Empowering designers to Build a Greener & more Sustainable Data Center





Reducing operational cost

Rising energy costs and a premium on real-estate and floor space means that every DTC facility is **now focused on higher efficiency and an optimised power usage.**

Electrical parameters and **consumption** are now managed right **up to equipment level**, identifying potential power issues, providing **tangible cost savings** and resulting in lower billing.



Reducing operational cost

Provide grid flexibility and reduce energy costs



Elodie HESTIN
Offer Marketing Manager - BESS



Bérangère DANNELY
Business Development Manager - UPS



Provide grid flexibility and reduce energy costs thanks to BESS Systems and Flex UPS functionality

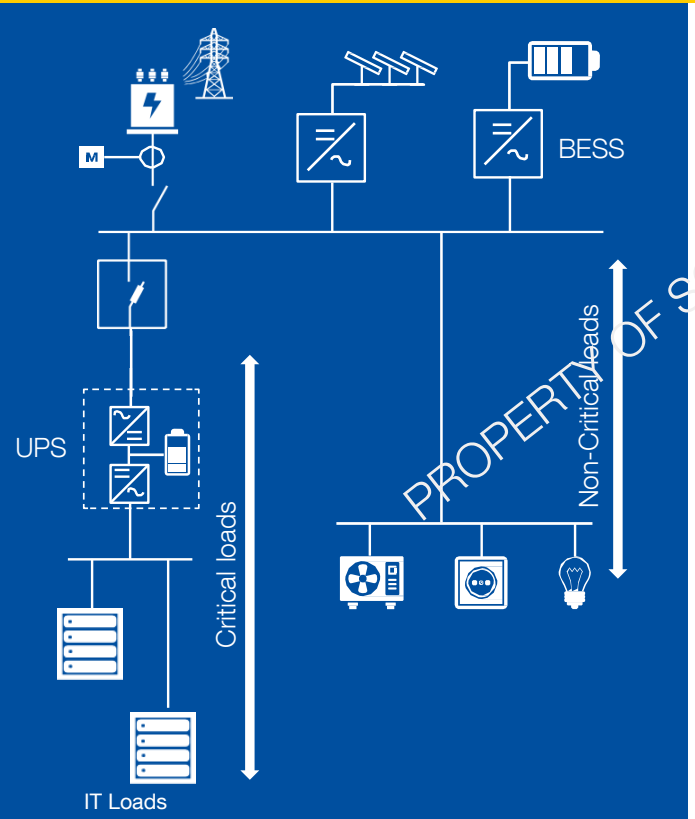
Storage	Backup
CUT ENERGY COST AND SUPPORT THE GRID	MOVE FROM GENSET TO ENERGY STORAGE

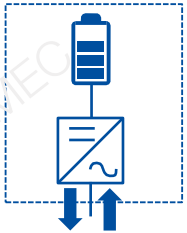
BESS (Battery Energy Storage Systems) and li-ion UPS (Uninterruptible Power Supplies) are **both energy storage systems** with Lithium-Ion batteries, **but they are typically used for different applications.**

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Where to find BESS and UPS in your installation?

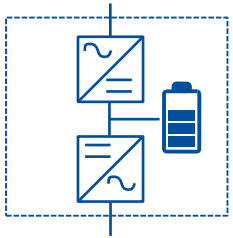
BESS is a Behind The Meter (BTM) application for Data Center





Battery Energy Storage System (BESS)

- Position behind the meter
- On the top of installation
- Energy management
- Backup power for multiple hours
- Sized depending on installation and functionality
- Supplying Critical and Non-Critical Loads



Uninterruptible Power Supply (UPS)

- Protection of critical loads
- Backup power typical up to 15 min
- Sized for IT load
- Supplying for Critical loads

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Integrating BESS in data centers help to:

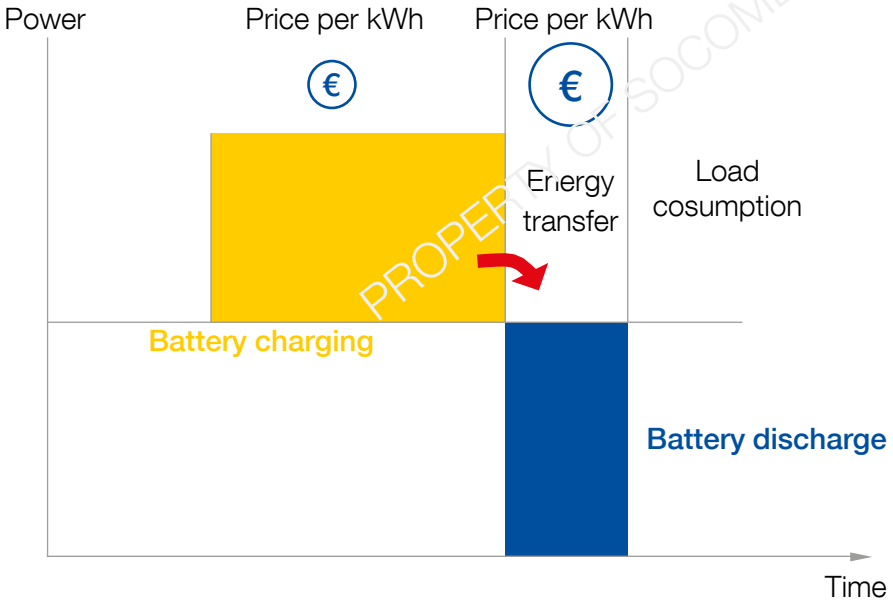
- Reduce the impact of increasing and fluctuating electricity prices

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Time Of Use management / arbitrage

Limit your consumption from the network during peak hours

Charging the battery when the electricity is cheaper during off-peak period, and discharge it during peak period, when the price is higher.



By supplying stored energy rather than drawing from the grid during peak period when it's expensif, it reduces your electricity bill.

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BACK



Integrating BESS in data centers help to:

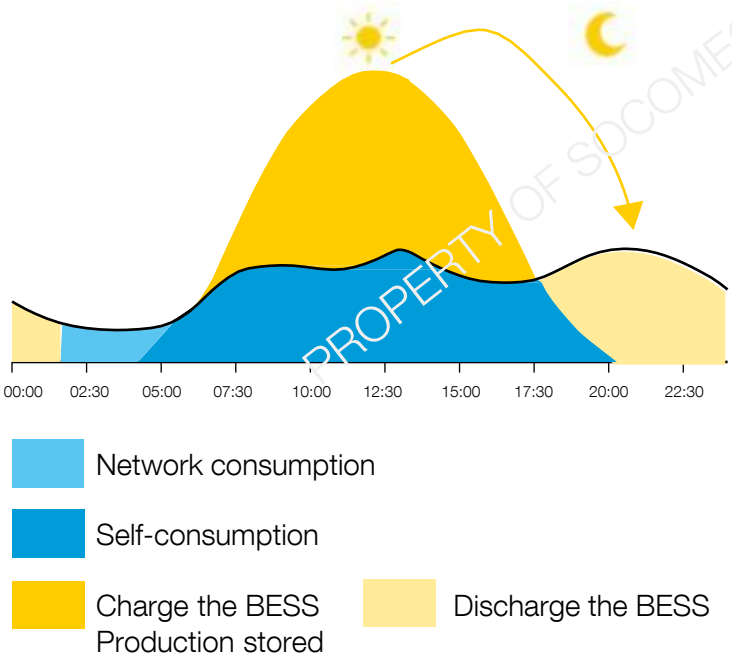
- Reduce the impact of increasing and fluctuating electricity prices
- Manage local renewable energy consumption

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Renewable Self-consumption

Use excess of local renewable energy later

BESS store the excess local renewable energy in the battery during peak production time for later use.



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- By maximizing the use of self-generated renewable energy, you reduce your electricity bill and dependence on the grid.
- Self-consumption with BESS supports the transition to a more sustainable energy system.
- Reduce the dependence from the cost of electricity which tends to increase.

BACK



Integrating BESS in data centers help to:

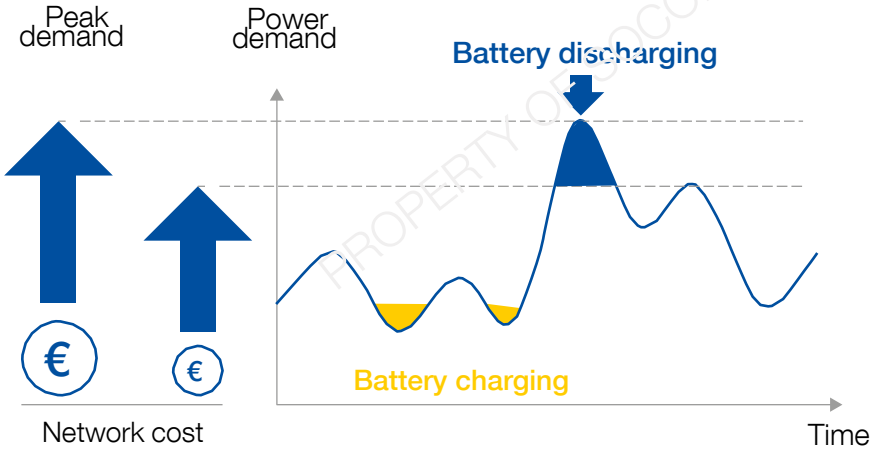
- Reduce the impact of increasing and fluctuating electricity prices
- Manage local renewable energy consumption
- Meet the growing energy balance challenge of today's limited supply and peak demand

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Peak shaving

Limit the power demands made on the network

Peak shaving enables energy users to limit their maximum power requirement from the grid by supplying some of their peak energy needs from their batteries.



Reduction of the peak, which is fee based on the highest level of power demand recorded during a period.

By reducing peak demand, you can significantly lower your electricity bill.

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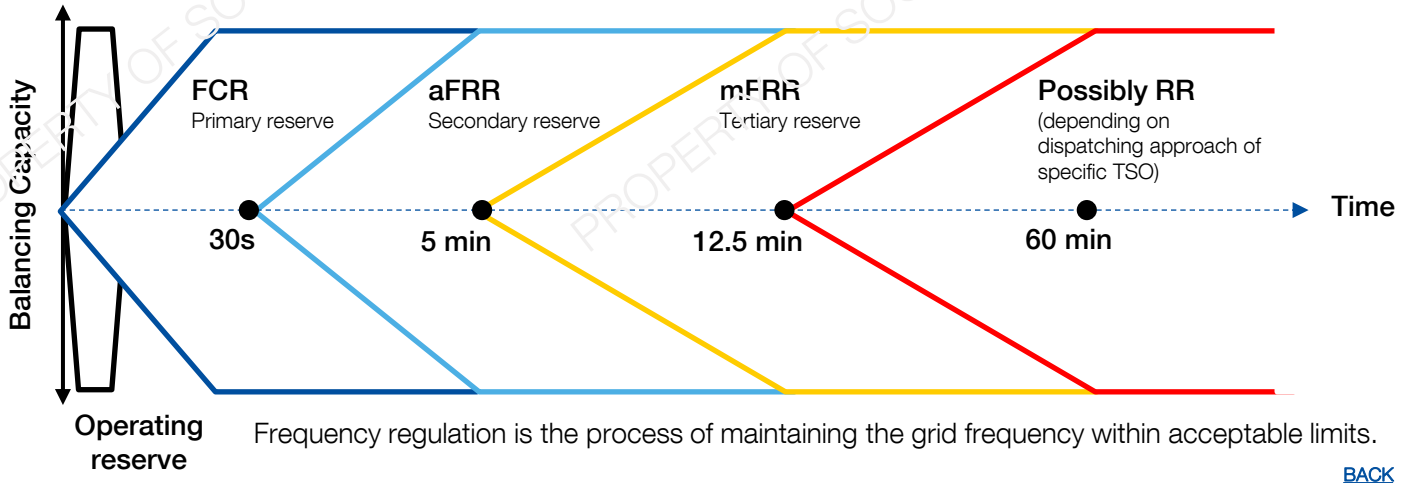
Stabilize the frequency with BESS and earn money for this service

Due to the intermittency of renewable energies, grid stability is now a problem for grid operators.
Variations in frequency can occur due to imbalances between supply and demand.
They need to stabilize the frequency and with the BESS you will be paid for this service.

FCR
Stop the freq drift

xFRR
Recover the freq to 50Hz

RR
Stabilise the freq



Frequency regulation is the process of maintaining the grid frequency within acceptable limits.

BACK



Integrating BESS in data centers help to:

- Reduce the impact of increasing and fluctuating electricity prices
- Manage local renewable energy consumption
- Meet the growing energy balance challenge of today's limited supply and peak demand
- Reduce the carbon footprint

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Backup power

Diesel gensets start the move to BESS

BESS makes the supply of an emergency power supply more sustainable, totally silent and free from carbon emissions when replacing all or part of the diesel genset.

News headlines:

Microsoft replaces diesels with battery system at Swedish data center



TIA-942 C Update

- Fuel supply system requirements change
  - > R-1; Belly tanks with 80% ≥ 12 Hrs
  - > R-2; 24 Hrs ≥ 12 Hrs
  - > R-3; 72 Hrs ≥ 24 Hrs
  - > R-4; 96 Hrs ≥ 24 Hrs

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News source: DCD (datacenterdynamics.com)

BACK

SOCOMEC Flex'UPS functionality in Data Center

Enabling the UPS to interact with the electric grid is a new approach for the data center industry

For typical applications UPS batteries are used only in case of a power outage.

UPS systems that interact bidirectionally with the smart electric grid can contribute to even more efficient and sustainable data centers.

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New battery technology

Acceptation of high performances batteries – more and more mature & accessible



Untapped UPS batteries

Not used most of the time



Critical load protected

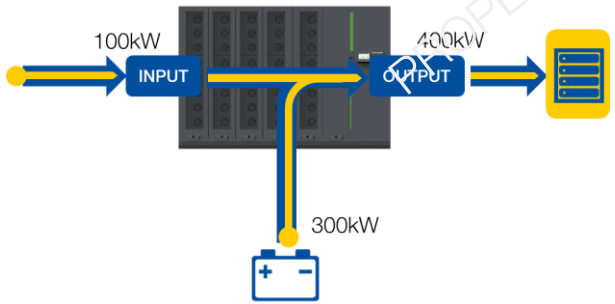
Grid interactive UPS keeping the critical load protection as main priority

Power reduction, over consumption, reinjection…

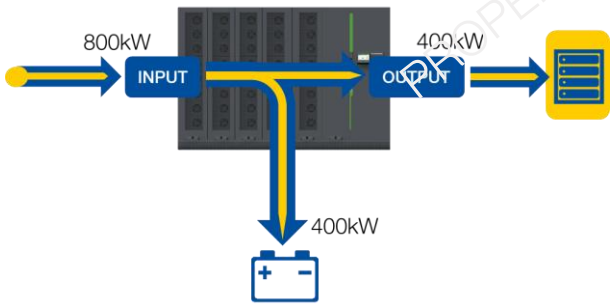
SOCOMEC UPS have the capability thanks to a bidirectional architecture to temporarily adjust its input power consumption by managing the energy stored in its batteries while giving utmost priority to the uninterrupted supply of critical loads.

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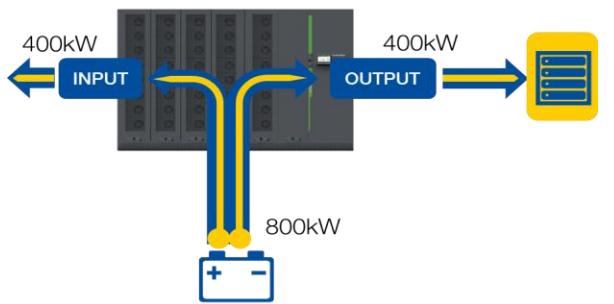
Power reduction



Over consumption

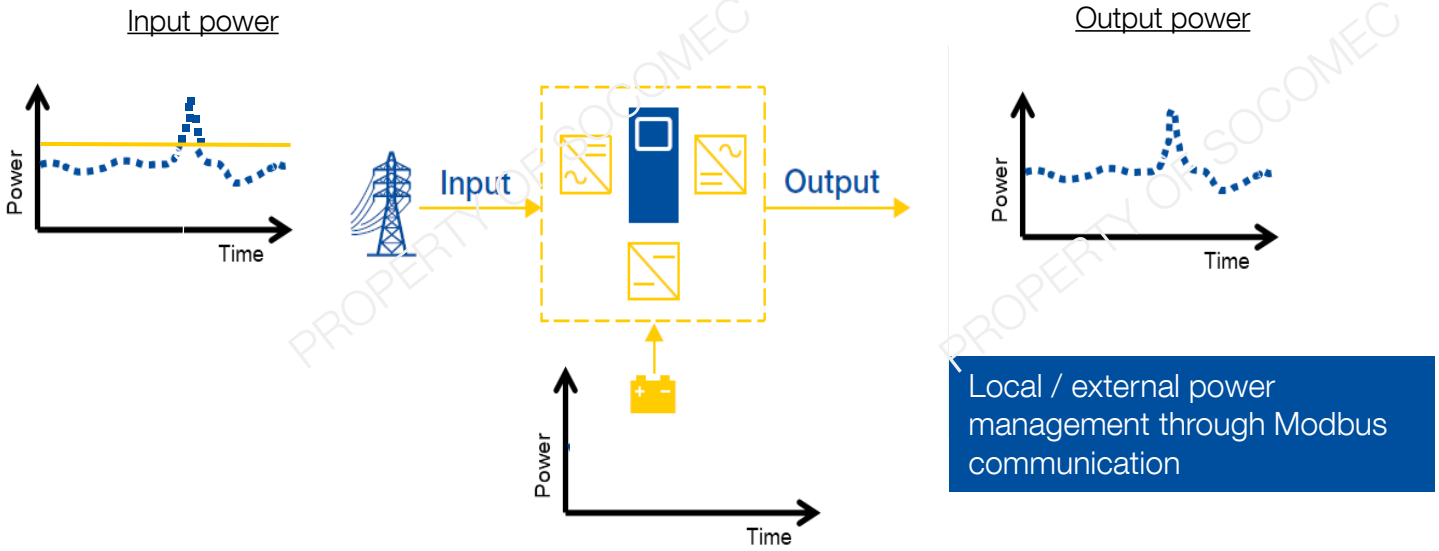


Power reinjection



Grid support functionality – Power Management

Lithium batteries for UPS opens doors to savings using Socomec Flex'UPS features

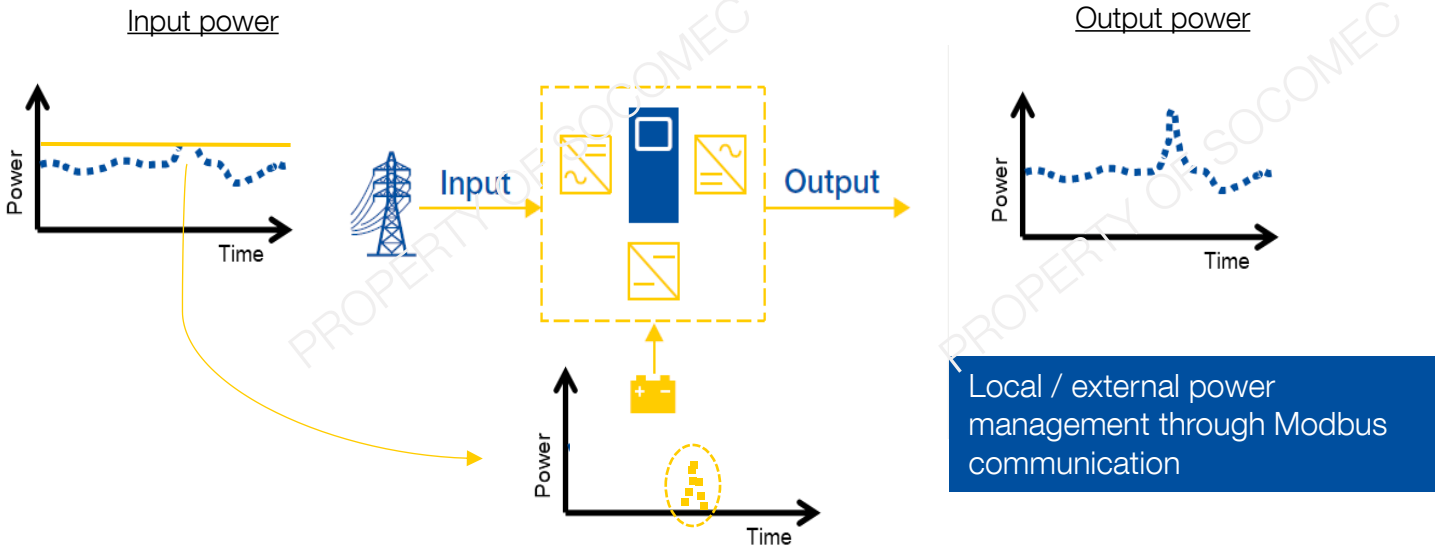


Local / external power management through Modbus communication

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Grid support functionality – Power Management

Lithium batteries for UPS opens doors to savings using Socomec Flex'UPS features



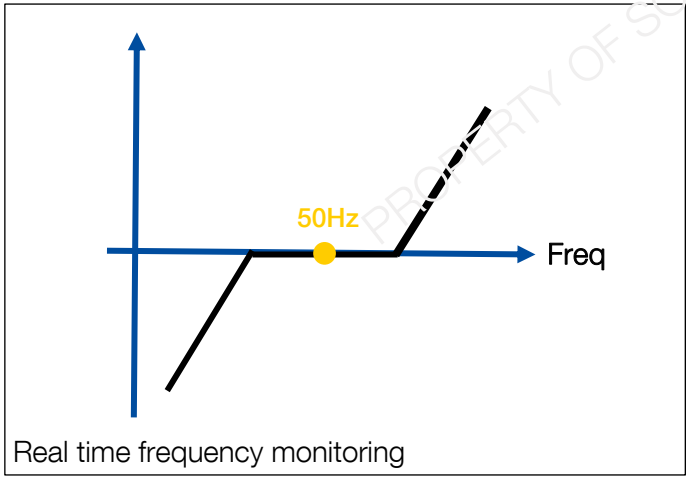
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Manage input power consumption according to grid support strategy (peak shaving, time of use management)

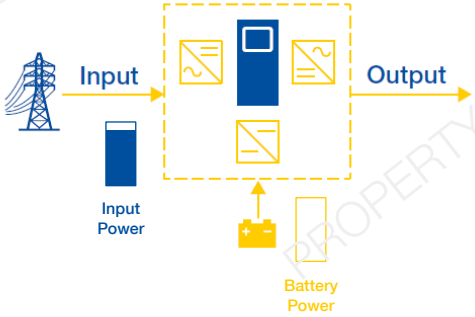
Grid support functionality – Fast Frequency response

Socomec Flex'UPS goes further than traditional functions by contributing to a more resilient electricity grid.

Input network **50Hz**



Real time frequency monitoring



Critical load

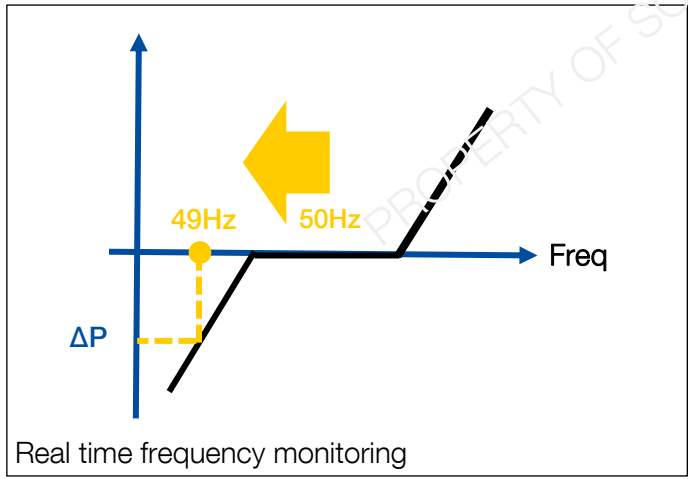
External or Automatic management

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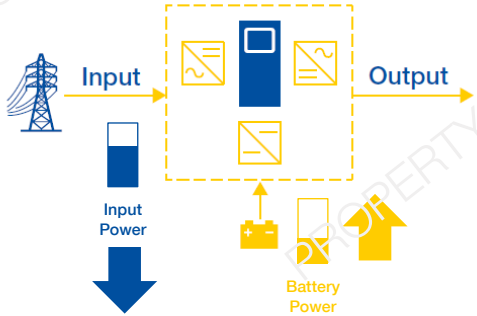
Grid support functionality – Fast Frequency response

Socomec Flex'UPS goes further than traditional functions by contributing to a more resilient electricity grid.

Input network **49Hz**



Real time frequency monitoring



Critical load

External or Automatic management

Reduce UPS consumption by controlling **the energy stored in the batteries**

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Grid support functionality – Fast Frequency response

Socomec Flex'UPS goes further than traditional functions by contributing to a more resilient electricity grid.

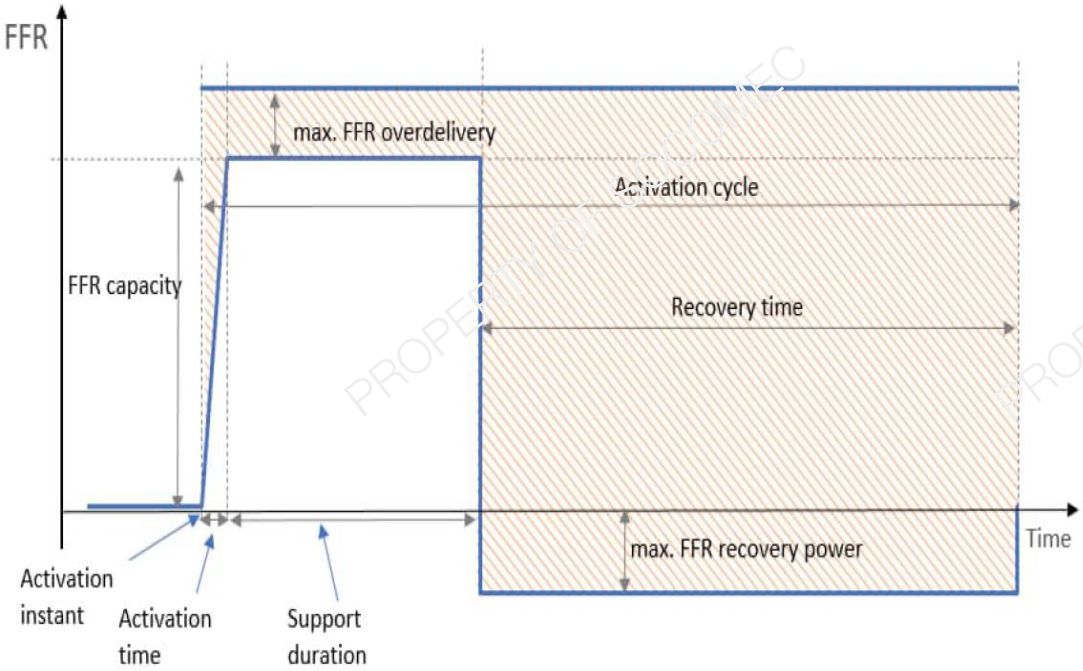


Figure 3.2 Recovery, 30 s support duration



Frequency monitoring equipment



Dry contacts

SOCOMEC Flex'UPS



Battery management

Max State of Charge

Battery fully charged
Flex'UPS deactivated for overconsumption

Target State of Charge

Target SOC to enable power reduction and over consumption if needed
Flex'UPS activated

Critical State of Charge

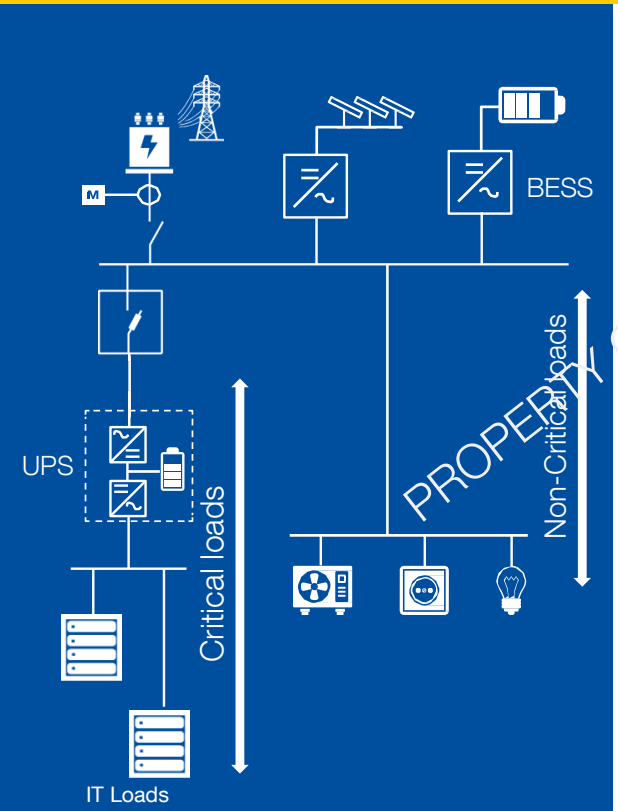
Minimum battery capacity allocated to the critical load to ensure the Back Up Time
Flex'UPS deactivated for power reduction



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Where to find BESS and UPS in your installation?

The two systems are complementary









	BESS	UPS
DESIGNED FOR	Energy management, grid support and renewable energy integration	Protect critical equipment from power outages
BACKUP TIME	For several hours	Few minutes
RESPONSE TIME	Seconds to minutes	0ms transfer time

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The Socomec solution for reducing operational costs



SUNSYS HES L
100 kVA / 186 kWh to
600 kVA / 1674 kWh



SUNSYS HES XXL
1 MVA / 1 MWh to
6 MVA / 20 MWh



SUNSYS HES L
SKID version

Battery Energy Storage System



DELPHYS XL
1000 to 1200 kW



MODULYS XL
from 200 to 1200 kW

Flex'UPS

thank you SO much!