Case study: Met Office and LEM-Software
Integrating weather and power forecasts

Challenge

Energy management is undergoing significant challenges as we head towards a low-carbon future consisting of renewable energy and decarbonised demand. This shift requires sophisticated advances in power prediction and demand forecasting to effectively balance the network.

The response will vary in each country and region depending on the available capacity, mix of renewable sources and the structure of the deregulated market. Similar challenges are evident in the energy trading sector where power forecast accuracy is paramount in dealing with day-ahead markets. This transformation requires an evolution in supporting technology, systems and process solutions.

Solution

As a world-leading operational weather forecaster, we partnered with engineering consultancy LEM-Software, experts in supporting the needs of a deregulated energy market. This partnership, of forecasting and software expertise, is designed to deliver a comprehensive power forecasting package for a variety of energy stakeholder organisations, including national utilities, regional distribution network system operators and energy trading organisations.

Benefits

The Met Office and LEM-Software’s integrated solution delivers superior weather and power forecast accuracy for business risk-management and energy cost reduction. By applying state-of-the-art statistical models like artificial neural networks, which are optimised for use in the renewables sector, LEM-Software is able to bridge the gap between meteorological and production forecasts.

Underpinning our highly accurate and reliable forecasts is a sophisticated blend of site-specific forecasts in combination with surface data and unique high-resolution terrain downscaling. This valuable partnership is providing services to German distribution system operator E.DIS (part of E.ON) with over 5 GW of installed power, and RWE Group partners Vereinigte Saar Elektrizitäts AG (VSE), Süwag Vertrieb AG & Co. KG (Süwag) and Lechwerke AG (LEW).

Forecasts of increased accuracy enable grid operators such as E.DIS to better plan controlling measures in regions with a history of surplus renewable energy production. Traders benefit from increased profits attributed to improved production forecasts, partly because of reduced reserve energy costs. In total, this global solution is currently delivering forecasts for more than 175 sites and is transferrable across renewable energy sectors, including wind, solar and hydroelectric.

“The Met Office’s site-specific weather forecasts are the basis of our accurate infeed forecasts. They increase both our forecast accuracy and reliability for our clients and thus help in ensuring grid stability and provide confidence in portfolio management for traders.”

PD Dr.-Ing.habil. Ingrid Heinrich
LEM-Software