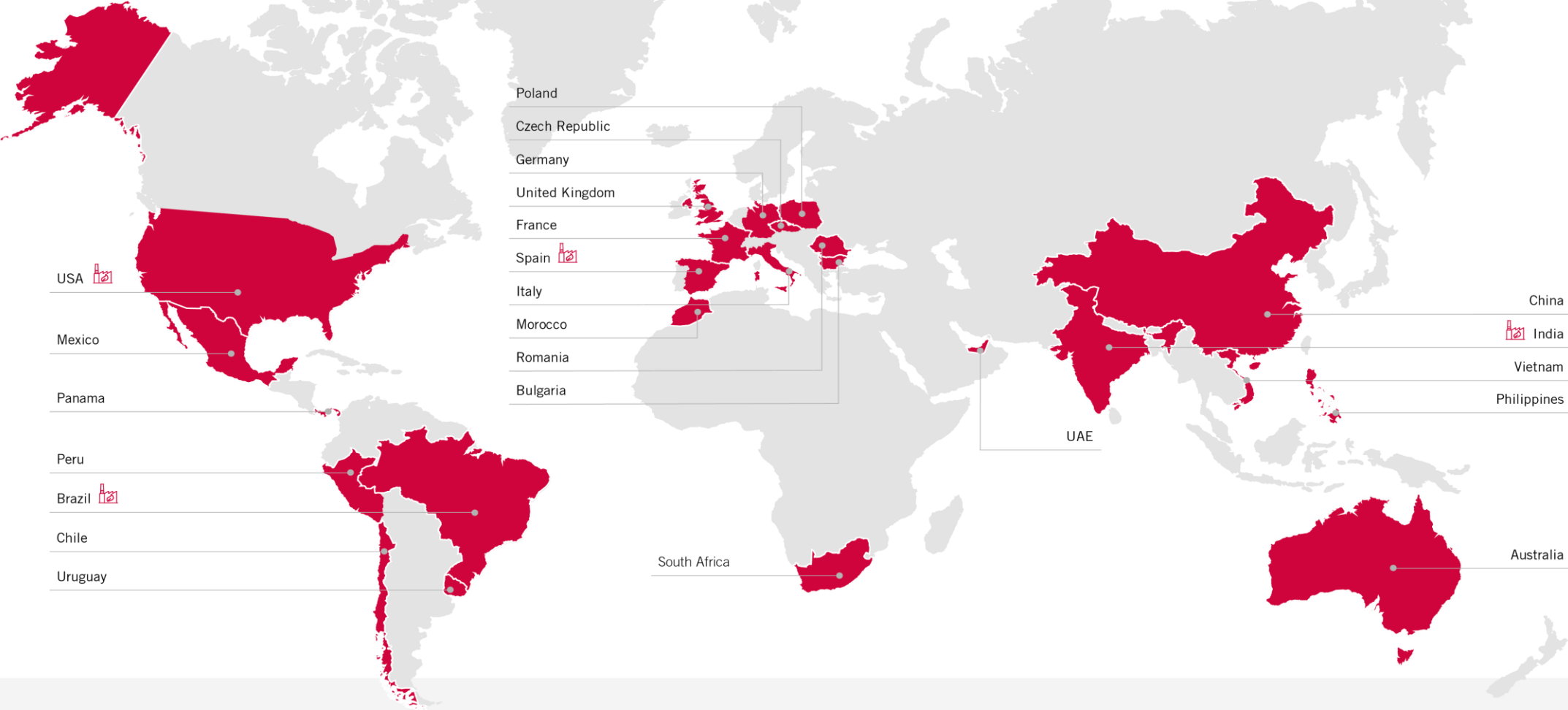


Ingeteam

READY FOR YOUR CHALLENGES

www.ingetteam.com

Key figures



24 PRESENCE
IN NUMBER
OF COUNTRIES



4,108 EMPLOYEES



+75 YEARS IN
THE ELECTRICAL
SECTOR



5% ANNUAL
INVESTMENT OF
TURNOVER IN R&D



22 YEARS OF
EXPERIENCE IN
THE SOLAR INDUSTRY



22 GW INSTALLED SOLAR
POWER CAPACITY
WORLDWIDE



17.3 GW O&M PROJECTS
WORLDWIDE

Ingeteam

READY FOR YOUR CHALLENGES

 Diversified business in different sectors

A BANKABLE COMPANY



Wind
Power



Marine
& Ports



O&M Service



Solar PV
Power



Railway
Traction



e-Mobility



Energy
Storage



Power
Transmission
& Distribution



Industry



Hydro
Power



Mining



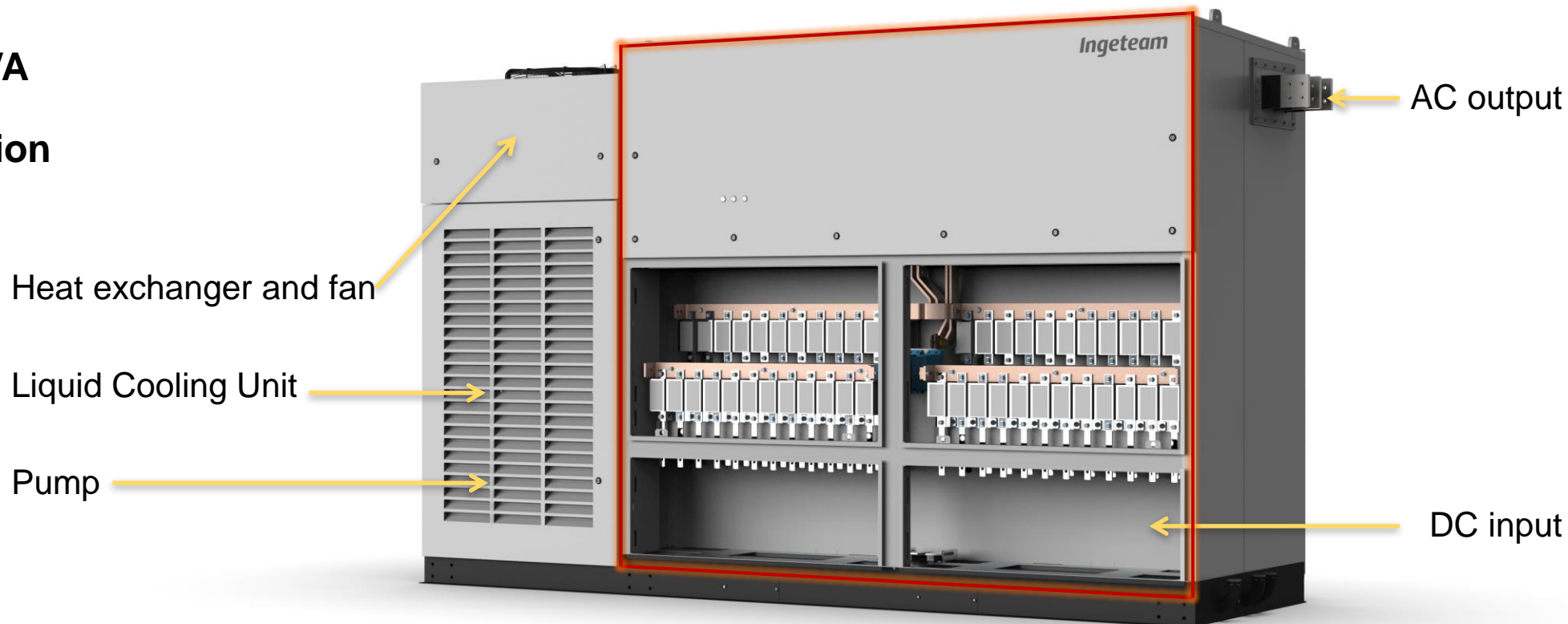
Green
Hydrogen

INGECON SUN 3Power C Series

1,500
Vdc

 The most powerful power stack

- ❑ Liquid-cooled inverter
- ❑ Up to 3.7 MVA
- ❑ IP65 protection



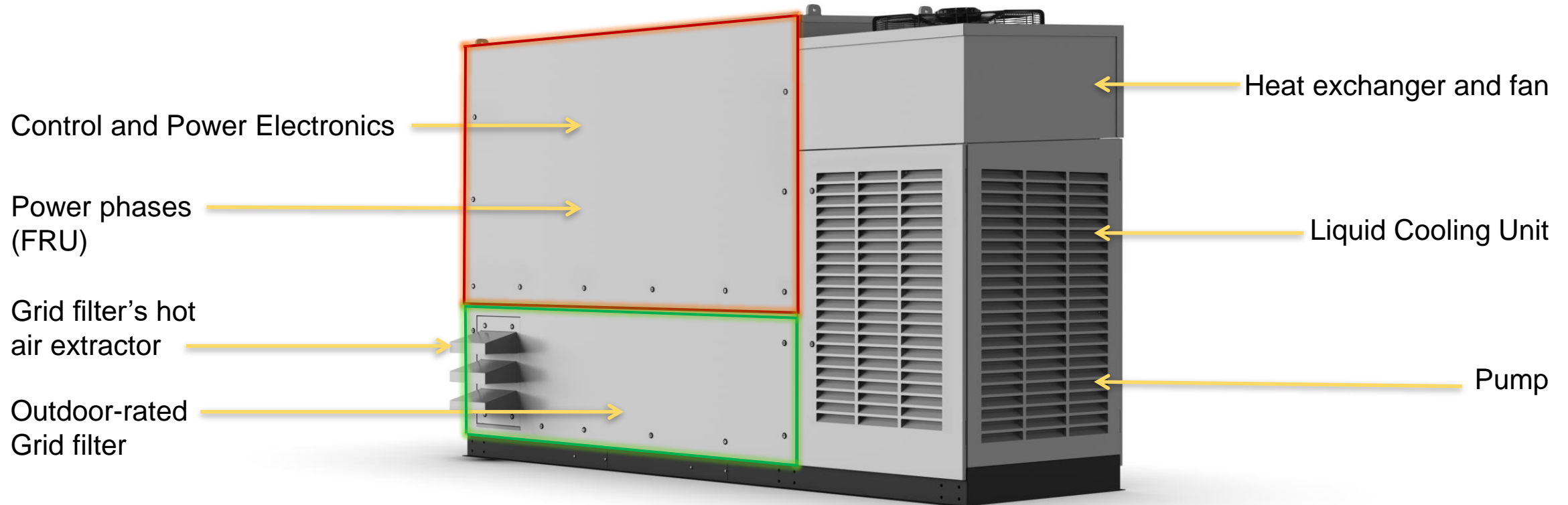
 IP65 compartment.

Front view

CONSTRUCTION OVERVIEW



The most powerful power stack



 IP65 compartment.

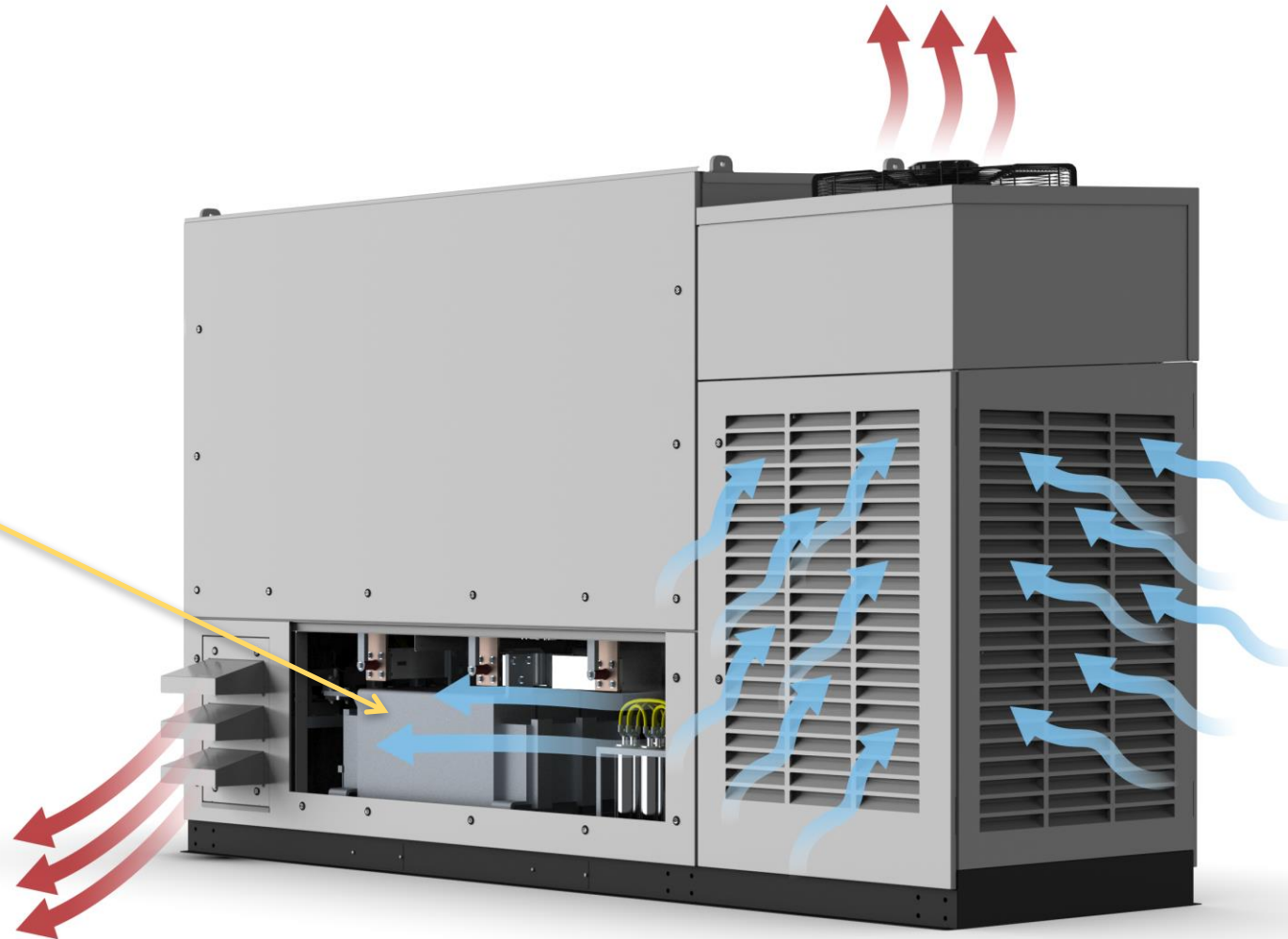
 IP54 compartment.

Rear view

CONSTRUCTION OVERVIEW

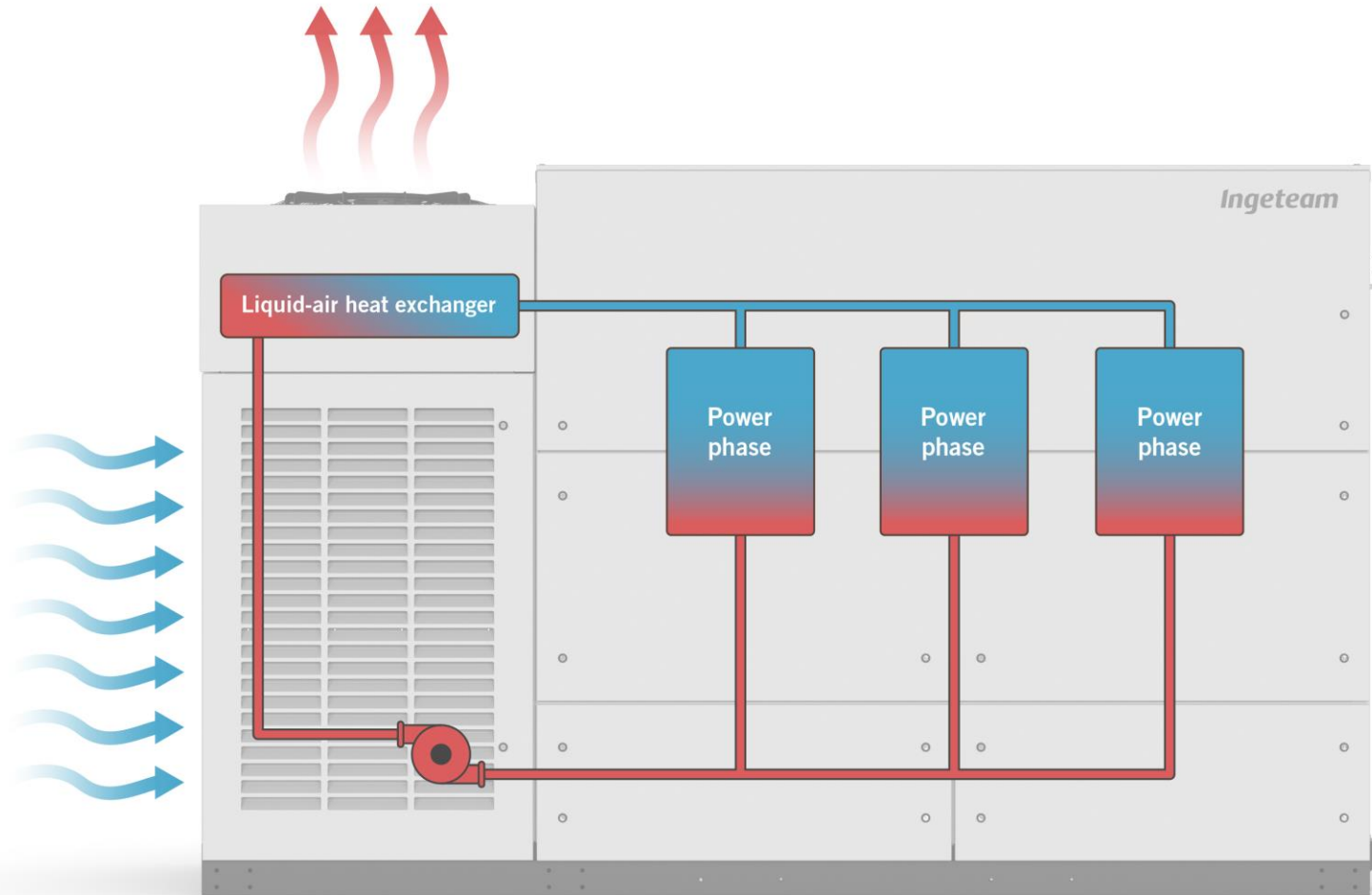
Forced Air Ventilation

Outdoor-rated grid filter



CONSTRUCTION OVERVIEW

 Total airtightness thanks to its liquid cooling system



GRID SUPPORT



Advanced functionalities



Low Voltage Ride Through



Fast Frequency Regulation



Reactive Power at Night



Voltage Droop Control



Active Power Reserve Without Batteries



Grid Following & Grid Forming

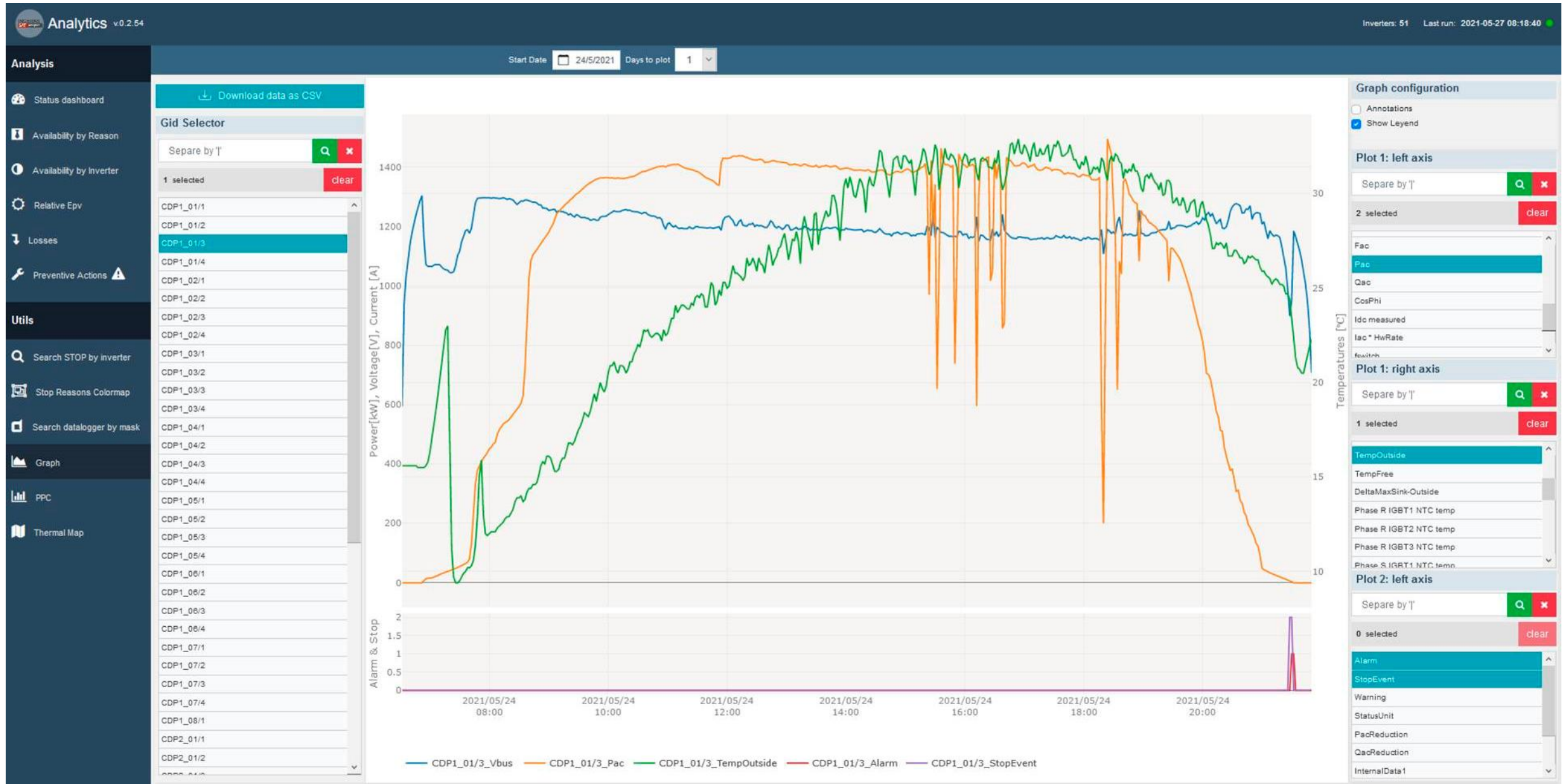


Black Start Capability



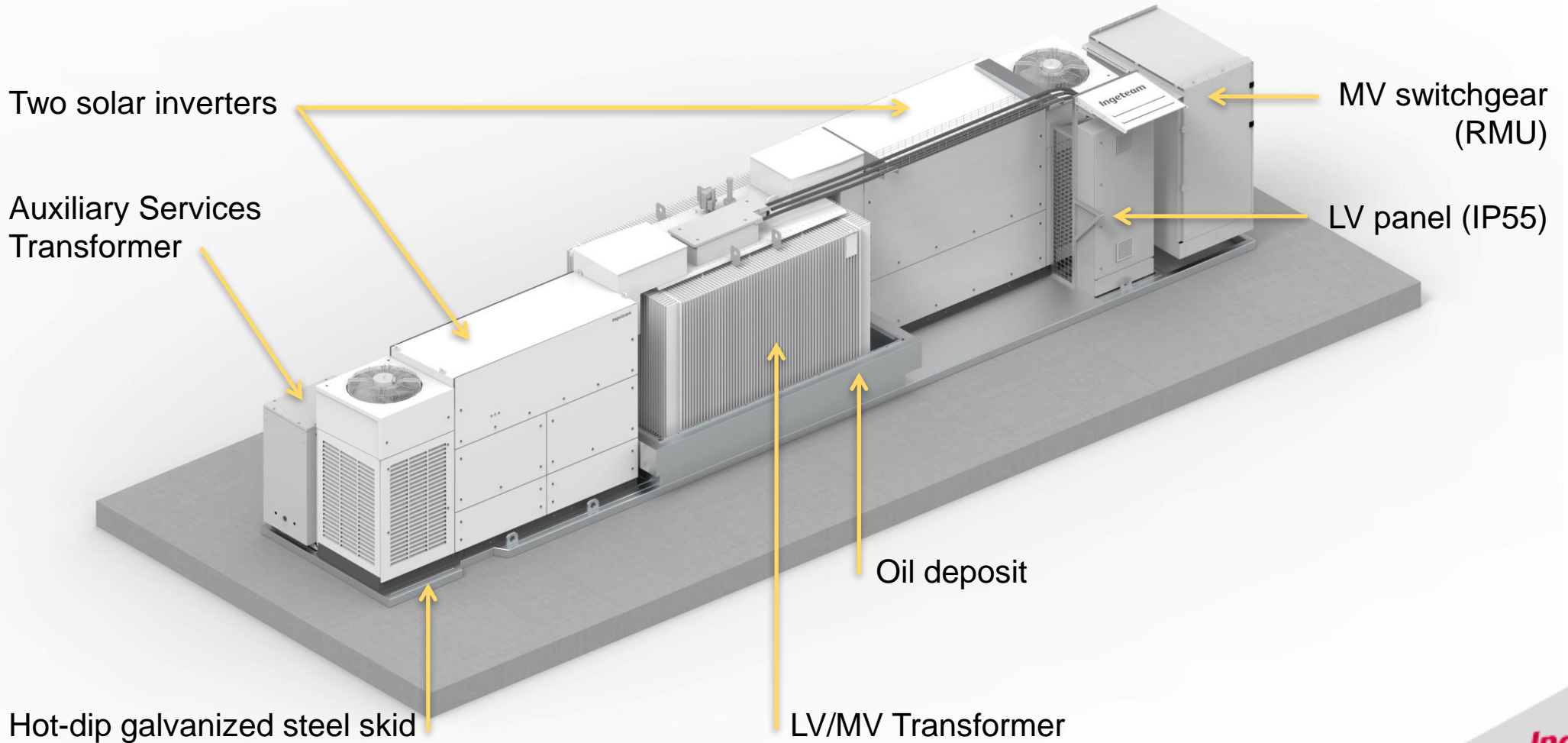
Automatic Voltage Regulation

DATA ANALYSIS



Integration Into a Full Skid Solution

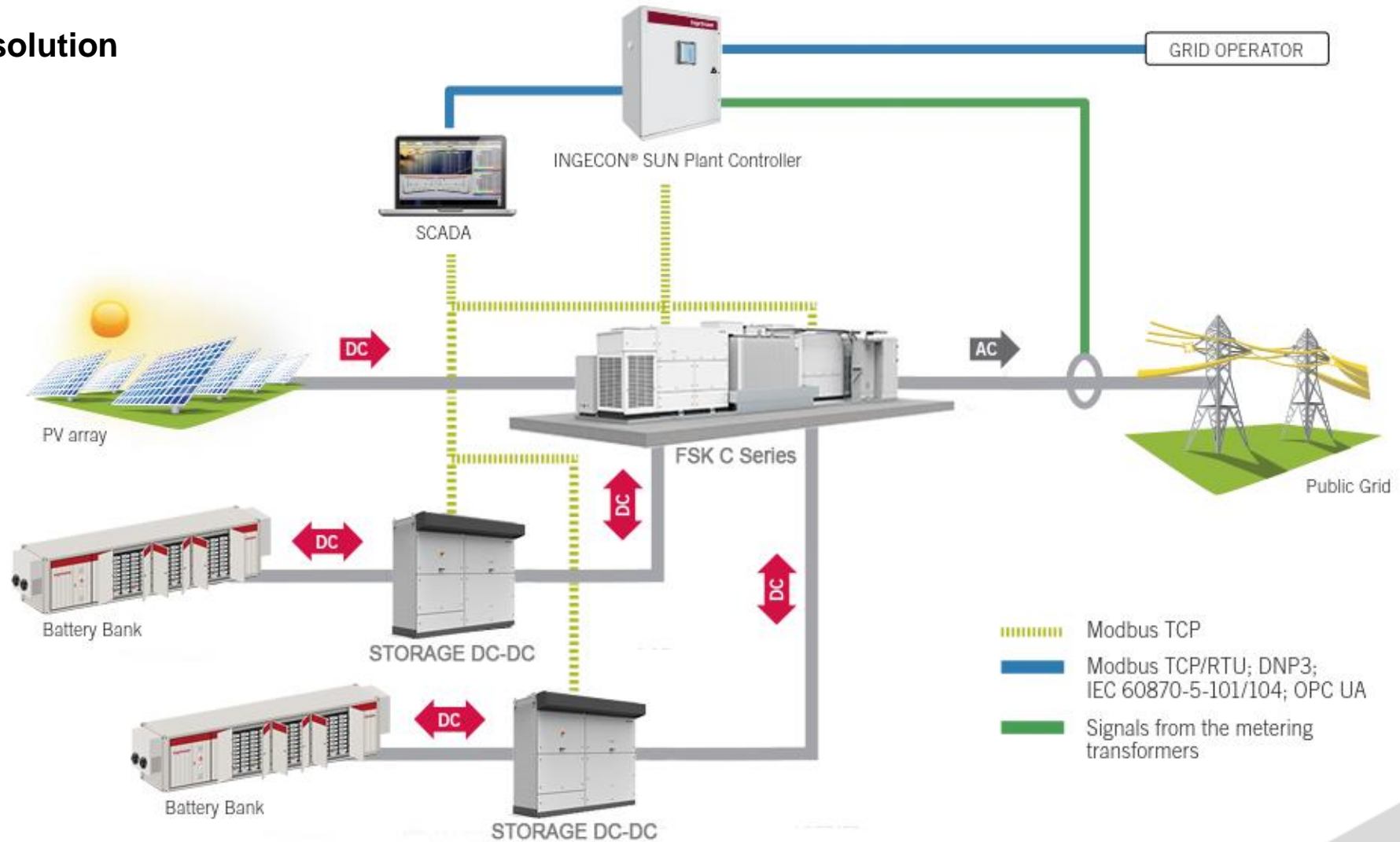
 Medium-voltage turnkey power station up to 7.4 MVA



BESS-READY

✓ Fully integrable with energy storage systems, DC and AC coupled

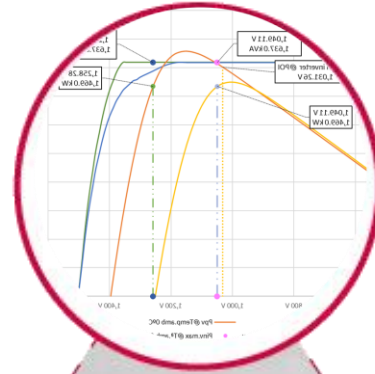
□ DC Coupling solution



IN ALL THE PROJECT PHASES

1. DEVELOPMENT

- ☐ Models
- ☐ Simulations
- ☐ Engineering support
- ☐ Dimensioning of the PV plant



2. CONSTRUCTION

- ☐ Supervision
- ☐ Commissioning
- ☐ Grid Code compliance
- ☐ Technical training

3. OPERATION

- ☐ After sales service
- ☐ Warranty
- ☐ Spare parts
- ☐ Power plant audit
- ☐ Service level agreement with availability



**Minimising risks;
Controlling the LCOE**



SOME BENEFITS OF THE NEW CENTRAL INVERTER IN TERMS OF O&M:

1. Fully sealed Water Cooling System

- ☐ IP65
- ☐ No air filters in the electronic phase
- ☐ Ingeteam has a large know-how and experience in the maintenance of water cooling systems thanks to years of experience in the wind energy industry

2. Remote monitoring of the inverter

- ☐ Fans monitoring (this will allow to predict future failures on the ventilation system)
- ☐ Information of the inverter performance on the cloud getting a proper traceability on the performance of the inverter, alarms, upgrades,...

3. General benefits

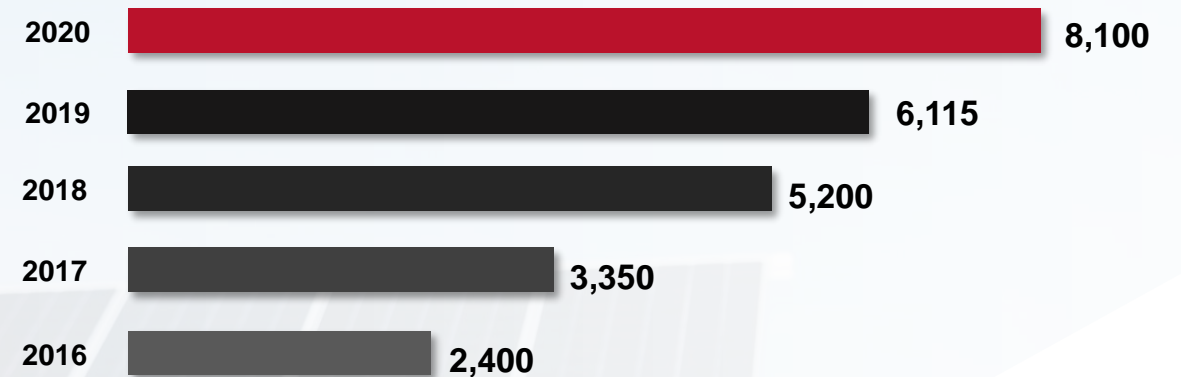
- ☐ Better efficiency
- ☐ Option of remote assistance
- ☐ OPEX reduction: less consumables, less spares
- ☐ Reduction of O&M times.

OPERATION AND MAINTENANCE

568
PLANTS MAINTAINED
throughout the world

8.1 GW

Maintained Solar PV Power (MW)



SERVICES



INGETEAM INVOLVED IN THE DIFFERENT STEPS OF A PROJECT:

Ingeteam will support during the different phases of the Project:

Design during the elaboration of the Execution Project Documents of the PV site



EPC phase:

- Assembly and installation of the Skids (if Ingeteam product applies)
- Prior Audit – EPC defects punch list
- Pre-Operation and Maintenance (during end of the Construction phase)



Operation & Maintenance



Improvements or upgrades of the PV site (revamping's, retrofits, ...)

STEP 1

Design:

- ☐ Ingeteam will support the Customer with the information needed for the market model with all technical information related to the product
- ☐ Ingeteam can provide any prior support to understand needs and costs during the O&M phase
- ☐ Ingeteam can advise from a technical point of view in terms of O&M standard preventive maintenance (for inverters and any other device of the site)

STEP 2

EPC Phase:

- ❑ Assembly of the Ingeteam equipment (Skids, inverters, ...). It can be done by the future O&M team, giving a proper training for the O&M activities.
- ❑ Prior Audit – EPC Defects: Ingeteam can support to the Customer with the Punch List and with this, O&M provider and Owner
- ❑ Pre-Operation and Maintenance



STEP 3

Proactivity

We constantly analyze
each plant from our
CONTROL CENTER

In our hands

We apply the most demanding
standards to guarantee
**THE CORRECT OPERATION
OF YOUR INSTALLATION**



Adaptability

The inventory sizing
needs at your plant
ARE OUR PRIORITY

Committed

Our commitment
Is to ensure a
RETURN ON INVESTMENT

STEP 4

**Improvements or upgrades of the PV site
(revamping's, retrofits, life extension...),
with many benefits:**

- ☐ New components more efficient and cheaper
- ☐ Return of investment
- ☐ Cost reduction in Maintenance
- ☐ New warranties
- ☐ The replaced equipment can be dismantled in order to use its components as spare parts for the rest of the PV plant
- ☐ Spare parts availability, software, reliability and H&S improvements



Thank you for your attention!!

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