



GreenPowerMonitor

a DNV GL company

LEADING RENEWABLES MONITORING AND DATA MANAGEMENT SOLUTIONS

PONENTE

Webinar de ATA Insights: Monitorización para la optimización de plantas FV

Javier Sanjuán
Global Product Manager

Miercoles 29 Abril 2020, h16:00 (CEST)



AGENDA



Data Hub



Predictive O&M



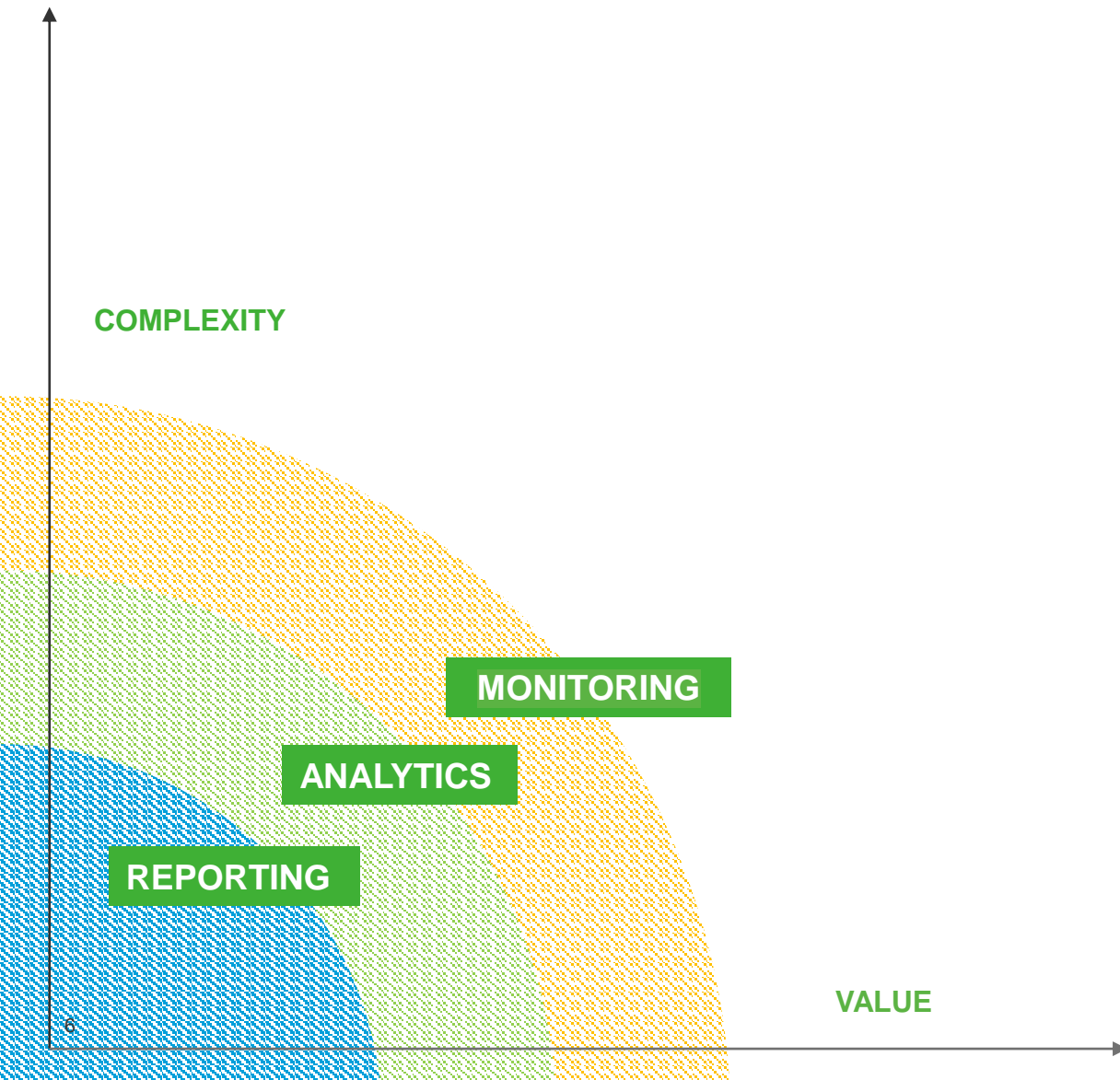
BESS



DATA HUB

DATA HUB

TRADITIONAL MONITORING



Monitoring

- What's happening now?

Analytics

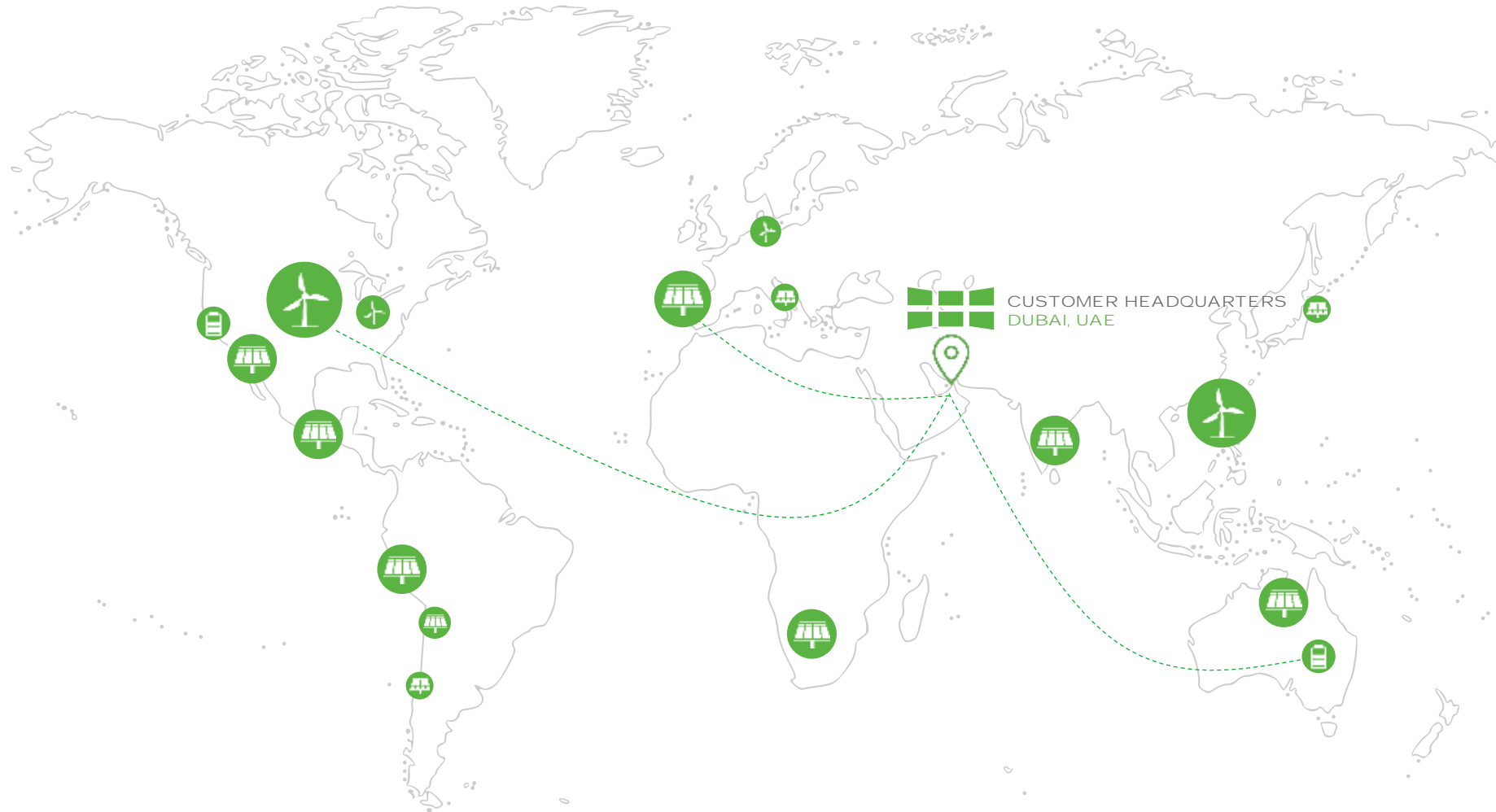
- Why did it happen?

Reporting

- What happened?

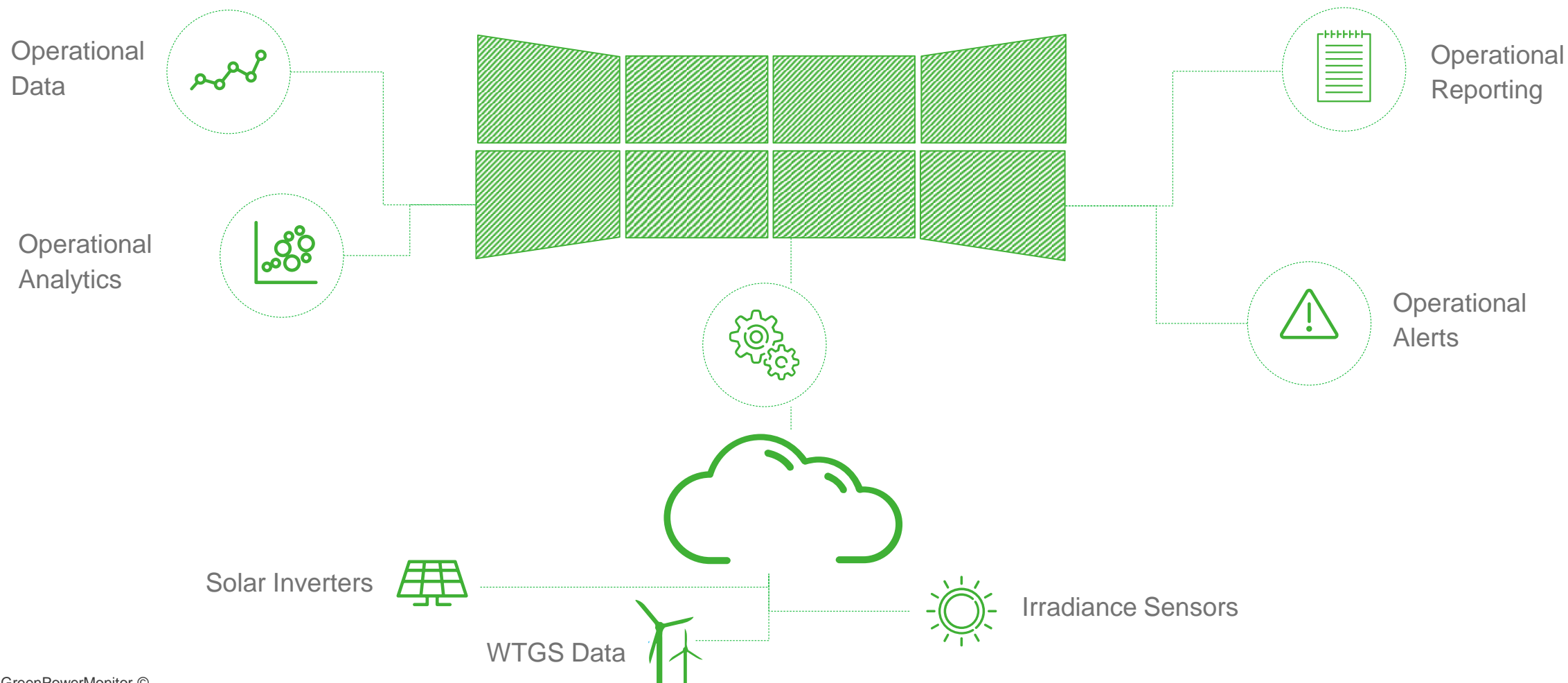
DATA HUB

GLOBAL MONITORING SOLUTIONS



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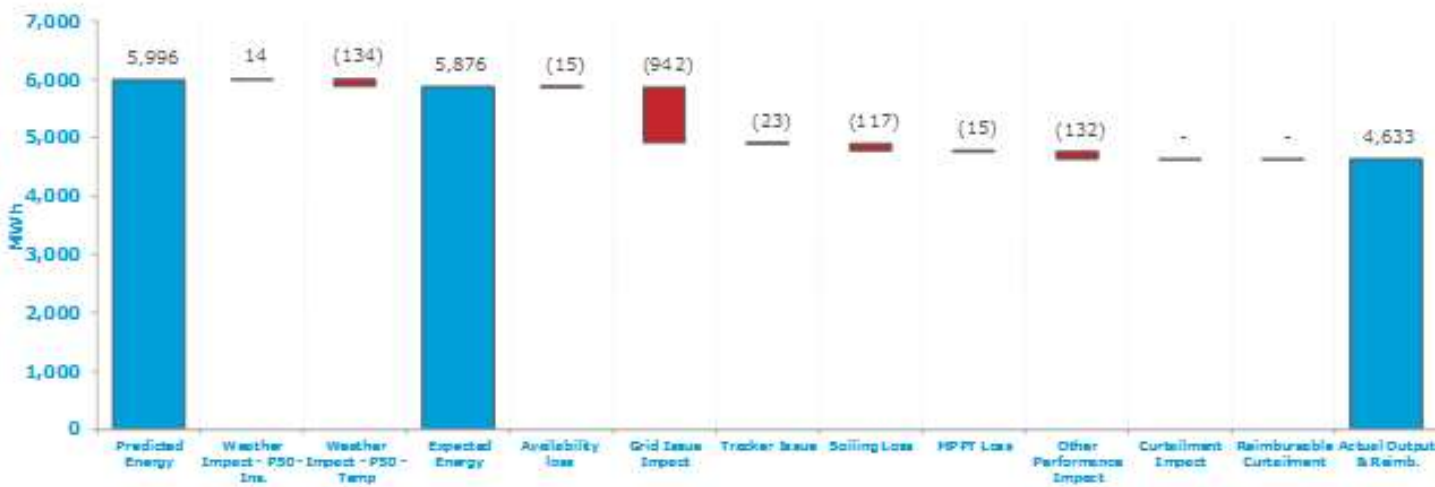
CASE STUDY

SOLARGEMINI

Advanced Analytics for Solar PV Site Performance Enhancements

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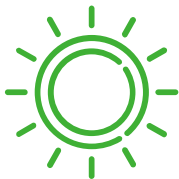


Source: DNV GL Case study data



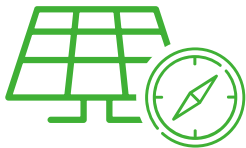
-15,72%

Grid Outage



-1,95%

Soiling loss Analysis



-0,38%

Tracker Issues

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DATA > ACTIONS

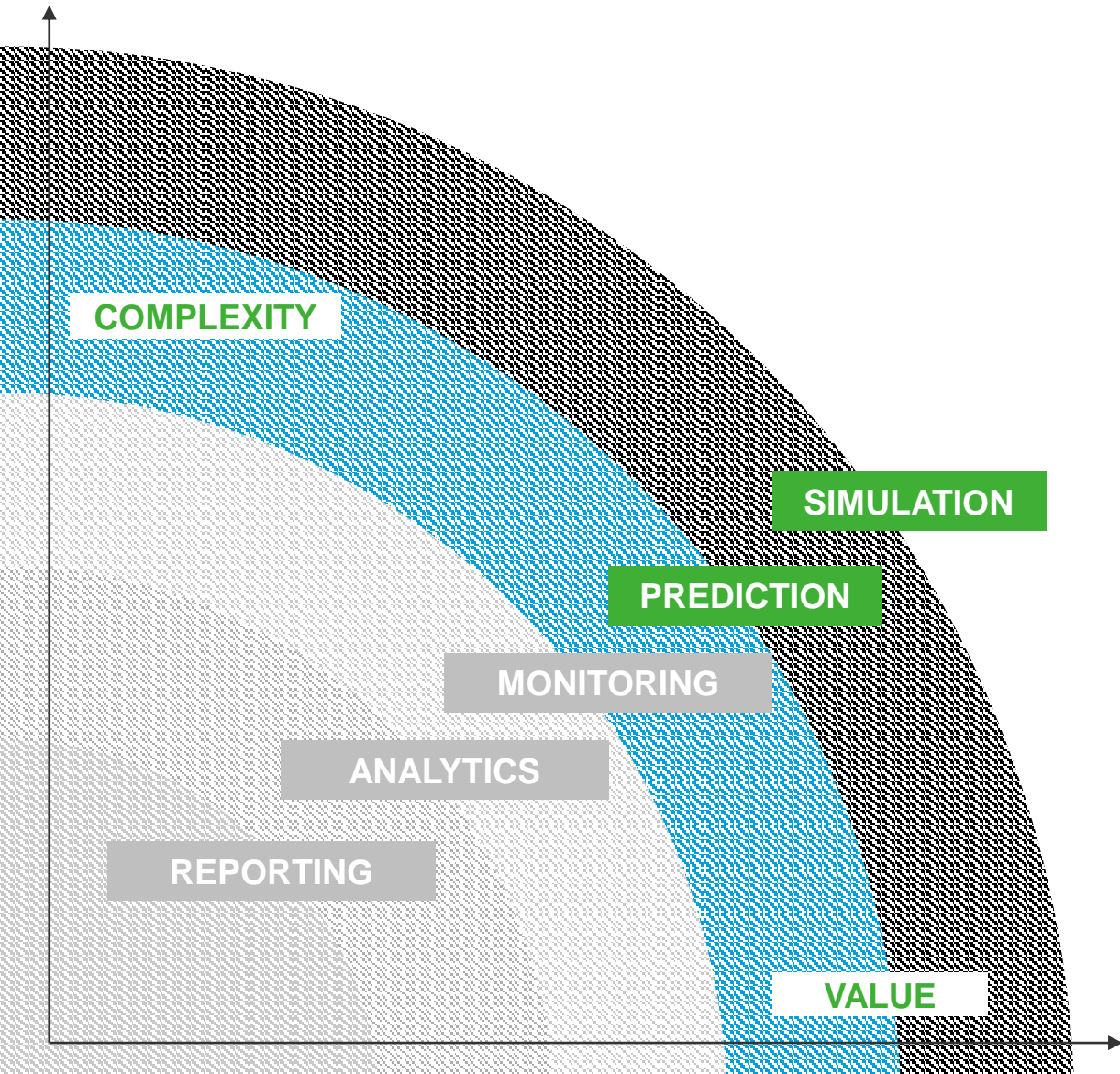
Our journey into unveiling the true potential residing in terabytes of [our] data oceans



PREDICTIVE O&M

PREDICTIVE O&M

A DATA STORY



Simulation

- What is it likely going to happen?

Prediction

- What might happen?

Monitoring

- What's happening now?

Analytics

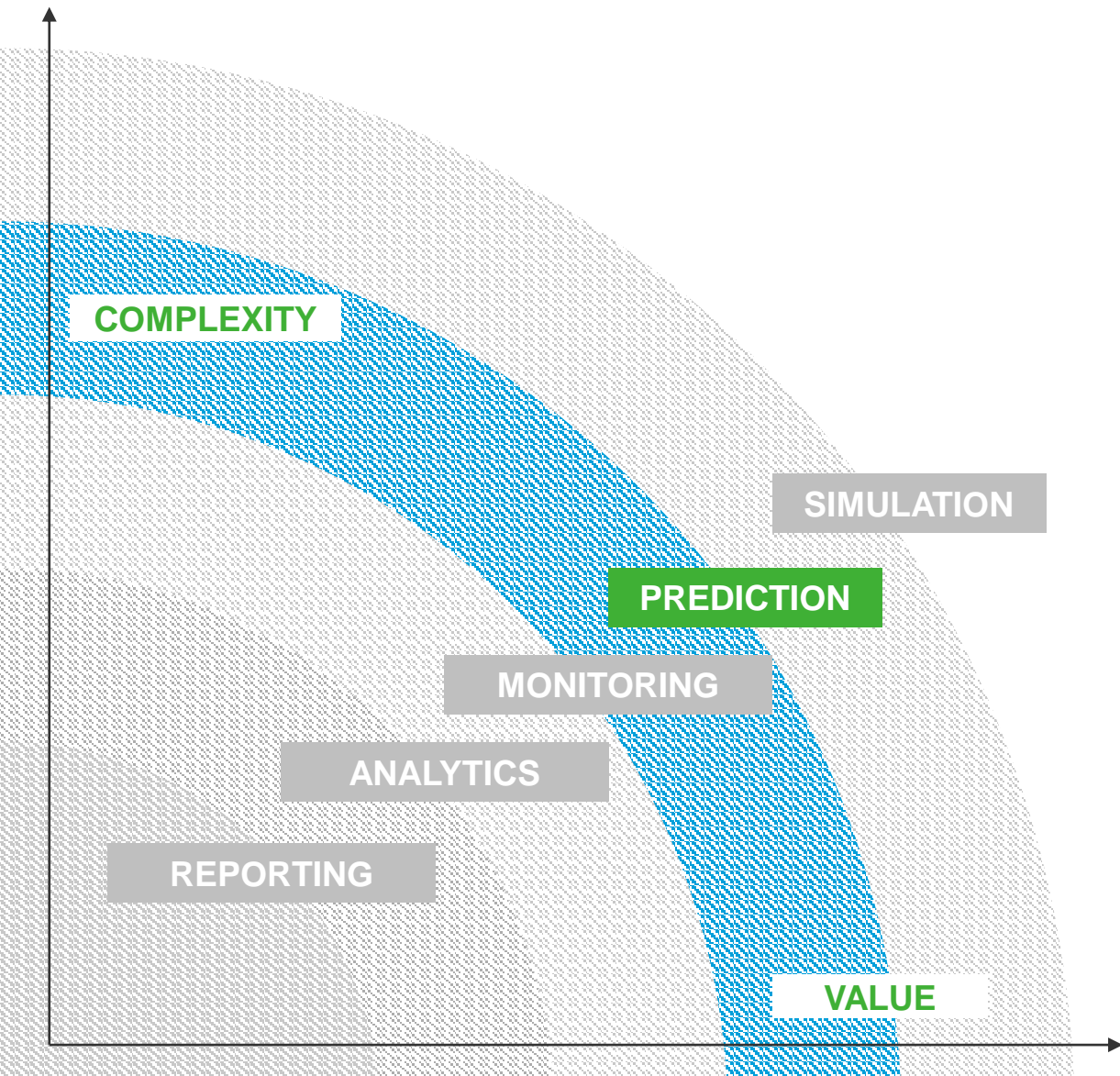
- Why did it happen?

Reporting

- What happened?

PREDICTIVE O&M

OUR DATA STORY (SO FAR)



Inverter power prediction

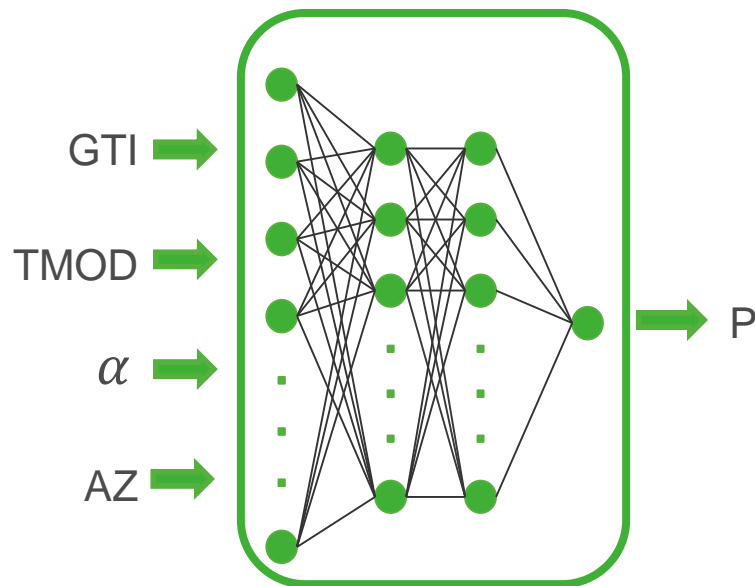


Inverter predictive fault detection

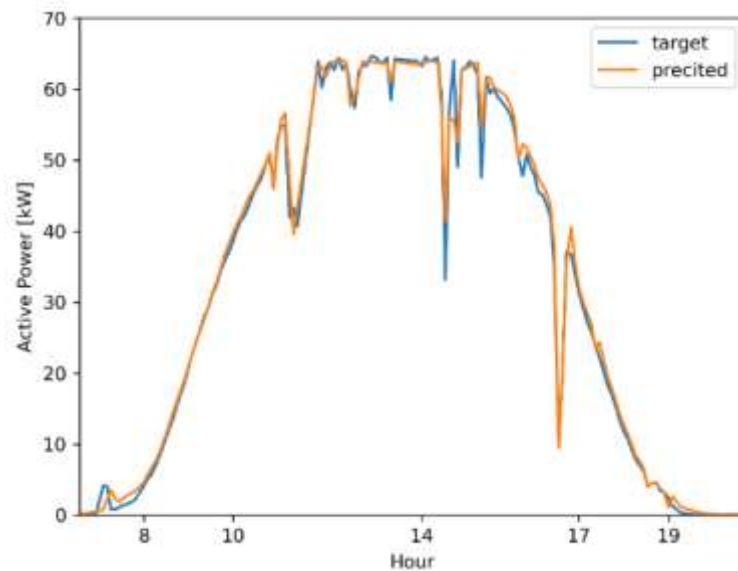
PREDICTIVE O&M

OUR DATA STORY (SO FAR)

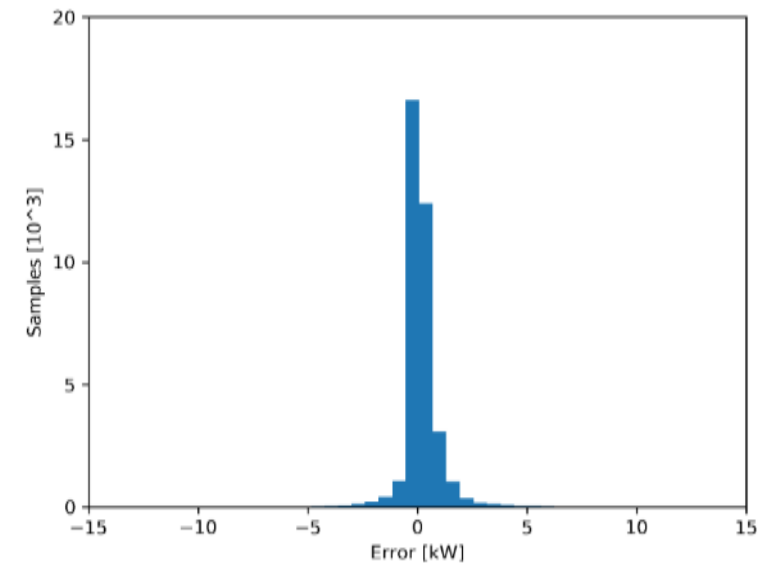
Neural Network



Model Results



Error Distribution



P: Inverter power / GTI: Global tilted irradiance / TMOD: Module temperature / α : Sun elevation / AZ: Sun azimuth

PREDICTIVE O&M

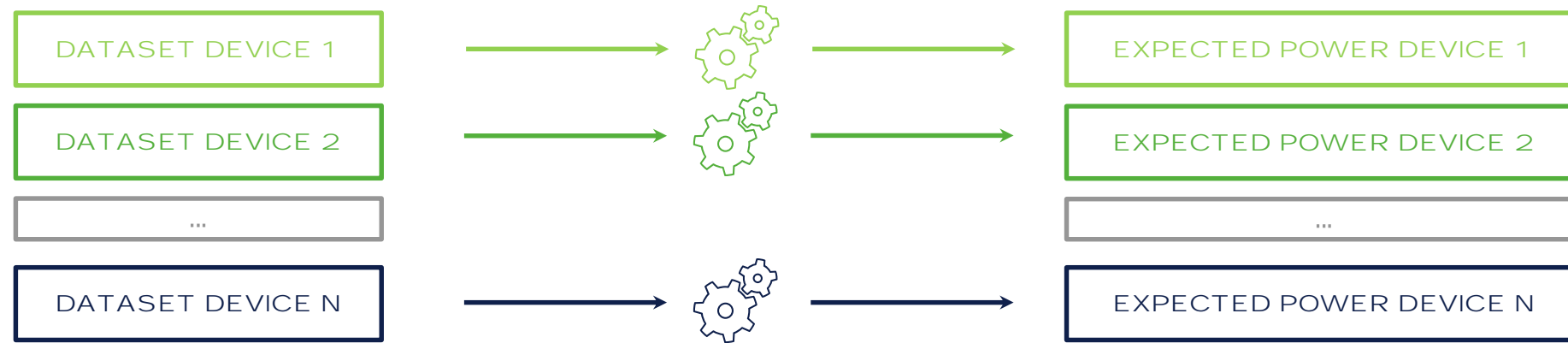
OUR DATA STORY (SO FAR)

Inputs

- Panel Temperature
- Irradiance
- Power
- Sun Position (Azimuth/Elevation)

Output

- 1 Data source per Device



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PREDICTIVE O&M APPLICATIONS



Data Gap
Filling



Energy Deviation
Analysis

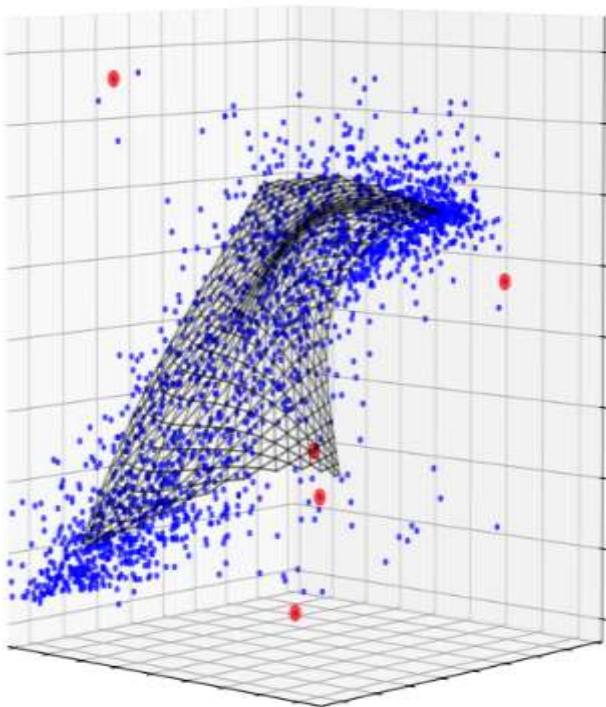


Energy Production
Forecasting

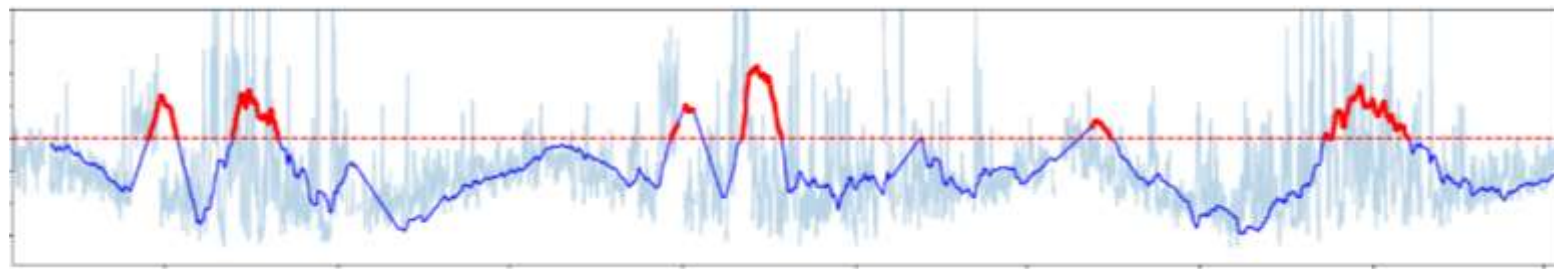
PREDICTIVE O&M

INVERTER PREDICTIVE MAINTENANCE

Normal Behaviour



Anomaly KPI



Input Variables

- Irradiance
- Ambient temperature
- AC Power
- AC Current
- Internal temperature
- Module temperature
- DC Voltage
- DC Power
- DC Current

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PREDICTIVE O&M APPLICATIONS



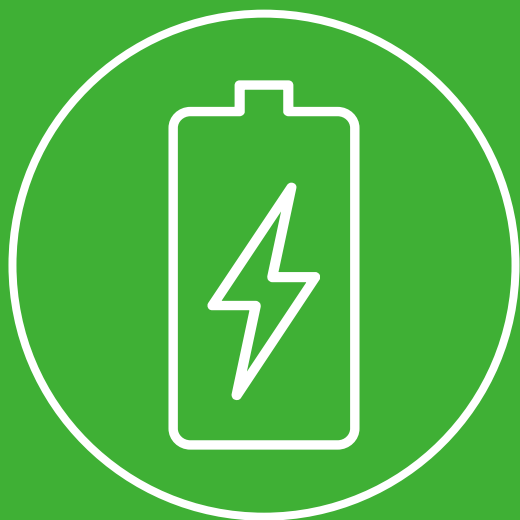
Component Failure
Prediction



Operator Route
Optimization



Smart(er) Inventory
Purchasing

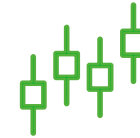


GPM BESS

BESS INTEGRATION TO A SOLAR PV



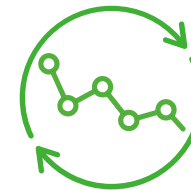
GPM PPC BESS Management System, ensures a power quality control in a Hybrid System.



Active and reactive power regulation within the limits established.



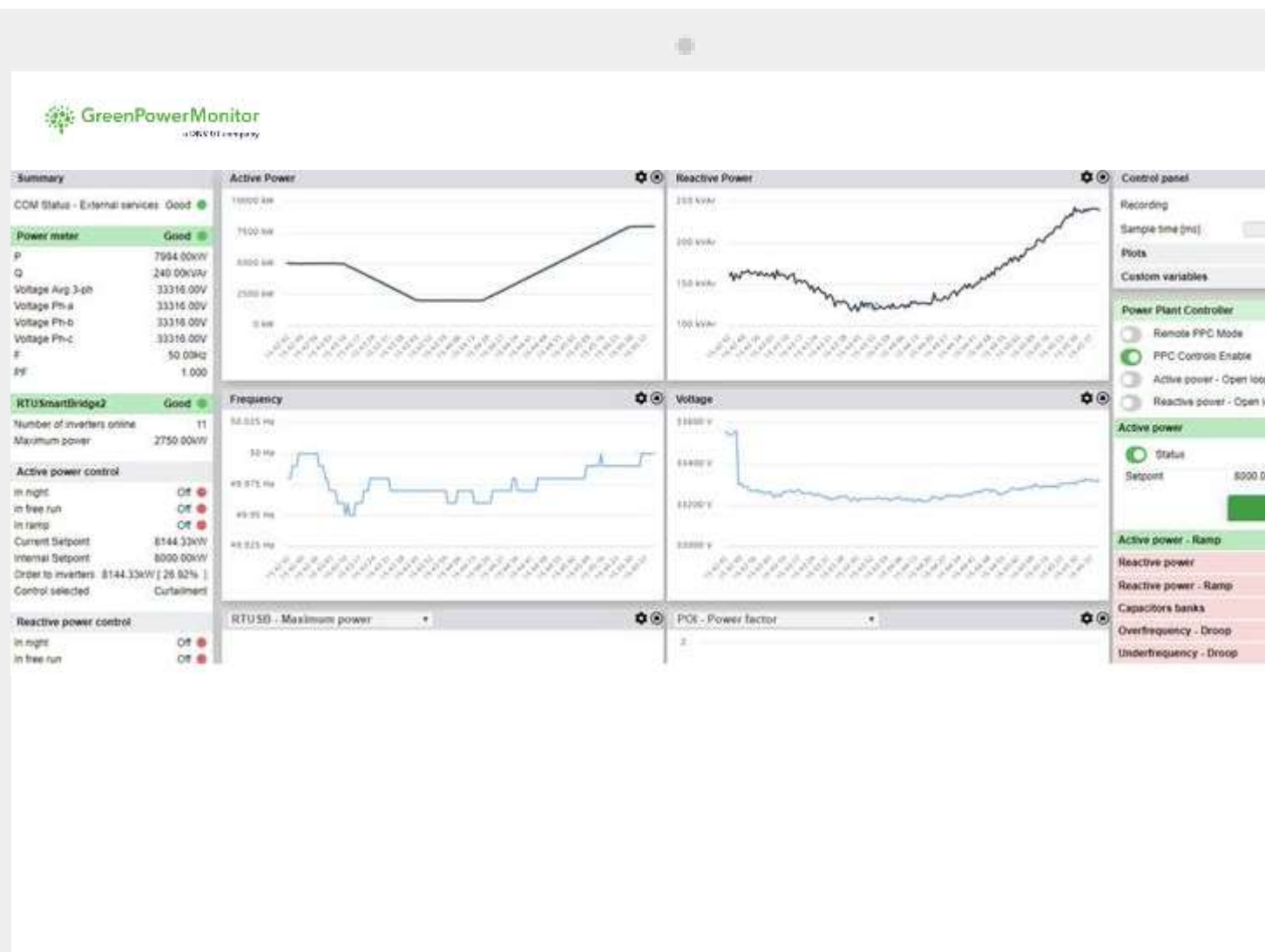
Configurable setpoints of active/reactive power to limit exporting and importing.



Frequency Controls & Firming

BESS INTEGRATION TO A SOLAR PV

- Control Charging/Exporting given a market changing events.
- The controller is capable of managing n x BESS stations units, applying individual controls in each one.
- State Of Charge management.
- Firming Function
- FFR and other Frequency Services



BESS INTEGRATION TO A SOLAR PV



The controller allows the selection of a desirable SOC average system to reach it in a selectable active power rate.



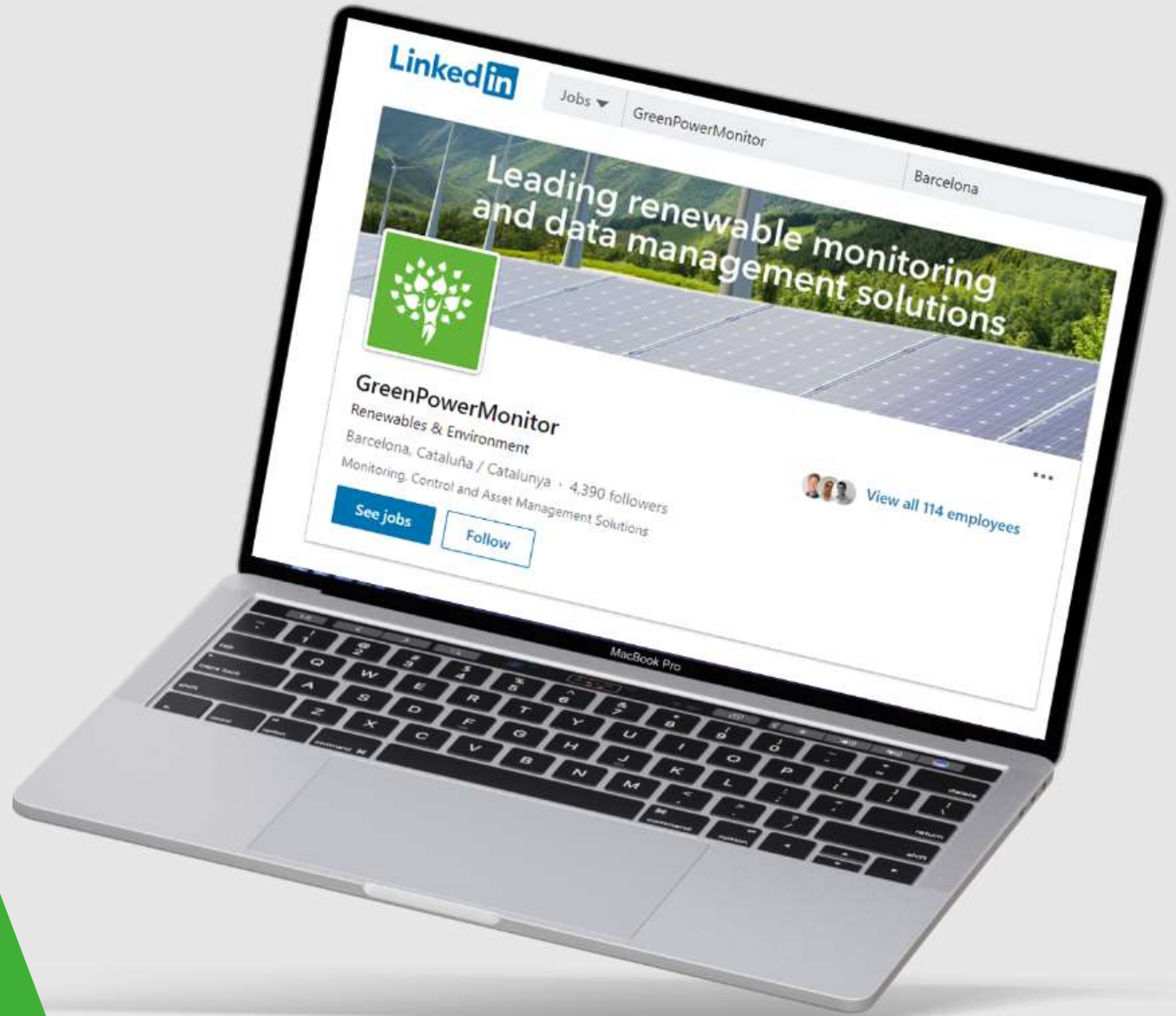
Once the SOC is reached the controller apply an active power setpoint of maintenance.



Modifiable setpoints of this control are:

- SOC Average Setpoint
- Active power setpoint after SOC Avg.Mode.

JOIN
US AND
STAY
TUNNED



ADDITIONAL CASE STUDIES?

CONTACT OUR
ENERGY EXPERTS

PONENTE

Webinar de ATA Insights: Monitorización para la optimización de plantas FV

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THANKS!

www.greenpowermonitor.com



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