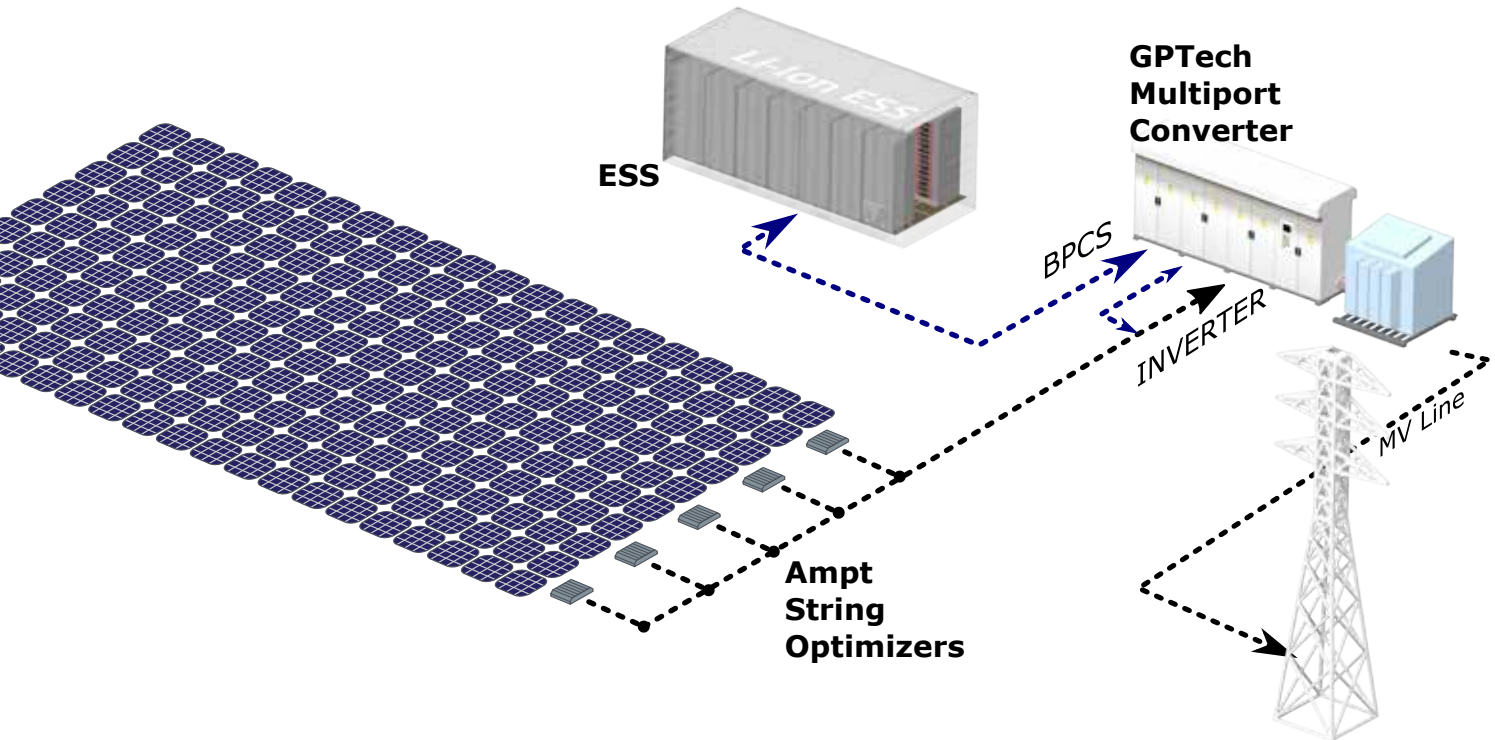


Smart DC-Coupled Storage Solutions

Complete solutions combining GPTech EnergyReserve and Ampt String Optimizers for lower cost and higher efficiency DC-coupled storage systems in both new and existing utility-scale solar plants.



Ensuring the Best Choice

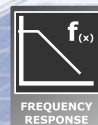
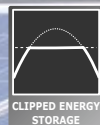
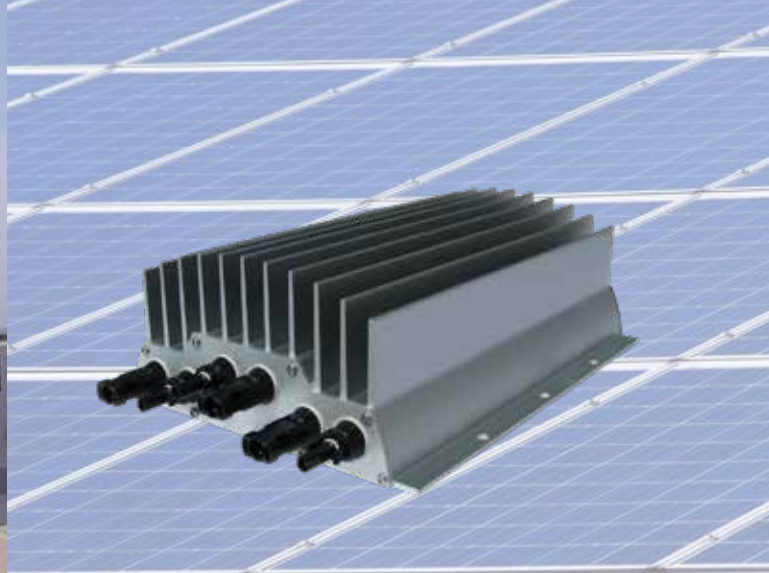
The solution fully integrates GPTech's EnergyReserve Hybrid PV + Battery Power Converter System with Ampt String Optimizers to provide PV system owners with advanced power optimization to maximize energy production.

GPTech deploys its EnergyReserve PV+Storage central converter with a modular configuration up to 5MW PV + 5MW ESS per station. The solution is integrated with customized whole-plant control algorithms to enhance the performance under grid code requirements.

Ampt String Optimizers perform maximum power point tracking (MPPT) on each string of PV modules to deliver full available power from the array at a fixed and higher voltage than systems without string optimizers. This eliminates 50% of the wiring, combiners, and associated labor, and allows the GPTech inverters to have a higher power density and lower cost per watt.

To further enhance the PV + Storage design, Ampt String Optimizers allow higher DC-to-AC ratios than traditional designs without Ampt to size the PV array for maximum utilization of both the inverter and battery.

- More energy with string-level MPPT
- 50% fewer combiners and cabling
- Lower cost per watt inverter
- Lower cost per watt charging converter
- Higher performance than AC-coupled energy storage
- Avoid energy losses from inverter clipping
- Smart power curtailment management
- Maintain tax incentives (ITC)
- Power plant controls meet the highest grid requirements
- Add energy storage without a new system impact study
- Training and support services



28MW PV + 20MW/100MWh System in USA with GPTech EnergyReserve DC-Coupled PV+Storage converters and Ampt 1500V String Optimizers

Renewables Integration

- Grid code compliance
- Ramp rate control
- Frequency regulation
- Voltage regulation
- VAR support
- Capacity firming

Scalable and Flexible

- Utility-scale power plants to micro-grids
- Add PV modules or storage over time with less hardware costs
- Repower existing PV systems by adding DC-coupled storage

“With Ampt String Optimizers in the system, our inverter and battery converter no longer have to manage the variable voltage of a PV array.”

Javier Landero; CEO GPTech

“The innovation GPTech brought to their power conversion products for this solution truly demonstrates the knowledge and flexibility they are known for.”

Levent Gun; CEO Ampt



GPTech is an expert company in technological solutions for the integration, management and control of renewable energy in large plants with more than 3GW of installed power in 25 countries. GPTech has offices in Spain, USA, Chile, Brazil, Argentina and South Africa.

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Ampt delivers innovative power conversion and communication technology that provides system level optimization of PV power plants. As the world's number one optimizer company for large-scale systems, Ampt serves the global solar market with award winning products that lower the cost of solar energy.

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