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End user's requirements

Wind Power Forecasting

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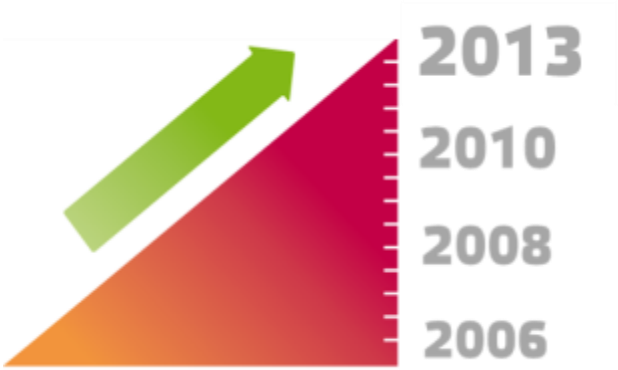
Facts and figures



Fast growing sustainable portfolio

Increasing renewable power purchase agreements, carbon emissions rights activities and decentralised renewable energy solutions.

Traded commodities

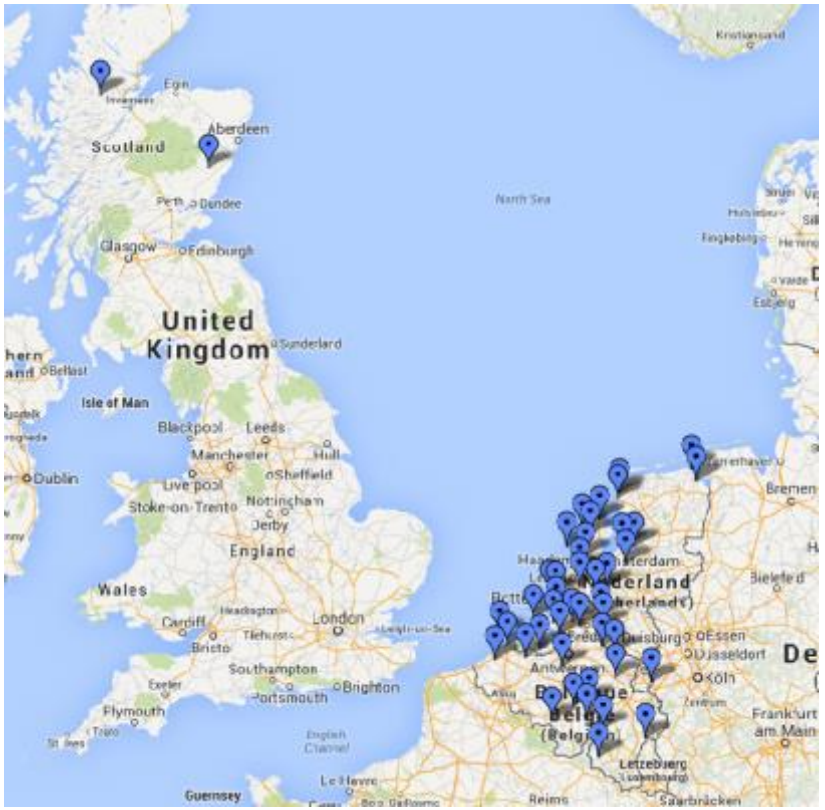
Natural gas, power, oil, carbon emission rights (CER's, EUA's, VER's), biomass, green certificates and LNG.

Portfolio management

20TWh annual customer demand, 1,400MW conventional production and 1,100MW renewable production.

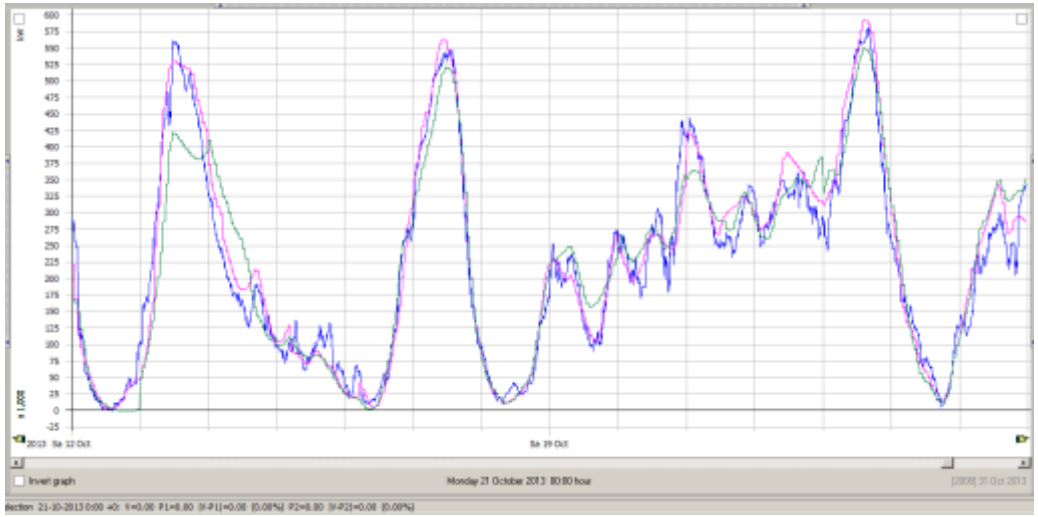
Wind Power forecasting at EET

- Total Wind Portfolio +/- 1100 MW installed capacity
- Netherlands, Belgium and UK
- Focus is on day-ahead and intra-day trading and balancing
- Site specific forecasts (around 43 forecast locations in NL, BE and UK)
- Minimize imbalance costs



Wind Power forecasting at EET

- Forecasts of wind speed, wind direction and air density for each location at hub height from different weather companies
- Own Wind Power Forecast model
- Forecast is combined with availability of the wind farm (planned and unplanned maintenance)
- Ultra Short Term Correction of the forecast based on Real-Time data

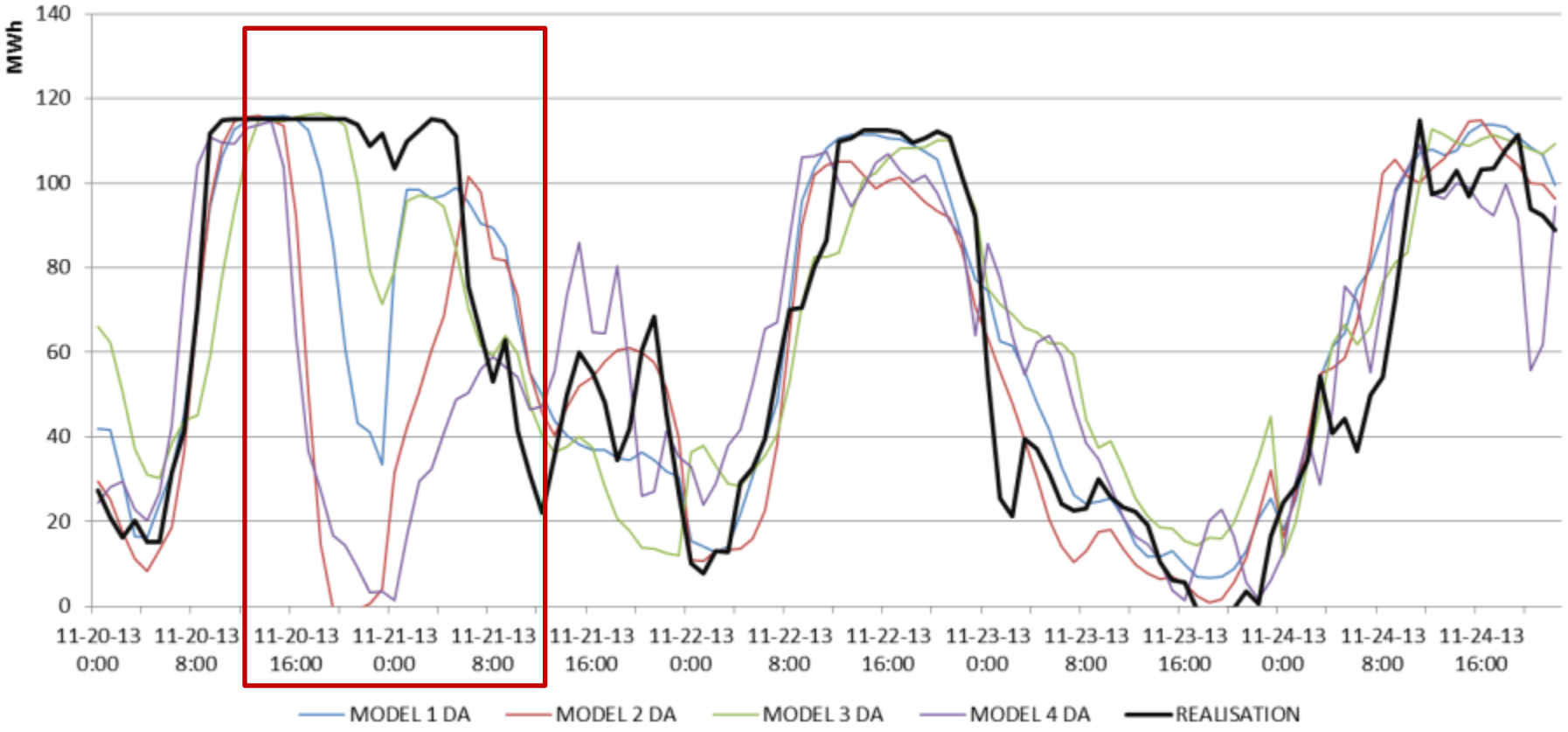


Difficulties Wind Power forecasting

- Creating a single forecast is not difficult, but what to do with different outcomes of models?

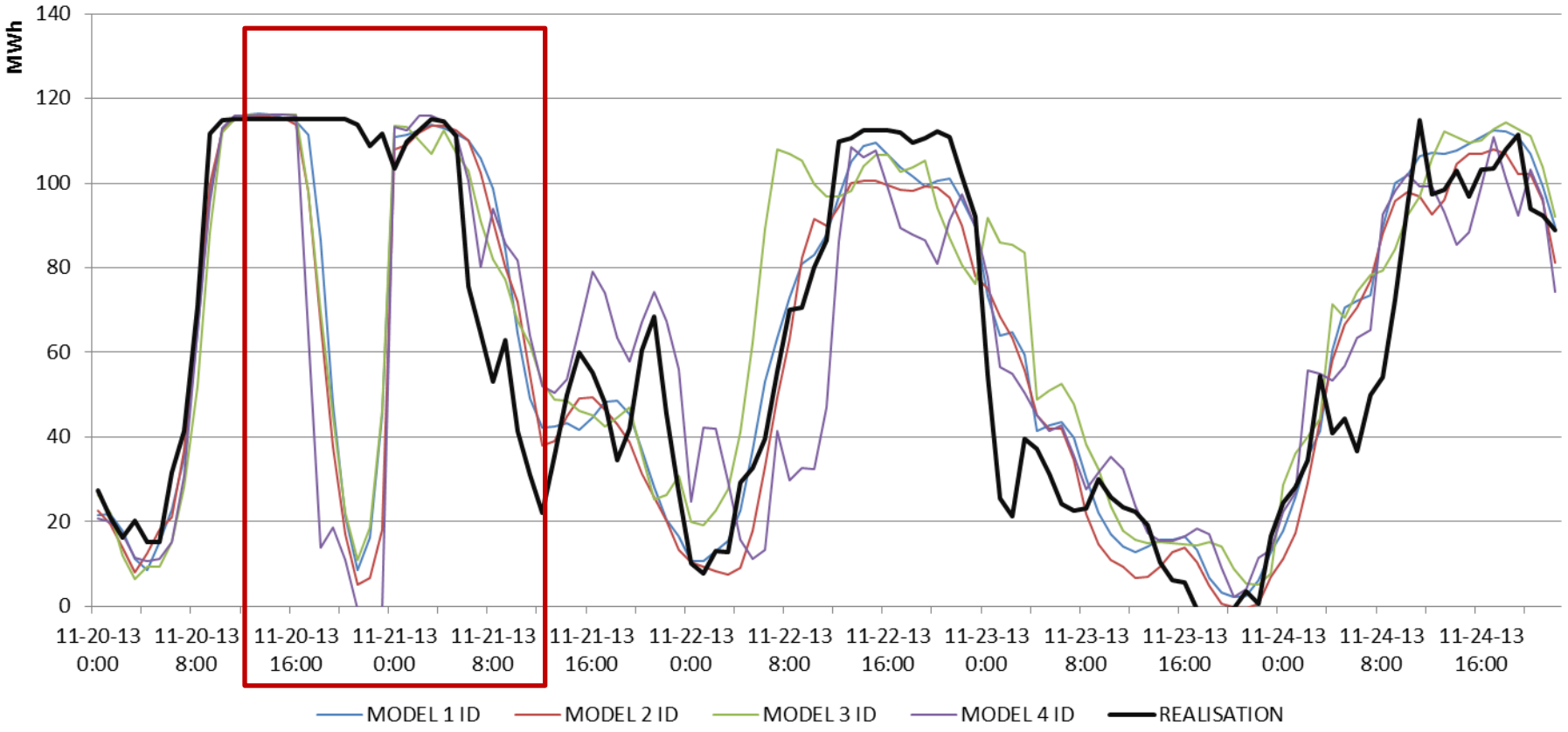
- In the next couple of slides an example is stated for an offshore wind farm with capacity of 120 MW

Day-Ahead Forecast (@10:00 AM)



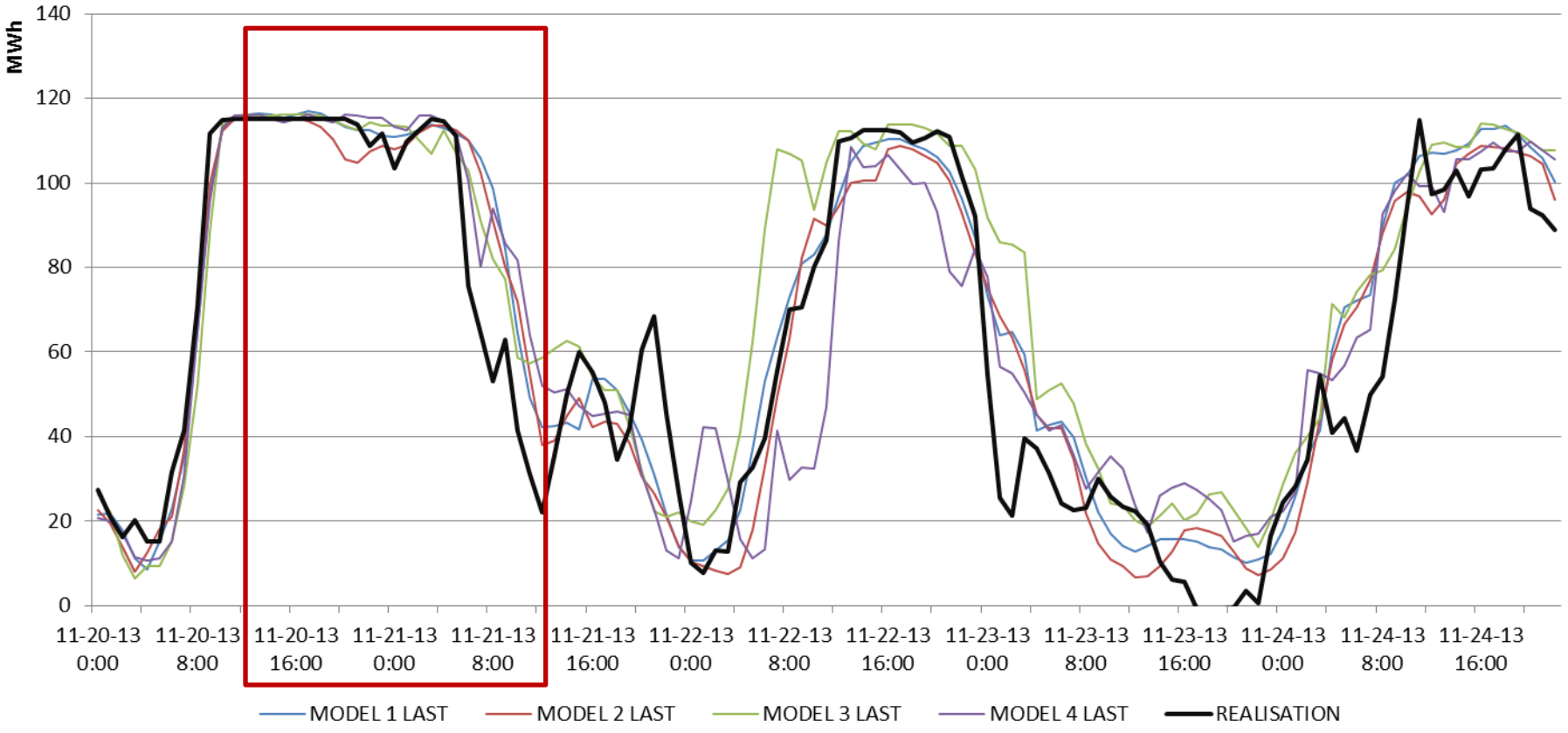
Lot of volatility for this day, so it's not surprising that realization is different than the DA forecast

Intra-Day Forecast (@10:00 AM)



Almost no difference between different models for ID forecast, so we expect that the models are all correct

Last Forecast



The last available for all models is now consistent en correct

Difficulties Wind Power forecasting

- The outcomes from different weather model can cause large differences in the output:
  - A weather event will occur or not
  - Timing of an event
  - Height of an event

- Difficult to make a choice between the different models for each wind farm in an operational environment

What are the challenges for us?

- Increasing portfolio:

  getting the best forecast with insights in the risks is getting more important
- Weighted average forecast is not enough:
  - Volume (point) forecast and
  - Forecast of the risk distribution
- Stochastic forecast, inputs:
  - Different models, with ensemble runs

End user's requirements

- Improvement of quality of DA wind speeds forecasts:

  DA quality should equal the ID quality of today!

- Different meteorological models including ensembles for wind speeds at forecast location

- Clear insights in the risks of a certain forecast

All for
sustainability
Eneco