
Solar Power Forecast

What you get

> Imbalance costs reduction and assets management thanks to an accurate power forecast of your assets

> Fusion of several kinds of raw data as input: numerical weather prediction data, satellite data, real-time production and assets availability

> Fusion of several Machine Learning and physical model to ensure reliable power forecast in every condition

> Flexible services outputs following market requirements. Outputs can be delivered through any format along with the possibility to visualize them on a user-friendly business intelligence dashboard

Performance

From our customers' experience, i-EM services has already proved to be a best-in-class solution. Continuous up-to-date Machine Learning technique implementation allows us to uphold high performance level.

Customers

i-EM provides worldwide competitive and innovative management services. About 50 plants adopts our solution to optimize their performance and many customers have already chosen our solution:

> Energy producers

> Energy traders

> Transmission & Distribution System Operators (TSOs, DSOs)

> Nowcast

Improved short-term forecast using real-time data. Solar power forecast up to 6 hours ahead can be highly enhanced exploiting real-time data.

- Real-time satellite solar irradiation data
- Cloud motion from real-time groundbased
- Sky camera images processing

Our **Machine Learning** models are thought to improve intra-day market, operational and system operators' activities.

> Forecast

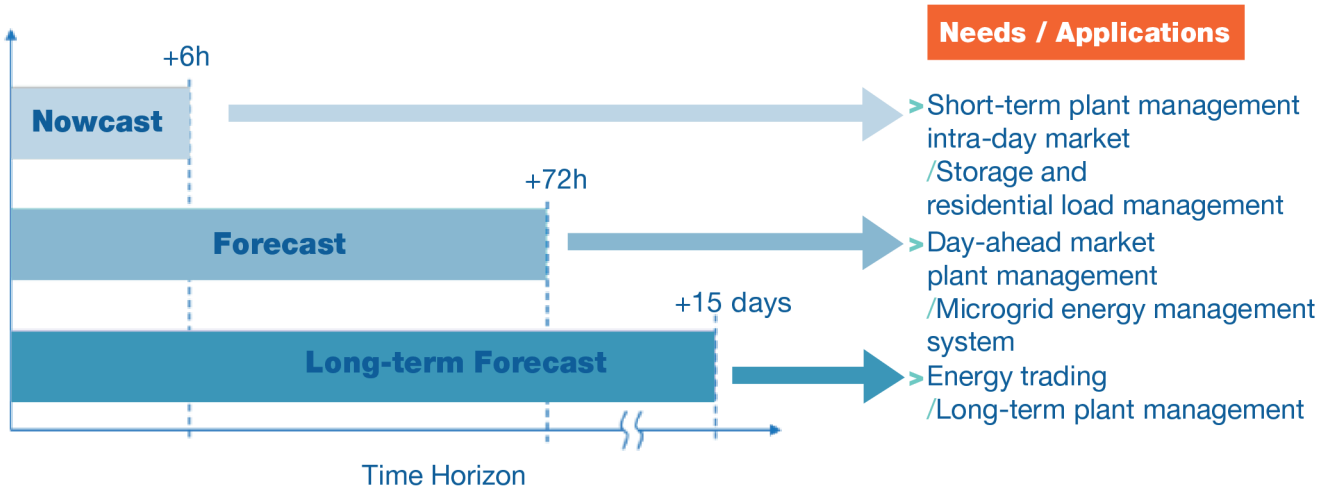
Improved forecast and long-term forecast thanks to cooperative fusion of Machine Learning algorithms.

The use of third party weather forecast data and proprietary numerical weather prediction data in a **Machine Learning** cooperative frameworks allows us to ensure accurate solar power forecast **up to 3 days ahead**.

i-EM service already demonstrates his reliability compared to the market world leaders' services.

> Portfolio

This solution, tailored to Energy Traders specific requirements, provides them accurate regional and/or portfolio **solar power forecast up to 15 days ahead**. The use of weather data and power production data in a Machine Learning framework allow us to give accurate forecast.
The energy traders improve their activities and optimize revenue.



Did you know that... ?

The Impact of not Accurate Weather Forecast

Forecast performance highly depends on weather data accuracy. i-EM Machine Learning models efficiently combine several Numerical Weather Prediction (NWP) data to reduce the impact of not accurate weather forecast.
i-EM assessed a forecast accuracy increase of **over 25%**, reducing to less than **3%** the error, thanks to the use of several models (from about 4% with one model).

Performance improvement using several models

+25%

The Impact of Plant Data

Forecast performance depends on the training data available.
i-EM ML models ensure reliable power forecast up to only 1 month of training set.
Using 1 month data, i-EM models' error is about **3.30%** instead of 3% when exploiting 1 year plant data. The maximum improvement is up to **10%**.

Performance improvement using several models

+10%

i-EM
Intelligence in Energy Management

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