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BEST PRACTICE IN THE USE OF SHORT-TERM FORECASTING – RESULTS FROM 2 WORKSHOPS ORGANISED BY THE POW’WOW PROJECT

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Abstract

Short-term forecasting of wind power for about 48 hours in advance is an established technique by now. Any utility getting over a few percent wind power penetration is buying a system or a service on the market. But which system? Also, once the system is installed and running day-to-day in the control room or on the trading floor, what is the best way to use the predictions? Which pitfalls are there to be aware of, and how can one maximise the value of the short-term forecasts?

Please note: this paper was intended to be the updated version of the similar paper presented at EWEC 2007 in Milan [1] after the second workshop had been held. However, the planned second workshop was moved after the abstract deadline to after EWEC 2008, therefore we will not repeat last year’s paper, but just summarise the main findings.

1. Introduction

Short-term forecasting of wind power for about 48 hours in advance is an established technique by now, and the topic of numerous papers on this conference. Any utility getting over a few percent wind power penetration is buying a system or a service on the market. However, once the system is installed and running day-to-day in the control room or on the trading floor, what is the best way to use the predictions? Which pitfalls are there to be aware of, and how can one maximise the value of the short-term forecasts?

Up to 15 years of experience with different forecasting systems have been built up in some utilities in Denmark and Germany, but also the Spanish, Dutch, Irish, Northern Irish, Greek, and some US and Australian ones have used forecasting now. However, the tips and tricks and general experiences from the control room have not been circulated to a wider audience yet.

For this purpose, two workshops were organised, one in Delft in 2006 and one in Oldenburg in 2007. The aim of the paper is to present the outcomes of those workshops. Most interesting is that there is a wide variety of best practices, depending on the special circumstances of the reporting utility.

Out of the experience of the forecasters comes a more basic guide for new users how to choose the right model for their application.

Usually predictions are not used in an automated way as can be the case for load forecasts. Given the uncertainty they involve, users need to develop expertise on the optimal decisions to make as a function of the current or expected power system state or market conditions. Therefore, there is a need emerging to fully integrate predictions and information on their uncertainty in management functions (i.e. unit commitment, economic dispatch, reserves estimation etc.). The expertise accumulated by the users on how to best integrate predictions into the day-to-day running of the power system should not be neglected in this process.

2. News

The second workshop on best practice will take place on 28 May 2008 in Madrid. For registration, please contact the author and see the workshop website <http://powwow.risoe.dk/BestPracticeWorkshop2.htm>.

3. Best practice

To recapitulate, major results of the first workshop were:

- Competition improves accuracy.
- The value of accurate wind power predictions is appreciated.
- The market for wind power prediction models is mature, with many service providers.

The Best Practice in the use of short-term forecasting of wind power can be summarised as:

- Get a model
- Get another model (NWP and / or short-term forecasting model)
- Balance all errors together, not just wind
- Use the uncertainty / pdf
- Use intraday trading
- Use longer forecasts for maintenance planning
- Meteorological training for the operators
- Meteorological hotline for special cases

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Reference

1. Gregor Giebel, George Kariniotakis: *Best Practice in Short-term Forecasting - A Users Guide*. European Wind Energy Conference and Exhibition, Milan (IT), 7-10 May 2007 (see http://www.ewec2007proceedings.info/allfiles2/156_Ewec2007_fullpaper.pdf)