

EWIS

Being one of the leading institutes on wind energy research, ECN has established the new EWIS (ECN Wind Industrial Support) group in 2009 to better bring the R&D results to the market. During the last three decades, ECN has developed expertise on aerodynamics, structural analyses, turbine control, offshore operation and maintenance, and grid connection. With the growing wind industry, ECN received more requests for assistance and EWIS has become the vehicle to support the wind energy industry in their product developments.

EWIS's focus is on the high end of the market which means that we will make use of tools and knowledge that have been developed in-house and include the latest R&D results!

The EWIS team is a mixture of young professionals and experienced researchers which ensures a fast response and high quality.

More information
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Wind Power Forecasting

The Service

Balance must be maintained in the electricity grid, which means that electricity production and electricity consumption must be equal. For this purpose at various aggregation levels production and consumption schedules are issued on a daily base. As to wind energy these schedules require wind power forecasts at the day before and at the day of delivery. In order to provide market parties with a tool and to study wind power forecasting and the related wind energy integration issues, ECN developed the wind power forecasting method AVDE (In Dutch: "AanbodVoorspeller Duurzame Energie").

The Approach

The ECN wind power forecasting method AVDE is a physical forecasting method with an output statistics module. In an operational sense it is a post-processor to the atmospheric model HiRLAM, or any weather prediction model that delivers the required input data (two horizontal wind speed components, temperature and pressure in two vertical levels on a horizontal grid covering the sites to be considered) in the required format (GRIB). If wind speed and/or wind power realisations are available, the output statistics module can be employed in order to compensate for systematic errors in the forecasts.

AVDE can be operated in two modes: power forecast and wind forecast.

- In the power forecast mode AVDE delivers the expected value of the 15-minute averaged power of a solitary wind turbine, wind turbine farm or cluster of turbines and/or farms at 15-minute intervals. In addition it gives the confidence interval of the power and the expected value of power variation intensity (ratio of wind power standard deviation and average), plus the expected value of wind speed, wind direction and air density at turbine hub height. All power values are based on the expected value of the air density.
- In the wind forecast mode AVDE gives the expected value of 10- or 15-minute averages of wind speed, wind direction, Obukhov stability length, temperature and pressure as well as turbulence intensity (ratio of wind speed standard deviation and average) at the given height above ground or mean sea level at 10- or 15-minute intervals up to 48 hours after initiation of the underlying run of the atmospheric model.



Specifications

Forecasting Service

Four times per day, +48h forecast, per grid connection

- Initial fixed fee € 500,-
- Modification fee € 125,-
- Annual fee per megawatt € 300,-
(maximum € 18.000,-)

Historic Forecasts

One year of data, per grid connection

- First year € 500,-
- Next years € 250,-

For more information about this service,
please contact:

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The Experience

The wind power forecasting method AVDE has been used since the year 2001 in order to provide forecasting services, and in evaluation and integration studies.

- Forecasting services have been provided to:
 - * two Programme Responsible Parties since 2001;
 - * the ECN wind turbine test site EWTW (since 2005).
- Evaluation studies were performed:
 - * for Programme Responsible Parties that liked to investigate whether to take Programme Responsibility for the wind turbines in their portfolio, and
 - * in the context of the monitoring and evaluation programme of the Offshore Wind Farm Egmond aan Zee (OWEZ).
- Integration studies were performed on:
 - * control of power networks that have a high degree of distributed generation and renewable energy penetration, and
 - * wind energy in the Dutch power system.