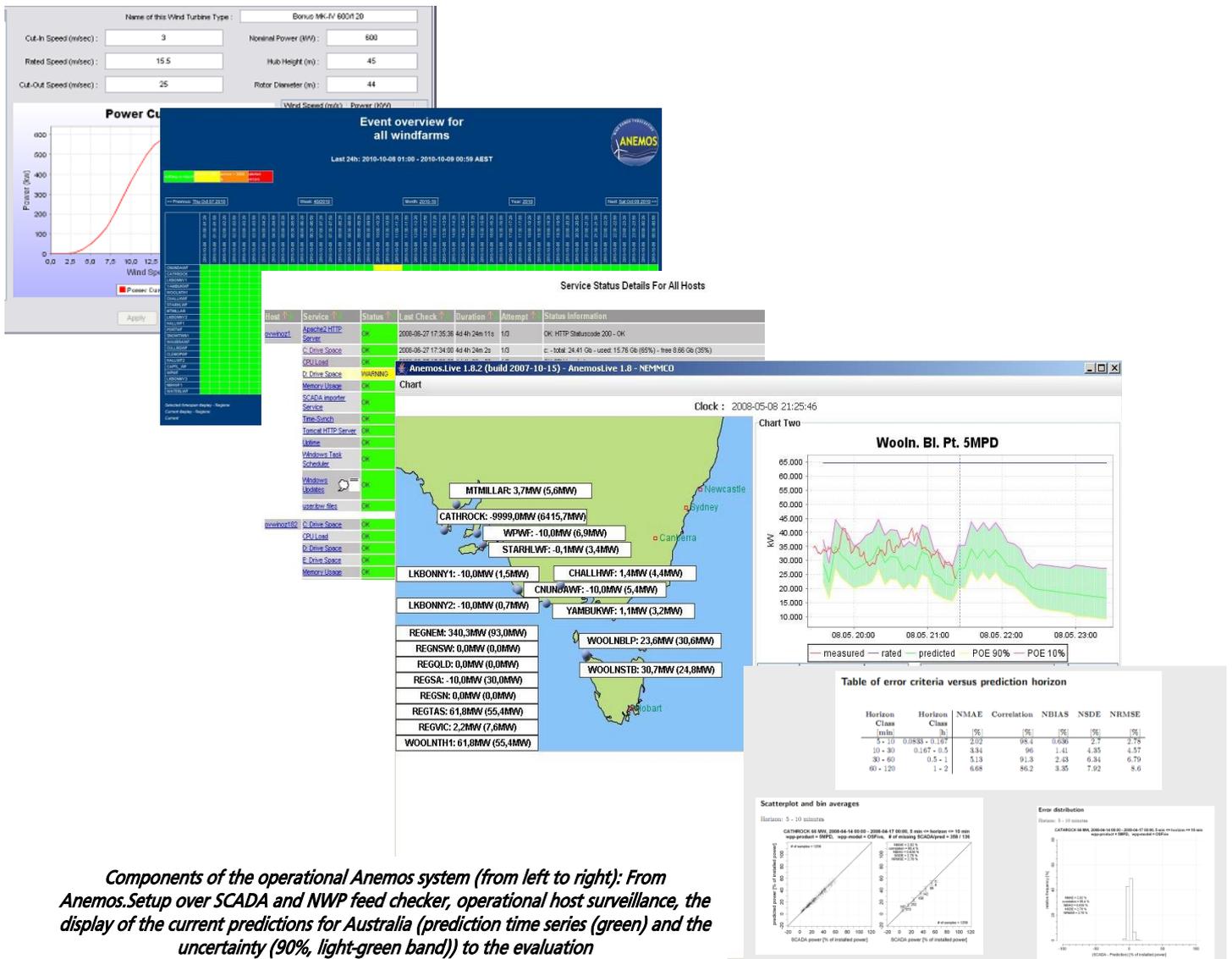
In practically all end-user wind and solar power prediction applications, the majority of tasks besides the predictions itself can be tackled on a generic level. A mature and proven solution with a high level of quality management and resilience may be an alternative to a proprietary development for benchmark and in-house prediction handling, using a number of prediction data feeds. Many of the *Anemos* functionalities are generic, and may be used for the implementation of individual wind and solar power prediction systems with respect to data interfaces, data storage, aggregations and uncertainties, GUIs, monitoring, QM and O&M support and benchmark reporting. By this approach, time and money is saved for in-house developments.

## Experience and Customers

Anemos partners have now worked more than 20 years in the area of wind power predictions. As part of the interplay between research institutions and companies, we continuously improve state-of-the-art solutions along with the commercial application side of wind power predictions. Today, Anemos partners are responsible for predicting more than 50 GW of wind power. Through the flexible Anemos prediction platform and our ongoing research, we succeed in swiftly putting research results into practice and satisfying the current and future needs of our customers.



*The partners of the commercial Anemos branch: Overspeed (consortium manager, Germany), Armines (scientific coordinator, France), energy & meteo systems (Germany), ENFOR (Denmark), Risø (Denmark), CENER (Spain)*



*Components of the operational Anemos system (from left to right): From Anemos.Setup over SCADA and NWP feed checker, operational host surveillance, the display of the current predictions for Australia (prediction time series (green) and the uncertainty (90%, light-green band)) to the evaluation of prediction accuracy with Anemos.Report.*