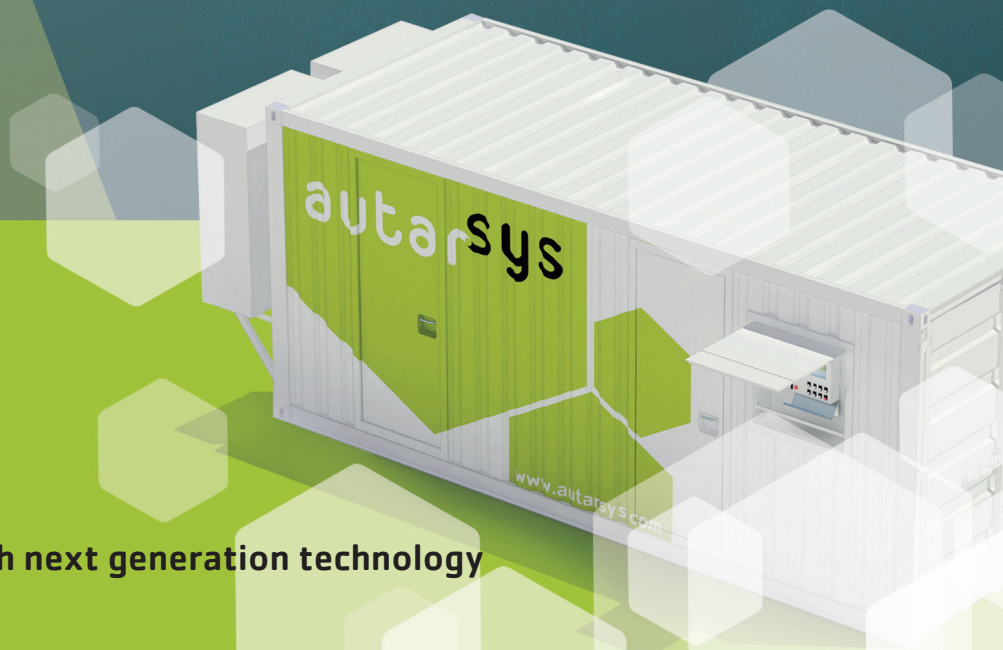


Integrate. Fast and Flexible.

Grid Stability for Large Scale Solar/Wind Power Plants



Renewable energy supply with next generation technology

Vision Promoting the Renewable Energy Transition

We are passionate about the sustainable supply of energy using renewable energy (RE) systems. Although centralized RE power plants now present a much more cost-effective solution, experience has shown that storage is paramount to their successful large scale adoption. By offering accurate, fast responding and long lasting Li-ion battery energy storage solutions, we want to contribute to helping RE become flexible and the backbone of our power generation system.

Application Dispatchable Generation and Ancillary Grid Services

Large scale renewable energy power plants have reached grid parity in several regions on the planet. Ambitious renewable energy generation targets set by governments internationally are expected to further boost the proliferation of these systems. It is estimated that beyond a certain percentage threshold of renewable energy in the generation mix, energy storage systems are required to maintain grid stability.

To compensate for losses in renewable generation, conventional thermal generators are used for peaking generation. These solutions however suffer from a minimum running capacity, leading to significant standby costs and emissions. As an alternative to traditional peaking plants, Autarsys offers Energy Storage Systems (ESS) that have zero emissions and can dispatch power within seconds. Being fully flexible they also offer an economic use of reserve capacity.

Fluctuations from large solar and wind power plants often result in large changes in the output power at the point of interconnection. The Autarsys ESS ensures that power producers avoid the need to curtail output power by limiting the fluctuations to the ramp rate demands set by the utility. Mismatches in demand and supply at the grid level are also regulated by the fast frequency response mechanism of the ESS. The modular design also enables servicing of the ESS components without interrupting its availability to provide these grid support services.



Product Autarsys Large Energy Storage System (ESS)

Typically suited for large scale renewable power plants, the Autarsys Large ESS comes as a sealed "Plug & Play" system which is easy to install. It is a specialized solution for harsh weather conditions and is designed to operate at stable conditions that prolong lifetime in spite of high ambient temperature, dust and humidity, thereby requiring negligible maintenance.

Nominal AC Power	Up to 1.66 MVA (20' container and scalable) Up to 3.325 MVA (40' container and scalable)
Energy Capacity	Up to 1.826 MWh (20' container and scalable) Up to 3.65 MWh (40' container and scalable)
Output Voltage	3 Ø 480 V ± 10%
Frequency	50/60 Hz
System Efficiency	≥ 85% @0.5 C (23±5°C)
Ambient Temperature	-10 to 50 °C
Guarantee*	10 years
Lifetime*	20 years

ESS Features and Capabilities

Off-Grid, On-Grid, Black start capability
Islanding, Fuel save, Energy management
Renewable Control Mode, Arbitrage / Load shifting
Frequency regulation (P(f)), Voltage stabilization (Q(U))
Harmonic compensation up to 51st
Reactive power compensation, UPS functionality

ESS Communication Interface

Touchscreen Display
Data Monitoring (SCADA)
Ethernet Support
Modbus
GPRS/Satellite Communication

ESS Product Certifications

EN 61000-6-2, EN 61000-6-4,
IEC 62040, CE Conformity

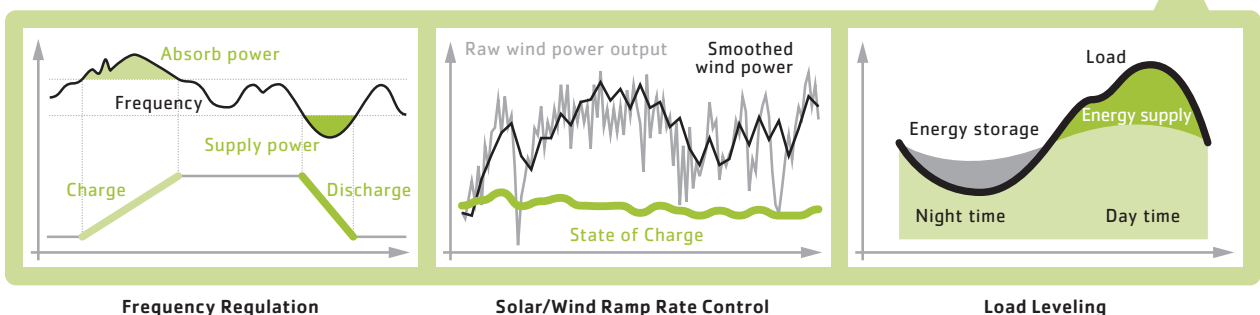
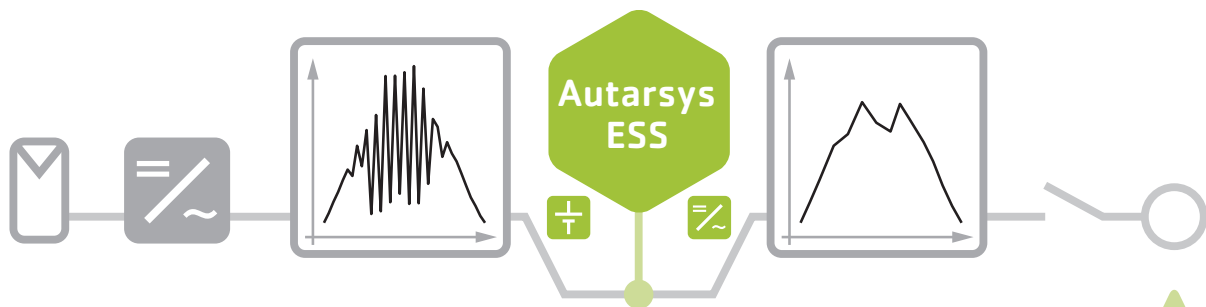
*The guarantee and lifetimes mentioned are under specific standard conditions of operation of the ESS.
Actual product specifications and layout may vary depending upon the application.
For further details, please contact your support team at Autarsys.



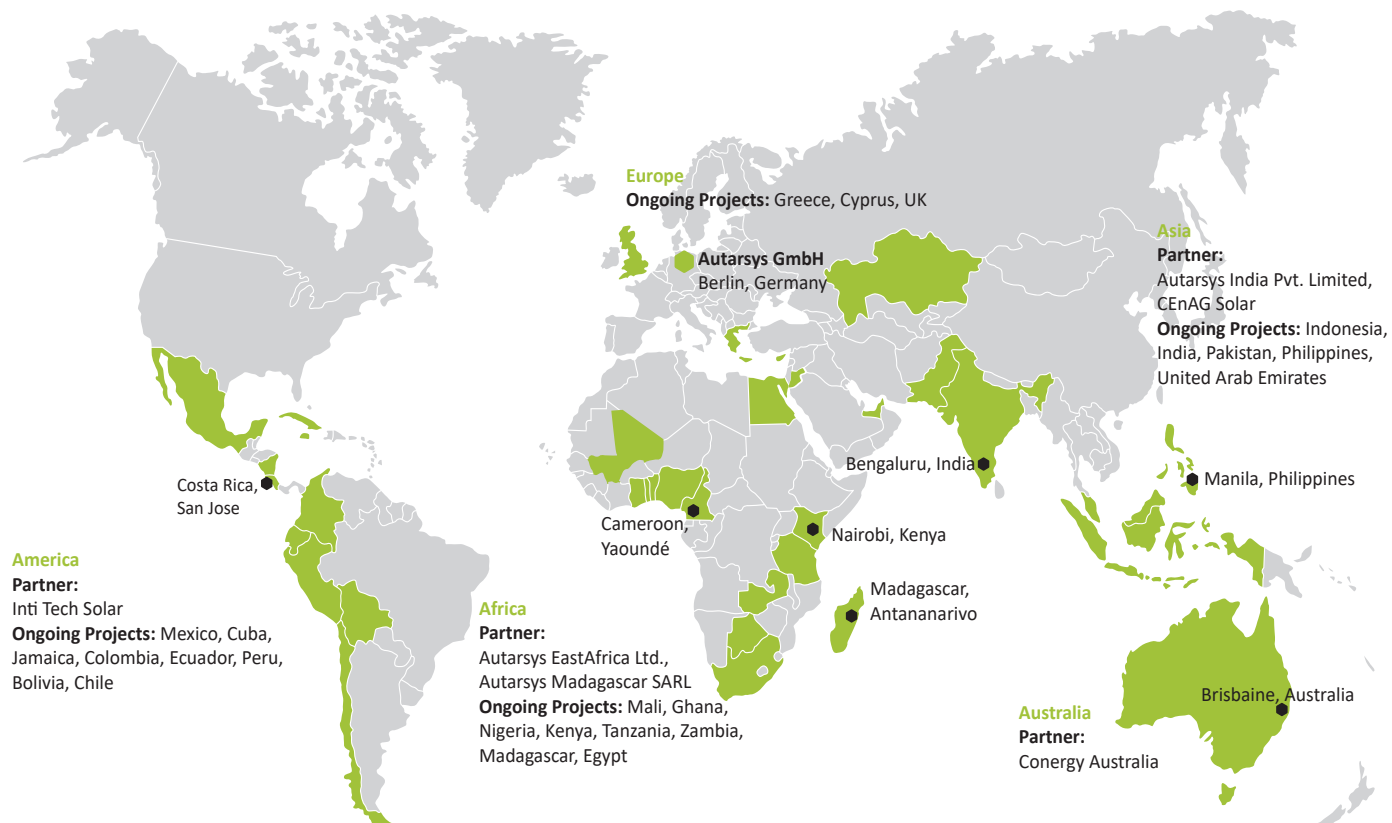
- 1** Battery racks
- 2** Battery inverter
- 3** AC connections
- 4** DC connections
- 5** Air Conditioning system
- 6** Heat Exchanger

Large Scale Integration For a stable and secure smart grid

Utility scale renewable plants expose the connected grid with high fluctuating currents which limits the size of the acceptable plant at the Point of Common Coupling (PCC). The Autarsys ESS is equipped with advanced Active filter inverters that provide accurate and reliable compensation of active and reactive power and harmonic interference on demand.



Global Presence **Where we are on duty**



Ancillary Tailored Service and Support **You can rely on us**

Analysis & Engineering	Installation	Operation & Maintenance
Load profiling and forecasting energy demand	Adaptation of communication interface and system power	Remote monitoring of system performance
Evaluation of the grid and renewable energy sources	Commissioning	Provide online support for troubleshooting
Sizing the energy storage system	Onsite O&M training for technical personnel	Comprehensive hardware, software and spare part management through product lifetime

autarsys

Make your own energy.

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