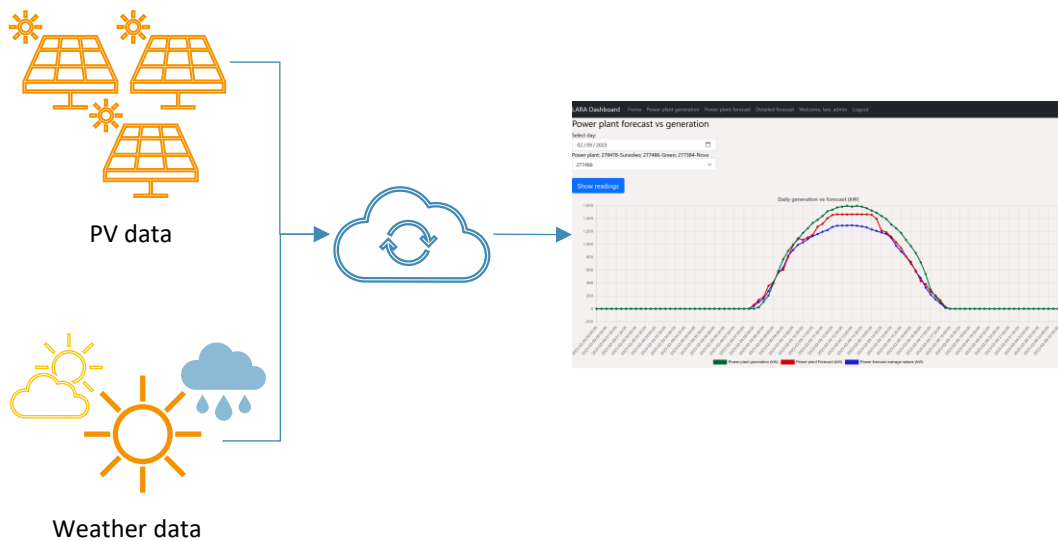


SMART IPV DASHBOARD

MONITOR & FORECAST SOLUTION FOR INDUSTRIAL PV POWER PLANTS

WEB APPLICATION

- Integrates data from: inverters, PV meters, IBD, weather sources (local stations or sensors and web providers).
- Provides decision support tools for monitoring, forecast and analytics.
- Forecast PV power for 7 days at 15-minute.
- Fully customized web application.

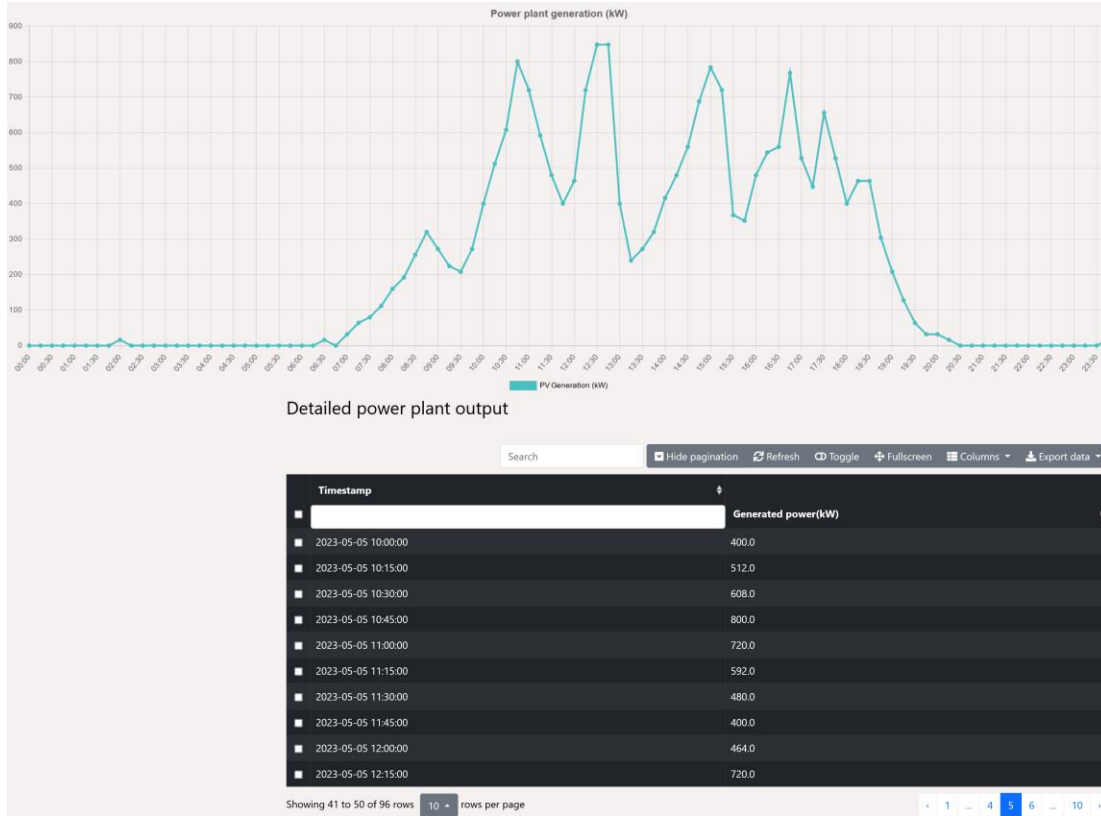


ALL WE NEED FROM YOU TO CUSTOMIZE THE APP:

- PV power plant info: location (latitude, longitude), rated power
- IBD data for the last 2-3 months
- For more advanced monitoring and analysis: inverters or smart meters data

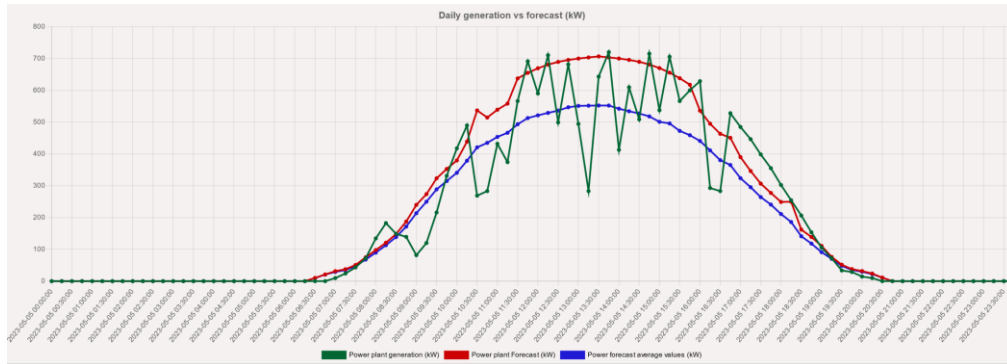
POWER PLANT MONITORING

- Collect and process data from smart meters, inverters and IBD.
- Monitor PV generation to detect possible power loss, inverter and grid connection issues.
- KPI analytics: *yield*, *Energy Performance Index (EPI)*, *Power Performance Index (PPI)*, *Performance Ratio (PR)*, *Partial Power Loss Indicator (PPLI)*, *Partial Energy Loss Indicator (PELI)*

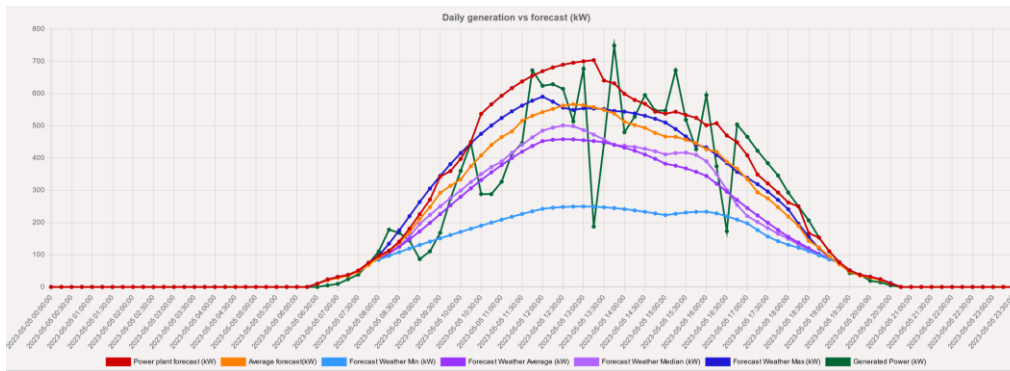


POWER PLANT FORECAST

- Powerful Artificial Intelligence forecast that combines multiple weather sources to provide 15-minute forecast for 7 days.
- Compare the PV generation with PV forecast using a confidence interval.



- Multiple forecast scenarios based on weather probability.



- View tabular data and export in .csv or excel for different time intervals.

Download forecast

Select start day:
05 / 01 / 2023

Select end day:
05 / 07 / 2023

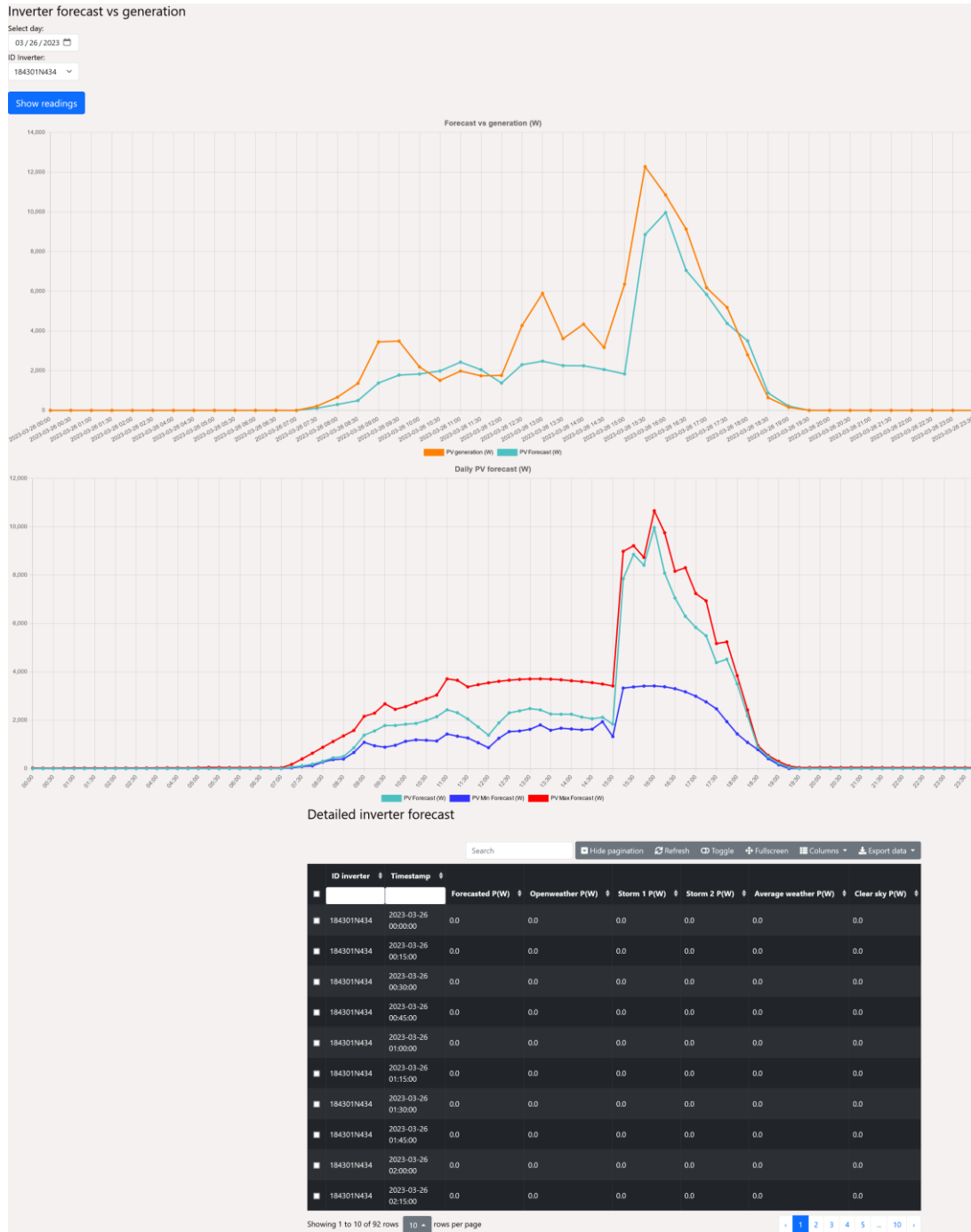
Download forecast

Timestamp	Forecasted P(kW)	Average P(kW)	Weather Min P(kW)	Weather Average P(kW)	Weather Median P(kW)	Weather Max P(kW)
2023-05-05 10:00:00	397.1	333.7	170.9	279.7	298.9	415.1
2023-05-05 10:15:00	449.8	374.4	180.6	306.1	325.3	446.3
2023-05-05 10:30:00	536.9	408	190.1	331.5	350.1	474.9
2023-05-05 10:45:00	566.4	440.6	199.5	355.6	371.9	500.8
2023-05-05 11:00:00	593.1	465	208.7	378.1	389.3	524.1
2023-05-05 11:15:00	616.8	482.3	217.7	399.8	416.2	544.7
2023-05-05 11:30:00	637.4	515.1	226.4	419.6	441.2	562.7
2023-05-05 11:45:00	655	530.9	234.6	437.2	464.1	577.9
2023-05-05 12:00:00	669.4	542.6	242.3	452.5	484.7	590.3
2023-05-05 12:15:00	680.9	552.1	245.8	456.6	494.1	574.8

Showing 41 to 50 of 96 rows 1 4 6 10

INVERTERS MONITORING

- Monitor and forecast the PV power for each inverter.



WEATHER DATA

- Collect and integrate more than 10 weather sources related to the location of the PV power plant.
- Weather monitoring and forecast for different time intervals and weather stations.



OUR SOLUTION WAS PUBLISHED IN PRESTIGIOUS INTERNATIONAL JOURNALS:

- S.V. Oprea, Bara, A - **Ultra-short-term forecasting for photovoltaic power plants and real-time key performance indicators analysis with big data solutions. Two case studies – PV Agigea and PV Giurgiu located in Romania**, Computers in Industry (Q1), Volume: 120, Published: September 2020.
<https://doi.org/10.1016/j.compind.2020.103230>
- Preda, S, Oprea, SV, Bara, A, Belciu, A - **PV Forecasting Using Support Vector Machine Learning in a Big Data Analytics Context**, Symmetry-Basel (Q2), Volume: 10, Issue: 12, Published: December 2018.
<https://doi.org/10.3390/sym10120748>

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