Exploring Our Product Roadmap and Exciting Innovations

Partner Forum 2023

Romane DOSQUET, Olivier BOMBOIR & Gilles GERON

27th September 2023

PARTNER FORUM 2023

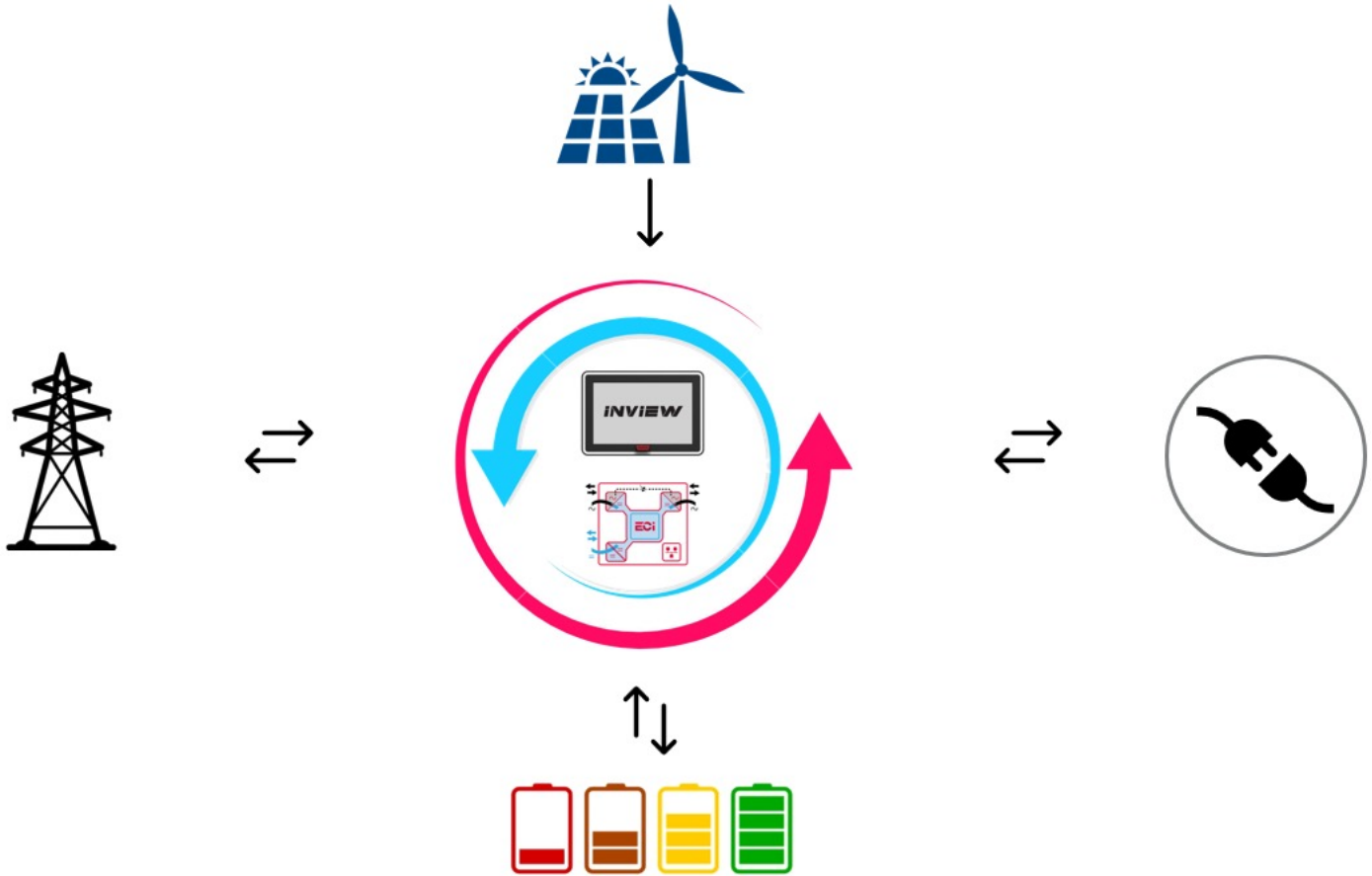
Today’s presenters

Romane DOSQUET
Product Manager

Olivier BOMBOIR
Chief Customer Officer

Gilles GERON
Product Manager

CE+T vision…



Today’s agenda

Power Management

InView functionalities

Sierra 25 evolution

Converter Range

Stabiliti

XC Solutions

Cybersecurity

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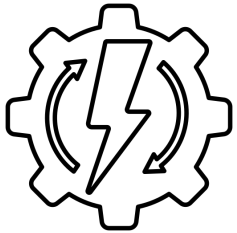
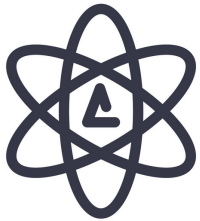
POWER MANAGEMENT

InView's **static policies** guarantee **local control** and ensure **reliable power availability**, ultimately leading to **reduced operational expenditure** (OPEX)



Local control
of power flow

Based on
static policies

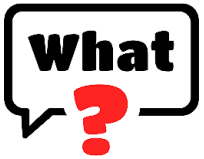


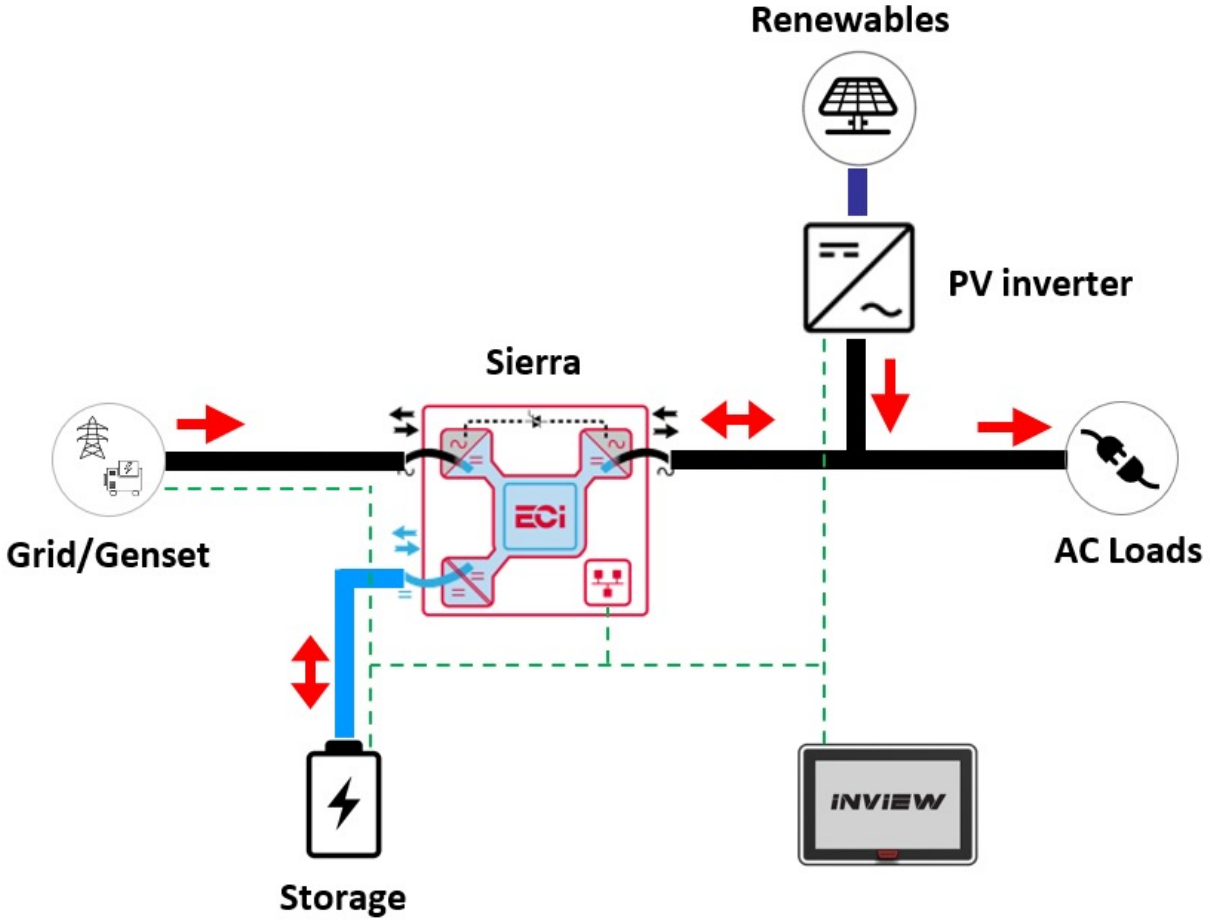
CE+T Converter
agnostic

Ensure stability
& availability

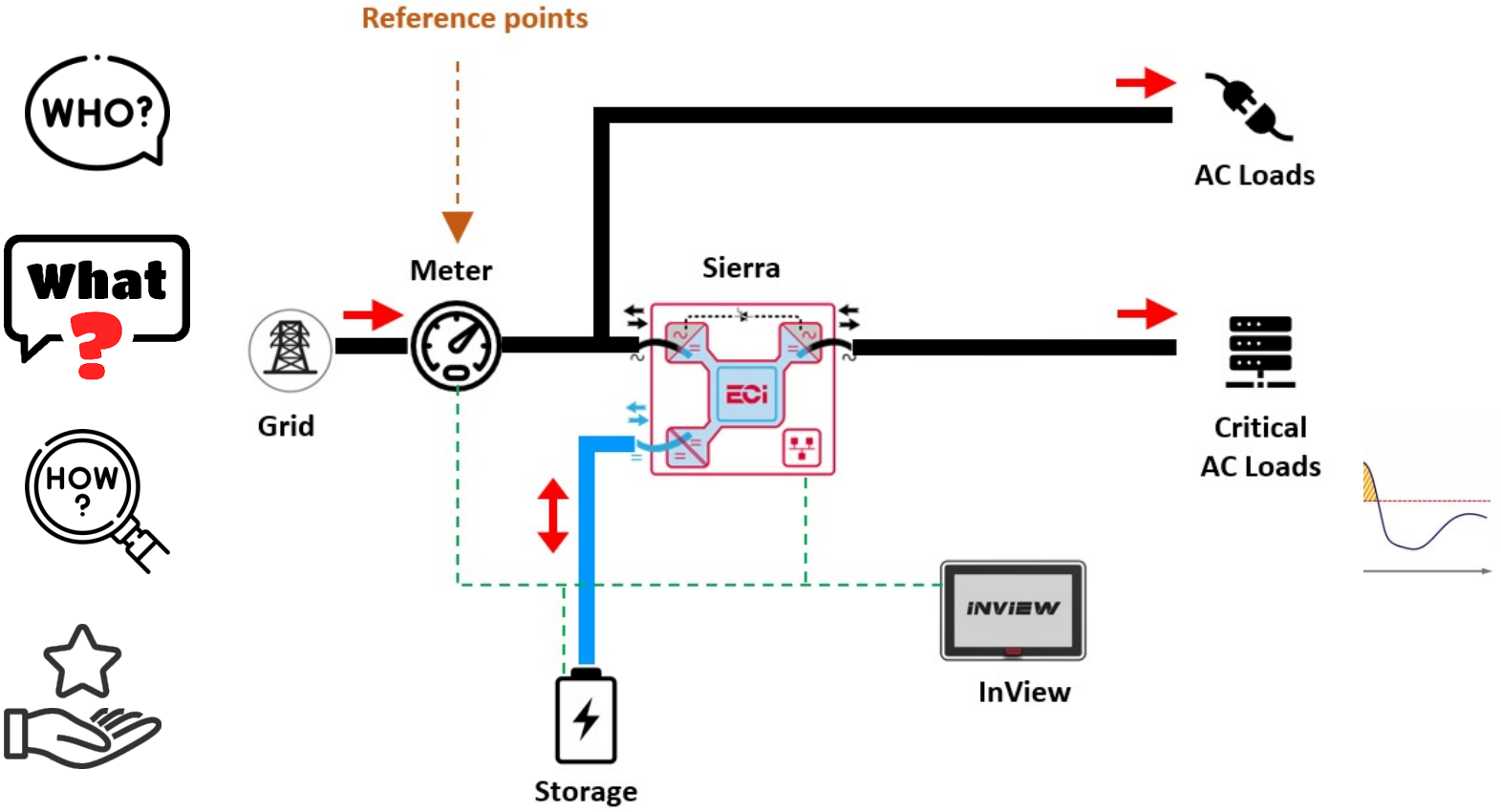
OPEX
reduction

InView functionalities - Off-grid & Self consumption

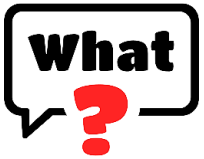


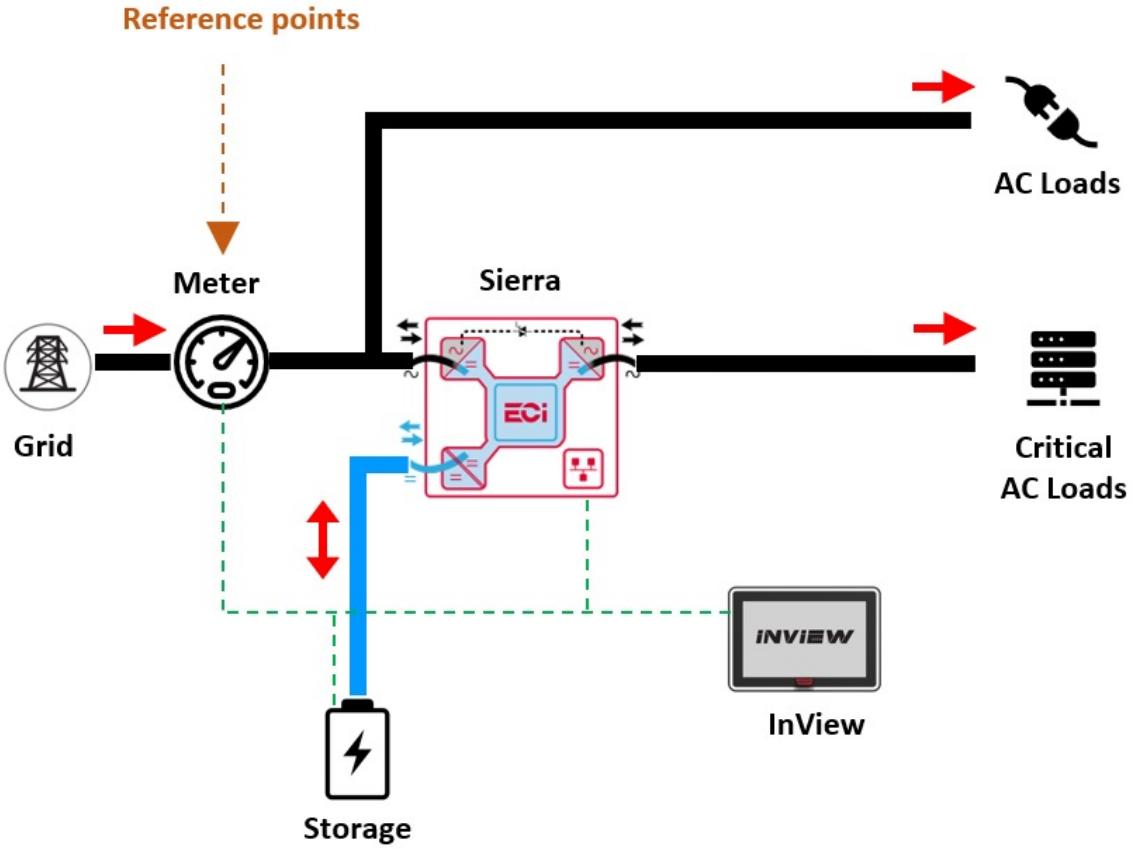


InView functionalities - Peak-shaving

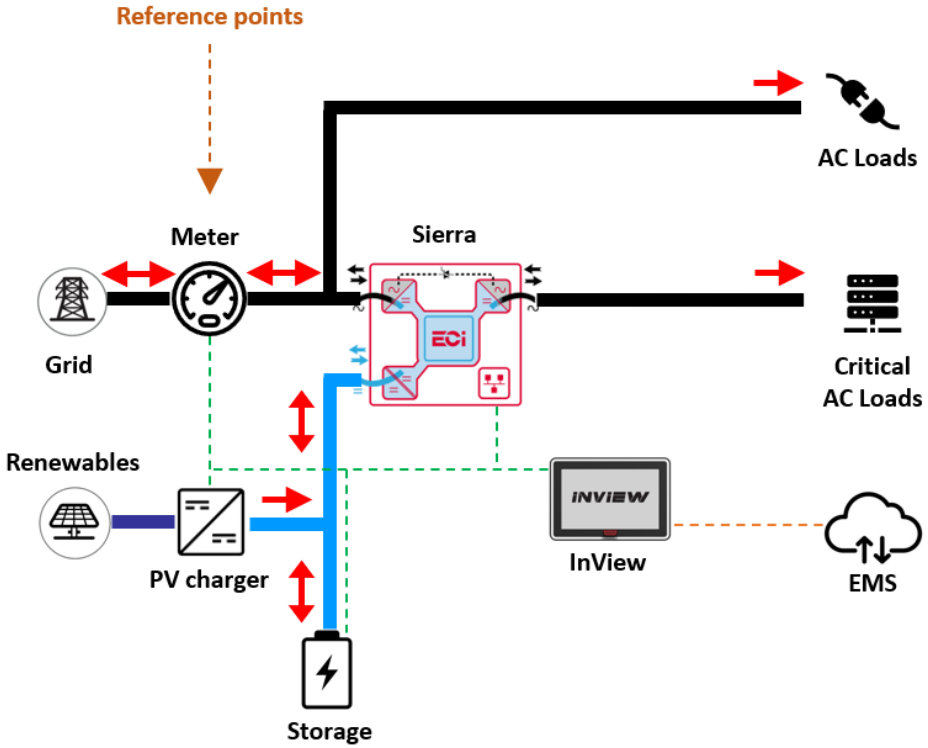


InView functionalities - Energy Arbitrage

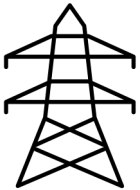




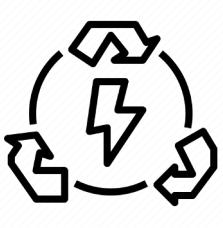
InView functionalities - Force charge/discharge



Sierra **25** serves as the **basement** of the controller and must also **evolve in tandem**



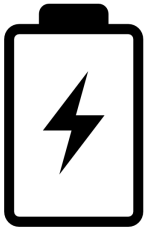
Grid interactivity



Output recycling

Give priority to DC source

Increased synchrospeed

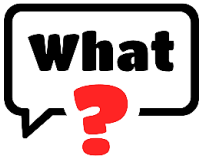


Discharge control

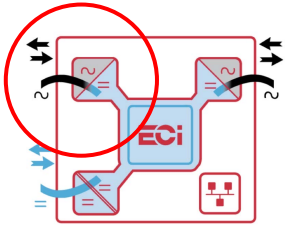
Power save out

Take part in the **grid support** thanks to Sierra 25 **Grid Interactive** capability

Functionality requiring **interaction with grid** (not a pure load anymore)



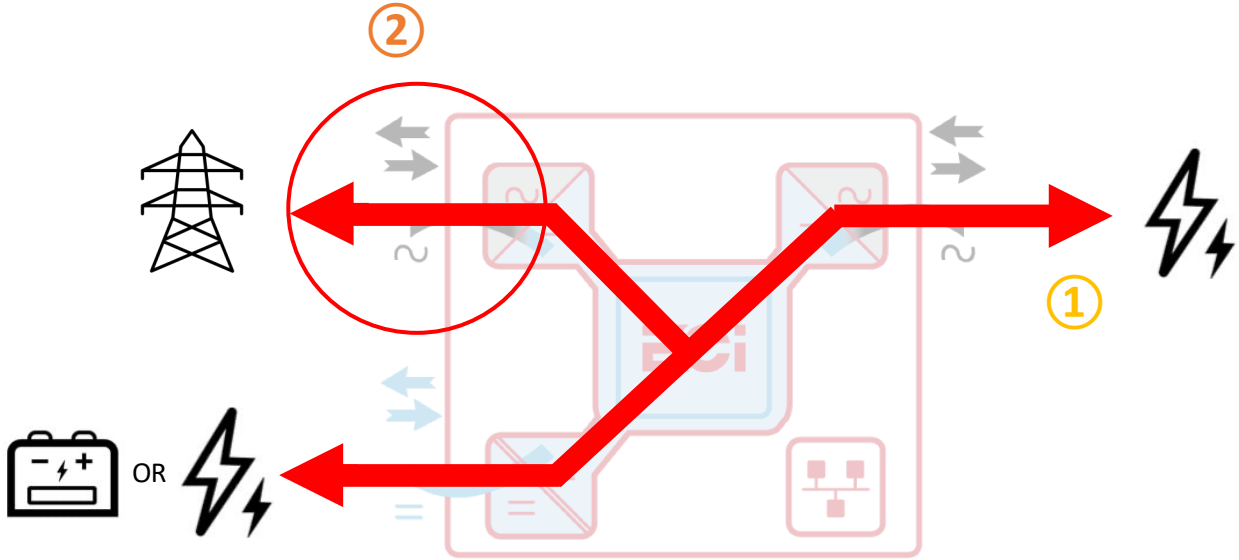
Grid interactive **certification**



Firmware adaptation for grid code compliance

OPEX reduction & reduced exposure to energy prices volatility

Grid interactive: power flows **from** batteries or **DC** source to **AC loads** & **grid**

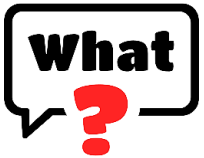


Batteries (bottom left) feed both the **AC loads** (top right) and **reinject energy** to the grid (top left).

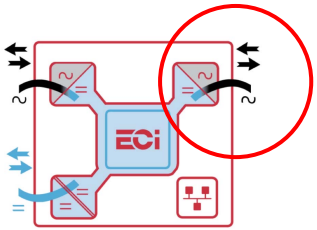
Sierra 25 is certified Grid Interactive for many regions

Take the **most out of** your Sierra 25 AC **output** by **recycling** the **energy** it generates **to the battery** or the grid

Combination with **AC coupling** or **regenerative breaking**



Recycle excess **back to the battery** (or the grid)



Firmware adaptation & set of parameters

OPEX reduction, **Securing Energy Supply** & **decarbonization**

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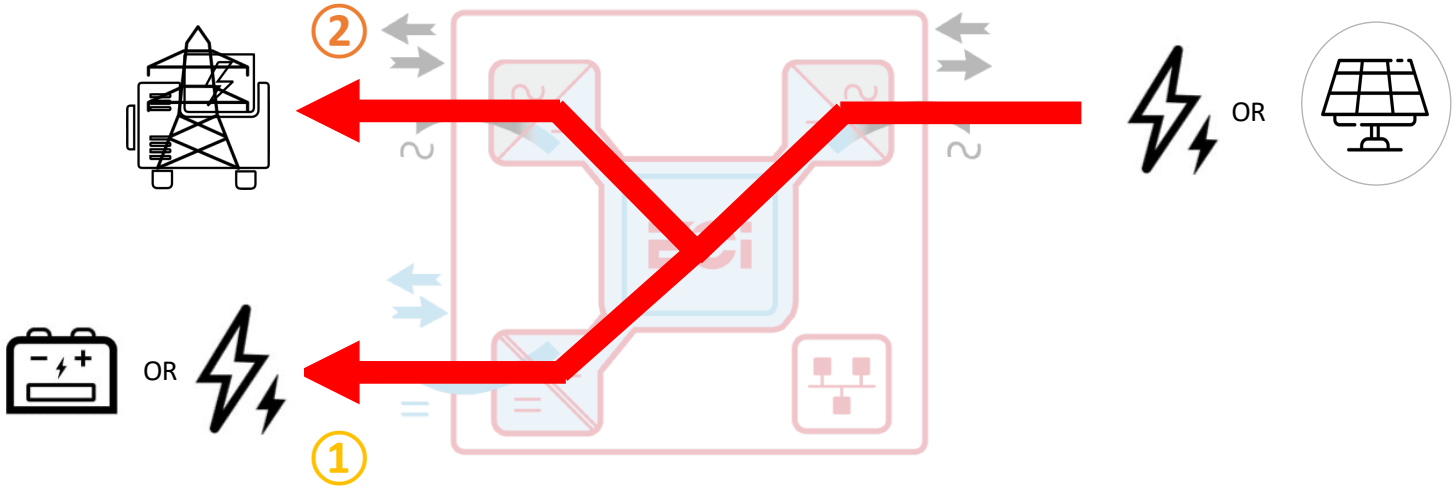
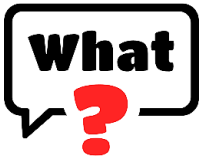
Output power **recharges** the **battery** in priority and then, the **excess** is fed back **to the grid**, if any



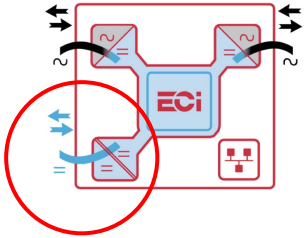
AC loads or **Sources** (top right) feed **batteries** and **DC loads** (bottom left) and **reinject energy** to the grid if possible (top left).

With Sierra 25, consume energy from **renewable DC sources** in **priority** even when the grid is connected

Combination with **DC coupled source**



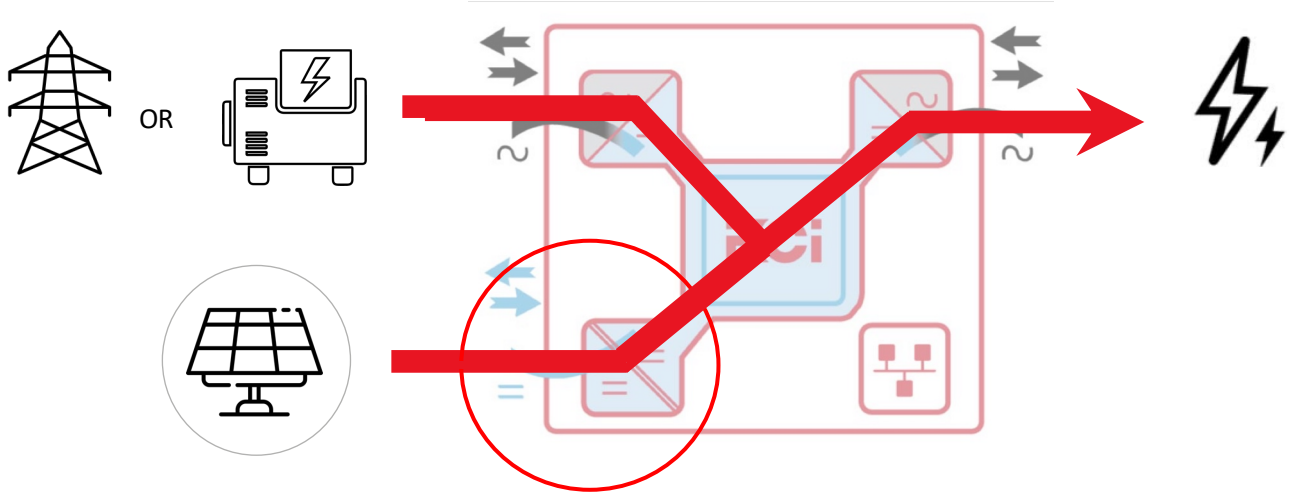
Give **priority to DC** source



Firmware adaptation (not rectifier anymore) & set of parameters

OPEX reduction, **Securing Energy Supply** & **decarbonization**

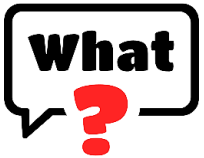
Optimize the use of **DC renewable sources** rather than the grid **when** they are **available**



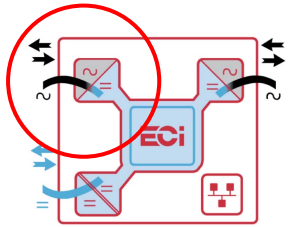
Grid (top left) feed both the **AC loads** (top right) and the **batteries** + **DC loads** (bottom left).

Enhanced Synchronization of Sierra 25 with **Gensets**

Combination with **Genset**



Reduce desynchronization risk related to load impact



Firmware adaptation to allow **faster synchronization of AC-in** port

Securing Energy Supply

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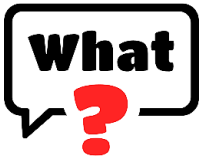
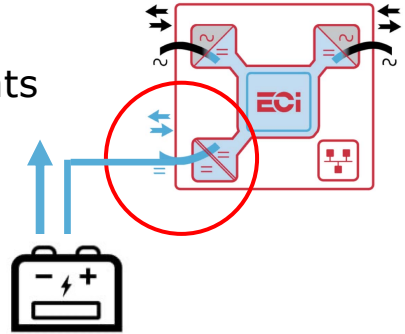
Control how much **power** can be **drawn** from your **smart battery** to supply the loads and/or the grid via Sierra 25

Use of smart battery with integrated control



Ensure respect of battery/controller physical constraints

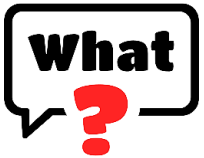


Firmware adaptation to consider those limits

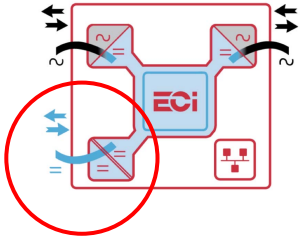
Securing Energy Supply

Prevent battery **over-sizing** by using the **power save** functionality for **off-grid** applications

Off-grid applications



Reduce consumption when operating **on DC** only



Turn off unnecessary **converters**

Capex & **Opex reduction, Securing** energy supply & **decarbonization**

New evolutions **on top** of existing functionalities of Sierra 25 are available under conditions

AC Voltage	DC Voltage	Power
230V	48V	2.4kW
230V	380V	2.5kW
120V	48V	2.25kW

Grid interactive, only for **AS4777-2**, **EN50549** & **VDE4105**

UL1741SB pending

Possible to **activate or not** these **new functionalities**

AC/DC/AC ports

Our **Hercules** converter is also a **basement** evolving in **tandem** with our **controller**

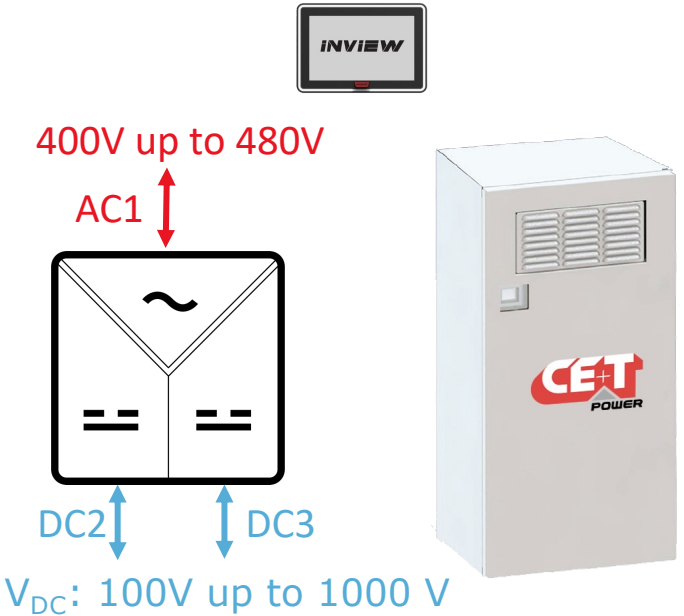
Grid interactivity
(EN50549)

Output recycling

Enhanced synchronization

CONVERTER RANGE

Stabiliti Converter is now available for **energy management** applications



1 AC port and 2 DC ports
MPPT Integrated

WHO?

- Energy Management Actors

What ?

- Energy Storage
- Microgrid AC
- Microgrid DC

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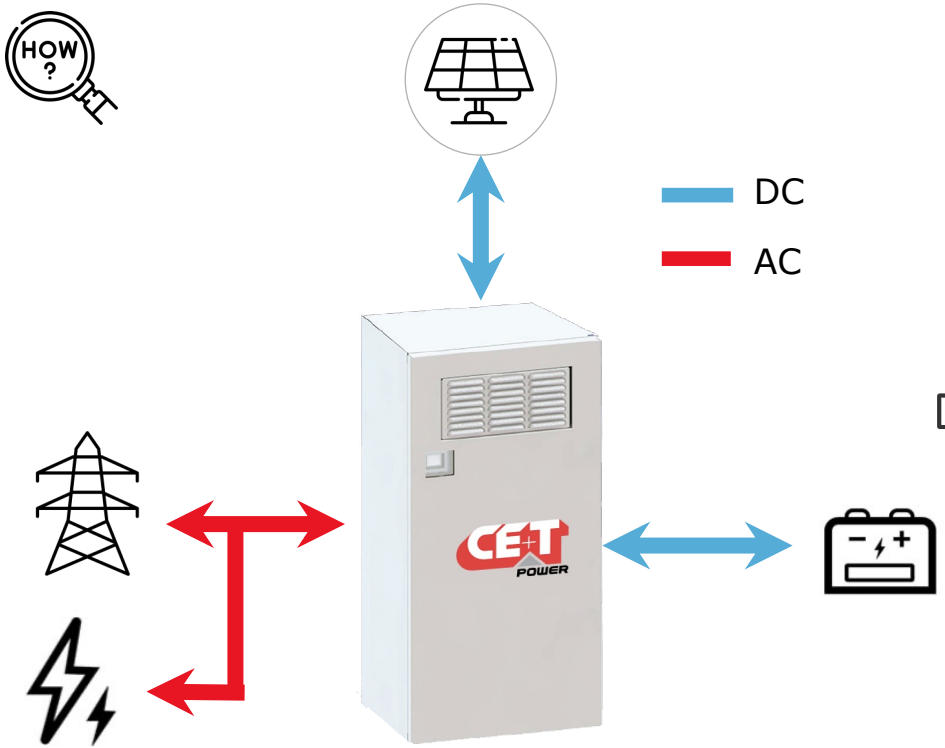
Optimize your **consumption** by utilizing a unique converter that seamlessly **interconnects** batteries, PV systems, and the grid



Certifications: EN50549, VDE-AR-4105-10, UL1741-SA (SB pending) , AS4777 pending

Benefits:

- **Reduced OPEX**
- **Decarbonization**
- **Reduced Exposure** to Energy **Prices Volatility**

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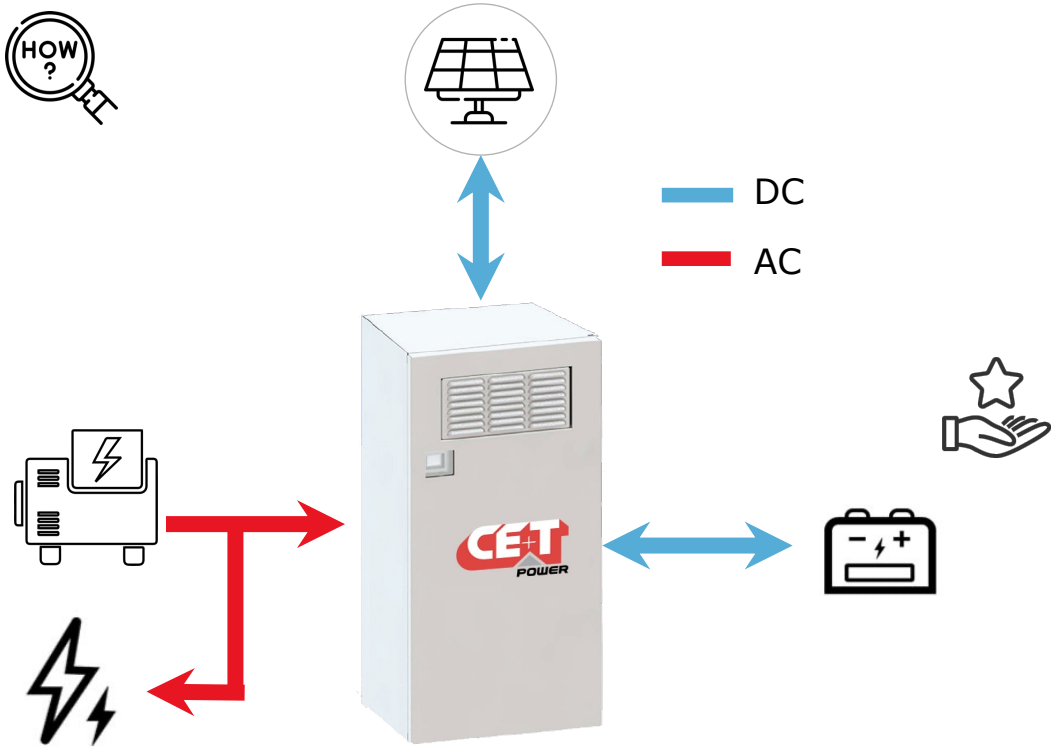
Rely on your **local energy production** to supply your loads in **off-grid** context with a single converter



Get power in **off-grid** areas

Rely on your **local production**

Easy transition from grid-tied to microgrid

Benefits:

- **Reduced CAPEX & OPEX**
- **Decarbonization**
- **Power Availability**

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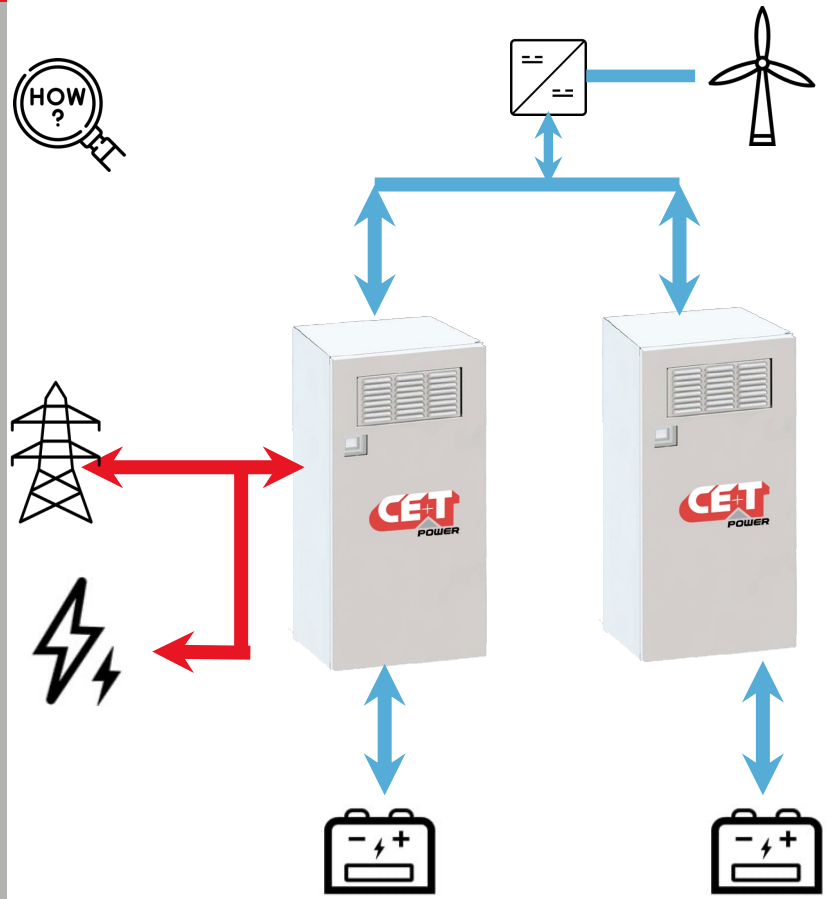
Use the Stabiliti to create a **high DC voltage microgrid** interconnecting several kinds of **sources** and gain in **efficiency** over **long distances**



- Create **High Voltage DC** bus up to 1000V
- **Interconnect renewable sources**
- **Reduce losses** due to distance

Benefits:

- **Reduced OPEX**
- **Decarbonization**
- **Power Availability**

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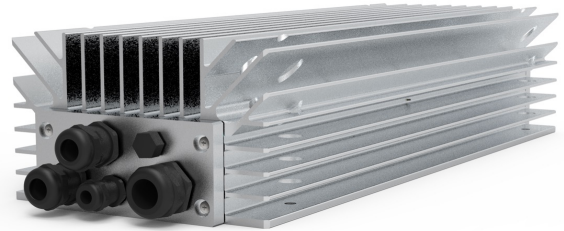
Growing need for electric power in **eXtreme Conditions**

- **Outdoor** wall, pole mounted
- **Harsh** industrial environment
- Vibrations and Shocks
- T°, Humidity, Corrosive, Dust

Sierra **XC**: our range of **fanless** converters that are rated **IP65**, capable of powering both **AC** and **DC loads**

1kW | $230V_{AC}$ | $48V_{DC}$



Sierra XC 10

- 3 ports **AC in, AC out, DC**
- IP65 / NEMA4
- **-40°C to +65°C** operating T°
- Compatible with **all Inview** controllers

1.6 kW | 120 or $230V_{AC}$ | 24 or $48V_{DC}$

Sierra XC 16

Benefits:

- **Robustness**
- **Securing** Energy Supply for both **AC** & **DC** loads
- **No moving** parts

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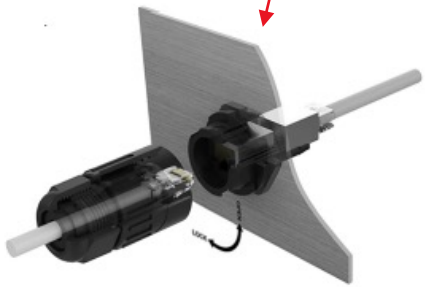
InView **XC** offers an **IP65**-rated **controller** to complete our product range



- InView firmware inside
- Ideal for critical back-up AC & DC loads

Display	3 Leds
Hardware interfaces	1 x ETH, 1 x RS485, 1 x CAN, 1 x 19 Pin connector
Supported protocols	Modbus RS485, TCP, SNMP v1, v2C and v3 HTTP/HTTPS
Digital input / Output relay	2 / 2
Mounting	Pole / Wall / Panel / Door
Temperature Range / IP	-40 to 65°C / IP65
Part Number	T602004140

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CYBERSECURITY

Cybersecurity - Overview

Cybersecurity is becoming a **major concern** globally

Industrial devices treated as IT servers

=

Challenging for embedded devices: Development tools, product live cycle, on site upgrades, …

Cybersecurity – General improvements

Assessment by a major European telecom operator

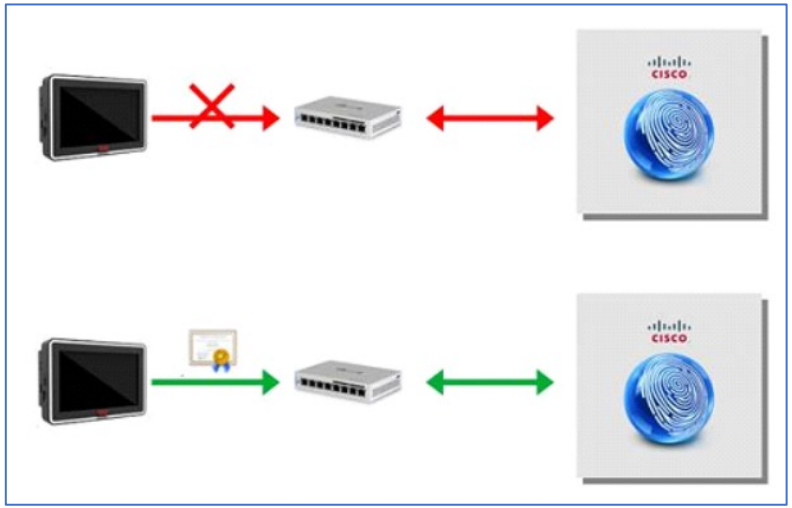
Supported by ‘white hat’ hacker team

More than 40 improvements: Low-level platform hardening, Firewall optimization, …

Cybersecurity – Dot1X support

IEEE802.1X standard

Prevent intruders from gaining network access



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for your attention

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www.cet-power.com

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