

# Energy Storage Solutions



## Efacec Energy Storage Solutions

The integration of large-scale energy storage systems in electric power grids is becoming further relevant. This type of solution can be advantageously used in different segments, from renewables grid integration, hybrid systems stabilization to distribution/transmission grid ancillary services.

The Efacec Storage Converter Station is a fully integrated solution for grid connected power conversion from battery energy storage systems, creating an entirely optimized station for storage applications, allowing highly flexible and performant solutions.

Aiming at large-scale centralized energy storage systems, the Efacec Storage Converter Station ensures a simplified installation and maintenance due to its integrated design approach. Integrating all products with in-house developed technology, the highest competitiveness and reliability targets are reached through Efacec's advanced power inverters, MV switchgear and transformers. Moreover, the full system knowledge makes the optimization of the global solution achievable in a more effective way, also allowing for integrated product lifecycle support service of the full solution.

The Efacec Storage Inverters play a crucial role in assuring the interaction between the storage system and the grid, providing advanced power control and innovative grid support features allowing the compliance with most demanding local utility grid requirements. The Efacec System Controller implements full dynamic control of the system and assures real time management of the energy storage application.

Efacec uses its competences in energy systems automation, power electronics and medium voltage solutions to make available customizable and adaptable solutions for system control, monitoring and integration with the grid operator dispatch.



**Efacec Storage Inverter**  
100 kW to 730 kW

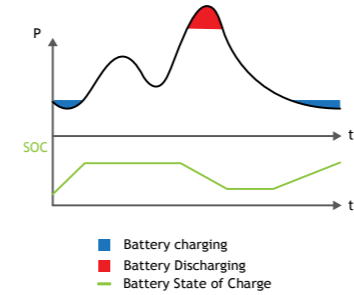
**Efacec LV/MV Transformer**

**Efacec MV Switchgear**  
Up to 36 kV

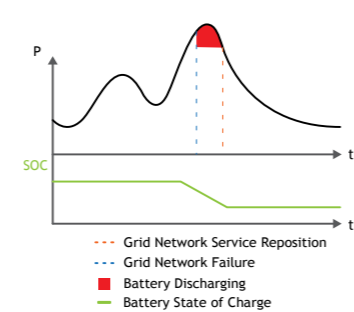
**Efacec Storage System Controller**

### Applications

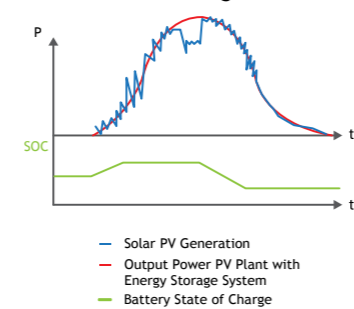
#### Peak Shaving



#### Energy Backup



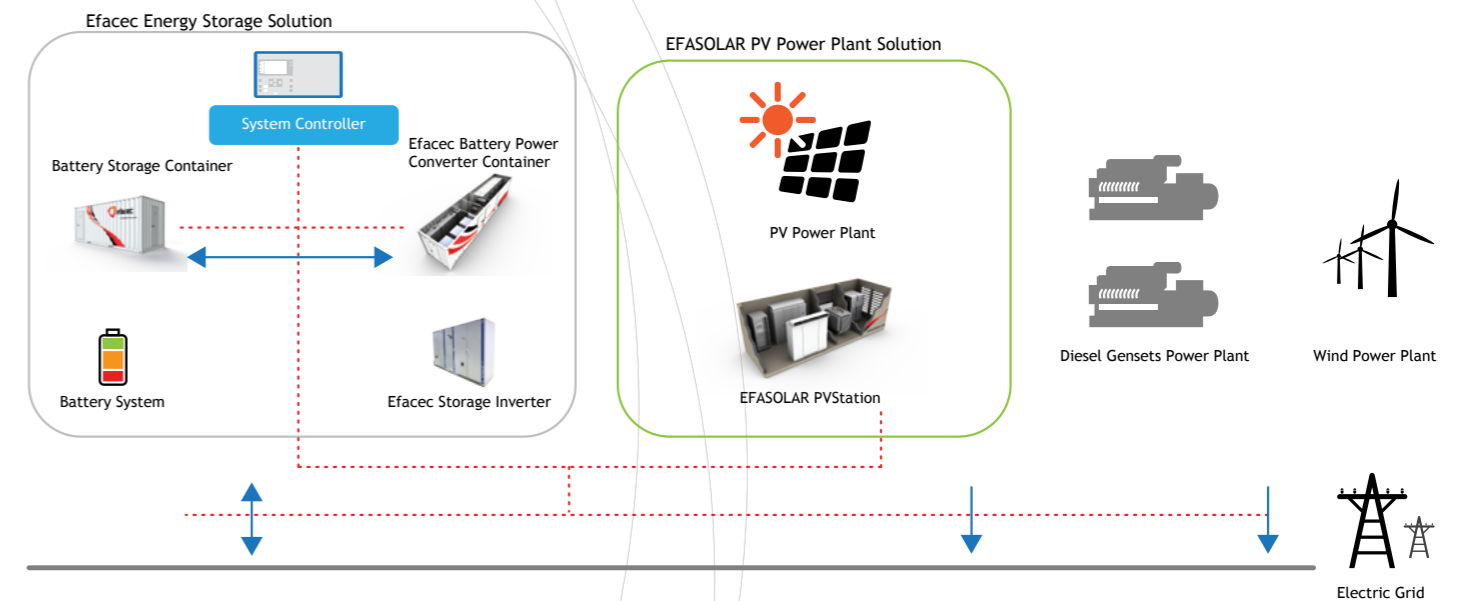
#### Renewables Grid Integration



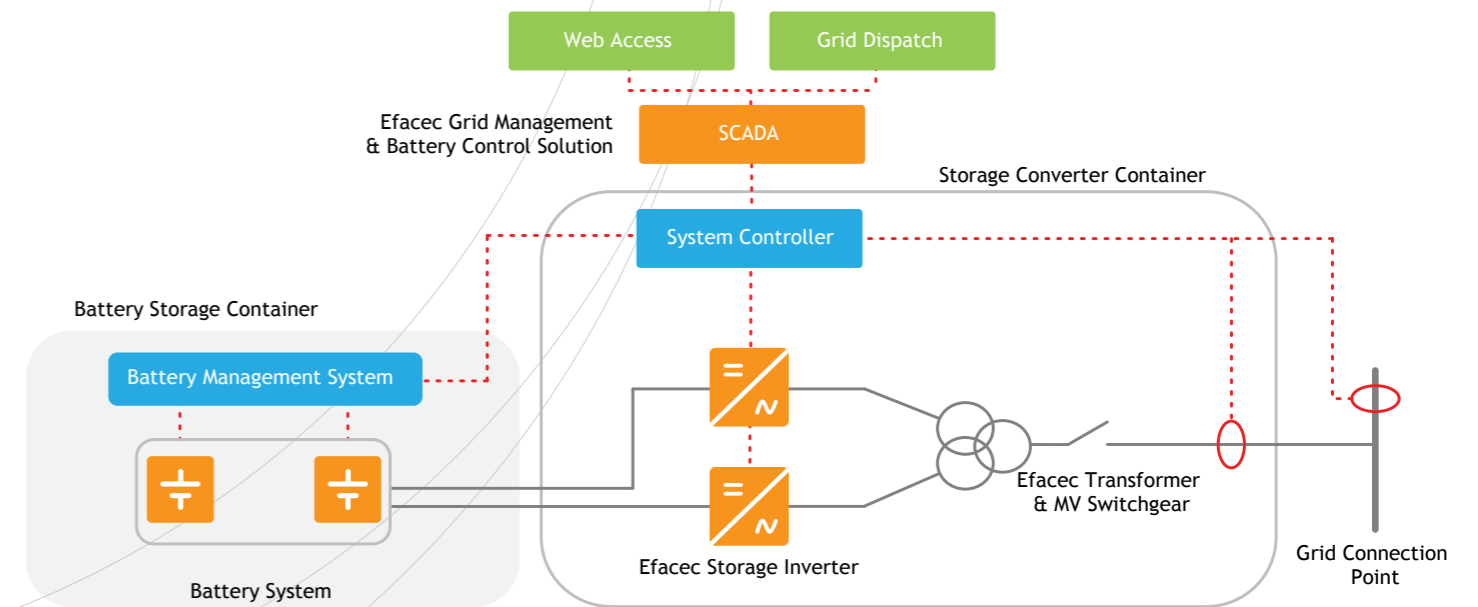
### Other Applications / Features

- Load Shifting
- Up/Down Power Ramp Limitation
- Black Start Capability
- Dynamic Grid Frequency Regulation
- Dynamic Grid Voltage Regulation
- Power Factor Control
- Other Customizable Grid Support Capabilities

### General Topology



### System Architecture



Technical data		
Converter Station Power	250 - 500 kW	1000 - 1460 kW
EFASOLAR Inverter	1 x 250 1 x 500 1 x 500M	2 x 500/500M 2 x 630/630M 2 x 730
Maximum Battery Voltage	1000 V	
Maximum DC Current	542 - 1200 A	1048 - 1350 A
Transformer	Oil Immersed / Dry Type	
Power	250 - 500 kVA	1000 - 1460 kVA
Number of LV Windings	1	2
Switchgear	IS + IS + CIS / IS + CIS <sup>(1)</sup>	
Voltage	≤ 36 kV	
Insulation	Air / SF6	
System Controller		
Web Interface	●	
Dispatch Integration	●	
Automatic Diagnostic	●	
Dynamic/Adaptable Control Algorithms	●	
Enclosure	Container	
Dimensions	20 ft. / 40 ft.	
Battery Type	Compatible with full range of technologies	

(1) Different configurations available upon request.  
 ● Base Feature

## Headquarters

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