



BATTERY ENERGY STORAGE SYSTEM CONTAINER, BESS CONTAINER

TLS OFFSHORE CONTAINERS / TLS ENERGY



Battery Energy Storage System (BESS) is a containerized solution that is designed to store and manage energy generated from renewable sources such as solar and wind power. BESS containers are a cost-effective and modular way to store energy, and can be easily transported and deployed in various locations.



Advanced Functionalities of Battery Energy Storage System (BESS) Containers



- **Ramp Rate Control / Power Smoothing:**

BESS effectively manages the rate of power output changes, ensuring a smooth transition and reducing the impact on the grid.

- **Energy Shifting:**

It allows for storing energy during low-demand periods and using it during high-demand times, optimizing energy usage.

- **Customizable Power Profiles / Schedules:**

Users can set specific power output schedules to meet varying energy demands efficiently.

- **Grid Voltage Control:**

BESS plays a crucial role in maintaining stable grid voltage levels, essential for grid reliability.

- **Power Frequency Response (PFR) / P(f):**

This feature aids in maintaining a consistent power frequency, crucial for grid stability.

- **Peak Load Shaving:**

BESS helps in reducing the load on the grid during peak times, enhancing overall efficiency.

- **Reverse Power Protection:**

It prevents the flow of power in the reverse direction, safeguarding the grid and equipment.

- **Active Power Reserve (APR):**

Provides backup power to support the grid in times of sudden demand spikes or supply shortfalls.

- **Enhanced Frequency Response (EFR) & Automatic Frequency Restoration Reserve (AFRR) / SRL:**

These features help in quick response to frequency changes, ensuring grid stability.

- **Frequency Containment Reserve / PRL:**

BESS aids in maintaining frequency within prescribed limits, crucial for grid integrity.

- **Plant Level Inertia:**

This function contributes to the overall inertia of the power system, enhancing grid resilience.

TLS Offshore Containers / TLS Energy: Leading the Charge in Renewable Energy Storage Solutions

In the rapidly evolving landscape of renewable energy storage, TLS Offshore Containers / TLS Energy stands as a pioneering force. With an expansive factory covering approximately 300,000 square meters and employing around 1,000 skilled workers, we are well-equipped to meet the diverse needs of our global clientele. Our specialized integrated assembly and test workshop alone spans over 4,100 square meters and is staffed by more than 70 professional technicians. It is this robust infrastructure that allows us to excel in delivering tailor-made Battery Energy Storage System (BESS) containers.



BESS Container Product / Service TLS Offers

We are at the forefront of the global renewable energy storage industry, delivering customized Battery Energy Storage System (BESS) containers / enclosures to meet the growing demand for clean and efficient power solutions. Our versatile product portfolio includes three distinct types of BESS container solutions, each engineered to suit the diverse requirements of our international clients. In addition, we offer complete EPC services for BESS projects, ensuring seamless integration from concept to commissioning.



Container Enclosure Body With Battery Rack

This is our foundation-level BESS solution, designed with flexibility in mind. It features a high-quality container enclosure pre-installed with a battery rack, allowing clients to integrate their own battery packs, cooling systems, fire suppression systems, and other components. This customizable platform is ideal for developers or EPC contractors looking for a cost-effective starting point for a tailored energy storage setup.



Semi-Integrated BESS Container Solution

Our semi-integrated solution includes a battery rack along with key auxiliary systems, such as:

- **Battery cooling system**
- **Fire fighting system**
- **Internal lighting**
- **Earthing system**

This configuration provides a ready-to-use base while still allowing flexibility for clients to integrate their preferred brands or technologies for PCS, EMS, or other components. It's the perfect balance between off-the-shelf convenience and personalized control.



Fully Integrated BESS Container Solution

Our fully integrated BESS container is a complete, plug-and-play solution. It comes pre-equipped with all essential and advanced systems, including:

- **High-performance battery packs**
- **Advanced Battery Management System (BMS)**
- **Integrated DC combiners**
- **Precision cooling systems (HVAC or liquid cooling)**
- **Intelligent fire detection and suppression systems**
- **Interior lighting and auxiliary electrical systems**

This turnkey energy storage solution ensures seamless deployment, minimal on-site work, and optimal safety and efficiency for utility-scale or commercial & industrial (C&I) applications.



3.727MWh, 5.016MWh, 5.644MWh, and 6.017MWh Energy Capacity in 20FT BESS

Main Properties:

■ Lower LCOS & Higher Energy Density

- **Maximise ROI:** industry-leading Levelised Cost of Storage thanks to high-capacity LFP cells.
- **Compact footprint:** hand-in-hand / back-to-back layout delivers more kWh per square metre.
- **Long-term value:** < 4 % cell degradation in year one and a 20-year design life keep replacement costs down.

■ Multi-Layer Safety Architecture

- Zero incident record across all ESS deployments worldwide.
- **Built for extremes:** reliable operation from -40 °C deserts to +55 °C tropics.
- **All-level protection:** cell → module → rack → container, with redundant sensors and real-time early-warning.
- **Stage-specific fire strategy:** aerosol suppression, NOVEC™ gas, and water-mist options tailored to each fire phase.

■ Electrical & Thermal Safety by Design

- Generous creepage & clearance distances exceed IEC and UL requirements.
- Total thermal isolation prevents heat spread between packs.
- **NP pack tech:** no fire, no propagation, no explosion—even during nail-penetration or thermal-runaway events.

■ Rugged IP Rating & Airtight Assurance

- IP55+ enclosure guards against dust, salt-spray and torrential rain.
- 100 % helium-leak test before roll-out guarantees airtight integrity for every module.



■ Plug-and-Play O&M Efficiency

- Factory-installed DC bus inside a 20-ft ISO cabinet—no site wiring headaches.
- SOC accuracy $\pm 3\%$ via advanced algorithms.
- One-click commissioning slashes on-site labour hours.
- **PCS-agnostic:** fully compatible with leading global PCS brands and future augmentation plans.
- AI cloud platform gives condition-based maintenance and predictive analytics.

■ High Serviceability & Integration

- Integrated MSD + fast-plug connectors enable swift module swap-outs.
- **Dense yet accessible:** reserved maintenance passages and lift-out panels speed routine inspections.

