SUCCESS STORY

Day-Ahead Power Forecast
Enel Green Power

EXECUTIVE SUMMARY

LOCATION
Italy

KEY SOLUTION
s-EM
Power forecast

BENEFIT
Day-Ahead market strategy improvement

BACKGROUND

PV plants Trading and Operational Strategy improvement from accurate power generation forecast

High penetration levels of Distributed Energy Resources (DERs), typically based on renewable generation, introduce several challenges in the new energy ecosystem, due to the intrinsic intermittent and uncertain nature of such DERs, the availability of distributed source of generation and consumption, the issues related to the integration into the grid. In this new complex energy context, it is fundamental to provide accurate forecast energy production from renewable sources, coming from solar photovoltaic (PV) in short and mid-term horizon.

CHALLENGES

Provide accurate power forecast to mitigate issues of intermittent and uncertain generation

Solar power plant operation is affected by the intermittent and uncertain nature of solar source that impact on its: dispatch-ability, efficiency and monitoring. The ability to accurately forecast power generation from renewable sources is nowadays recognized as a fundamental skill to improve both trading strategy (for the market of energy) and the operation of PV plants.

The following challenges could influence service quality:

(!) Power forecast performance highly depends on weather data accuracy

(!) Power forecast deterministic models require several plant information that may be a concern in case of big plant portfolio where it is not easy to retrieve information

(!) Different National regulations impose different requirements, from time scale to delivery format. In addition, they may impose penalties for not accurate forecast

The i-EM forecast solution, thanks to its proven accuracy, fill the gap of this quality service.

SOLUTION

Accurate forecast for Trading and Operational Strategy improvement

i-EM provides power forecasting service to support the operation of the renewable asset ensuring optimal energy forecasting according to different time horizons (typically from 6 hours till 15 days). Optimal solar power forecasting ensures optimal dispatching strategy, optimal maintenance scheduling, and efficient monitoring of plant production. Those optimizations are ensured by the following innovative features:

• use of different algorithms according to the time and spatial scale considering different signals availability and to always ensure the optimal performance

• use of different NWP data input models to reduce weather prediction errors impact.

• models blending for the optimal combination of many ML models and to foster the strength of each technique to improve the final accuracy.

• use of satellite data to improve short term forecast PV application (i-EM owns a satellite chain to transform satellite imagery in irradiation data product on a global basis)

BUSINESS IMPACT

The improvement of your power forecasts accuracy can save you money and benefit entire community

✓ Optimize bidding strategy: the energy trader has improved their activity on the electricity market

✓ Optimize plant operation and maintenance strategy: the O&M team has improved their short-term activities and maximized the energy production

✓ Valuable impact on the energy ecosystem by increasing its overall efficiency and sustainability. It is a solution that can support and improve the integration of renewable sources into the grid

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