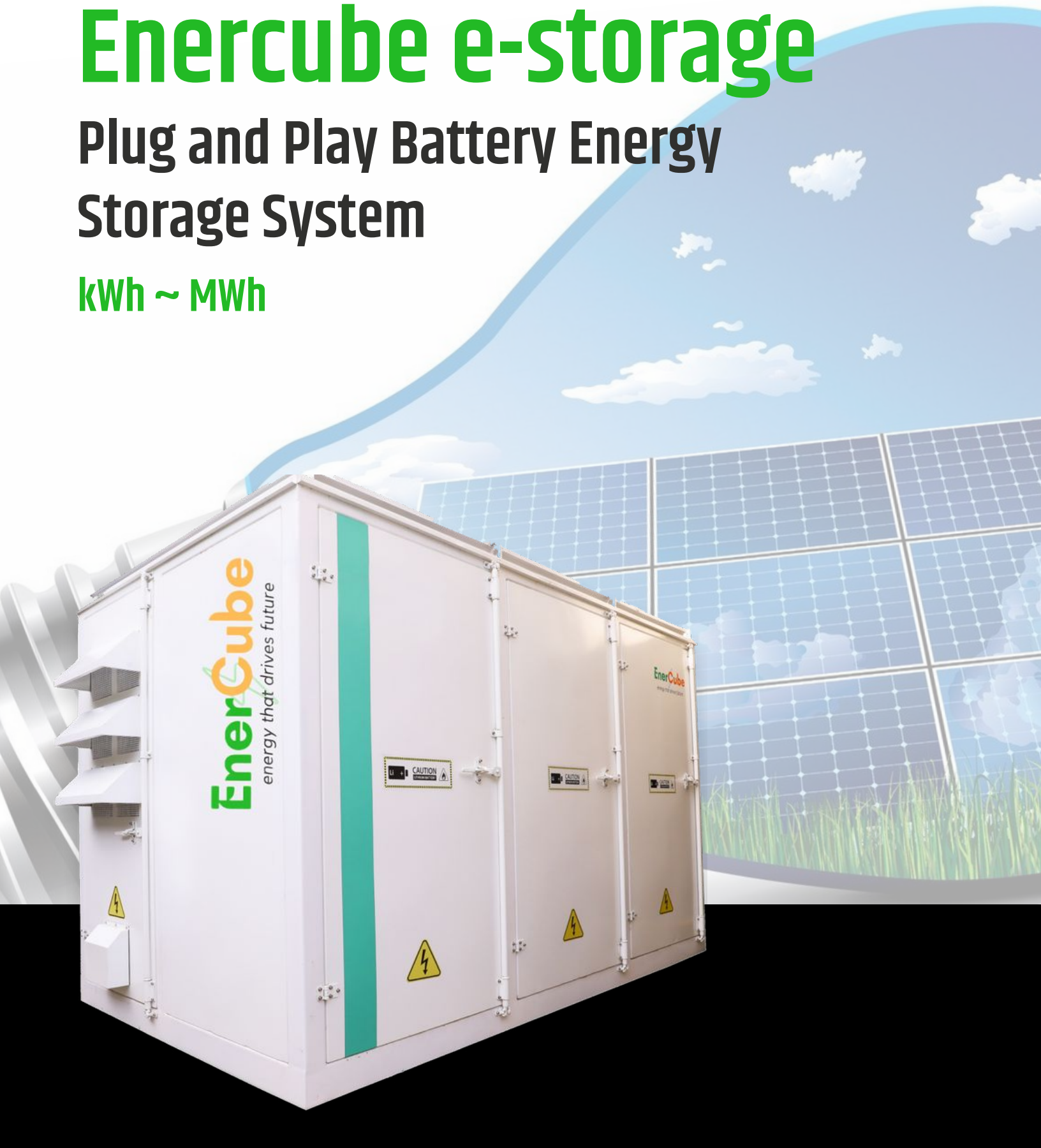
EnerTech
Answering All Power Needs

EnerCube™
energy that drives future

Enercube e-storage

Plug and Play Battery Energy Storage System

kWh ~ MWh



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Enertech
Overview

Enertech specializes in providing highly customizable EnerCube battery energy storage solution for IPPs, C&I and utilities in the renewable space.
Our battery energy storage system comes with an energy management system , a ML based software and firmware which optimizes the cost of operation by intelligently managing the available resources such as PV, DG, Biogas etc.

Our EnerCube e-Storage is a Cabinet Based design to operate in off-grid/on-grid mode coupled with a solar PV and wind, designed for the C4 corrosive environment.

EMS customizable edge-based computing system is designed for stacking value streams including energy shift, DG offset, peak shaving, PV utilization, reactive power control, voltage regulation, backup power etc. to maximize savings.
The system can be easily integrated with most of the industry accepted protocols including legacy SCADA.

- **30 years R&D experience**
- **R&D Recognized by DSIR Govt. of India**
- **IGBT & Zero Change over time in PCS**
- **120MW Delivery power**
- **NO1 BESS products manufacturer**
- **20,000+ installations across globe**
- **500+ Partners**
- **75+ Team**

We are the leading

Battery energy storage solutions provider

....with over 150 MW of energy storage product project experience

EnerCube

Low cost, Battery agnostic, Modular Storage Platform

EMS

Low cost, Battery agnostic, Modular Storage Platform

Residential Power Demand Management

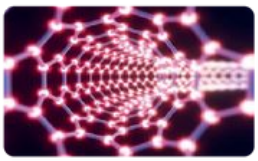
Industrial and Commercial demand management

Industrial Automation Demand Management

Power Availability Oil dispensing station

Power Availabilty Cold Storage

Telecom Tower



Micro Grid

DC-DC Boaster and PCU with H20 fuel cell

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BESS Core Components

A Battery Energy Storage System (BESS), is the industry's generic reference name for a collection of equipment that comprise a system to store energy in batteries and use the energy later when it is advantageous.

PCS

The Inverter converts the DC stored in the battery into AC (or DC), to meet the needs of the power system or loads.

Battery

- The Carrier of energy, including lithium-ion, sodium-ion, lead-acid, and others.
- BMS monitors, manages, and protects the battery.

Energy management system (EMS)

- Monitoring the demands of BESS, the grid, and loads.
- EMS controls the charging and discharging strategies of BESS, ensuring the system operates safely and efficiently

Enclosure

- Including Air Conditioning, electrical system, fire protection and others
- Used to accommodate, protect, and manage the various components of BESS, typically requiring a certain level of IP 54 protection.

Features
EnerCube e-storage

Modular and Scalable from a few kW to a few MW

Engineered for long life and animal maintenance

In-built thermal management to maximize life

Multi levels of fire protection

Plug and Play

Provides all required batteries, power conversion, coupling transformer, safety features, cooling, and protection and controls.

Pre-engineered

Designed with careful equipment selection, catering for a long lifespan in all conditions.

Digital enabled

Critical power operations digitally controlled for fastest response time with embedded energy management software

Efficient and convenient

Easy access to PV and diesel generator, intelligent multi-energy management.

Cost Optimization

One investment, multiple benefits: Peak shaving, backup power supply, microgrid building power quality improving and energy storage etc

Safe and Reliable

Integrated BMS,DC, AC multi-layer protection, maximum safety performance design. IP54, safe and reliable operation in outdoor environment.

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Benefits with
Energy Storage System (ESS)

Manage your Energy Cost

Giving you control over when to use grid power and manage peak loads and variable energy tariff to your advantage

Improve Power Quality

Can actively compensate poor grid voltage and frequency by providing active or reactive power, reducing the need back up systems (UPS) etc.

Demand charge reduction

Potential to decrease or eliminate the power fees related to short time peak loads

Renewable Energy maximization

RE sources are combined with a BESS increase share of renewable energy by charging with lower cost energy/ and discharging during times of high energy prices or when renewable energy is not available.

BACKUP POWER

To use the same in the Evening/night shift or during Grid interruption.

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Wide Range of Applications

Peak shaving:
Reducing energy and power tariffs by capping the consumption peaks.

Grid support
Compensating grid fluctuations by regulating reactive and active power or frequency.

Diesel genset optimization
Optimizing diesel hybrid system for consumption by delaying the start and managing ramp rates.

Intermittent power generation
Using more of the power generated with distributed energy resources.

Charging infrastructure
Integrating charging stations by providing peak shaving.

Islanding
Supporting microgrids and loads during power outages with seamless transition and black start capabilities

Time of use
Using of the storage system is dependent on the electricity cost (charge when low, discharge when high)

Multi Use applications
Combining several applications with dedicated priorities.

Commercial and Industrials
Mange the Energy Cost.
Power Continuity during grid outages
Improve Power Availability & Reliability
Integrate with RE sources Lowering the Energy cost.

Transmission & Distribution
Peak demand, Backup power and capacity forming

EV Infrastructure
Back up and Peak demand management

RE Maximisation
Improved off Grid utilization and Load level/capacity forming

Off-grid systems /Micro grids
Back up and Peak demand management

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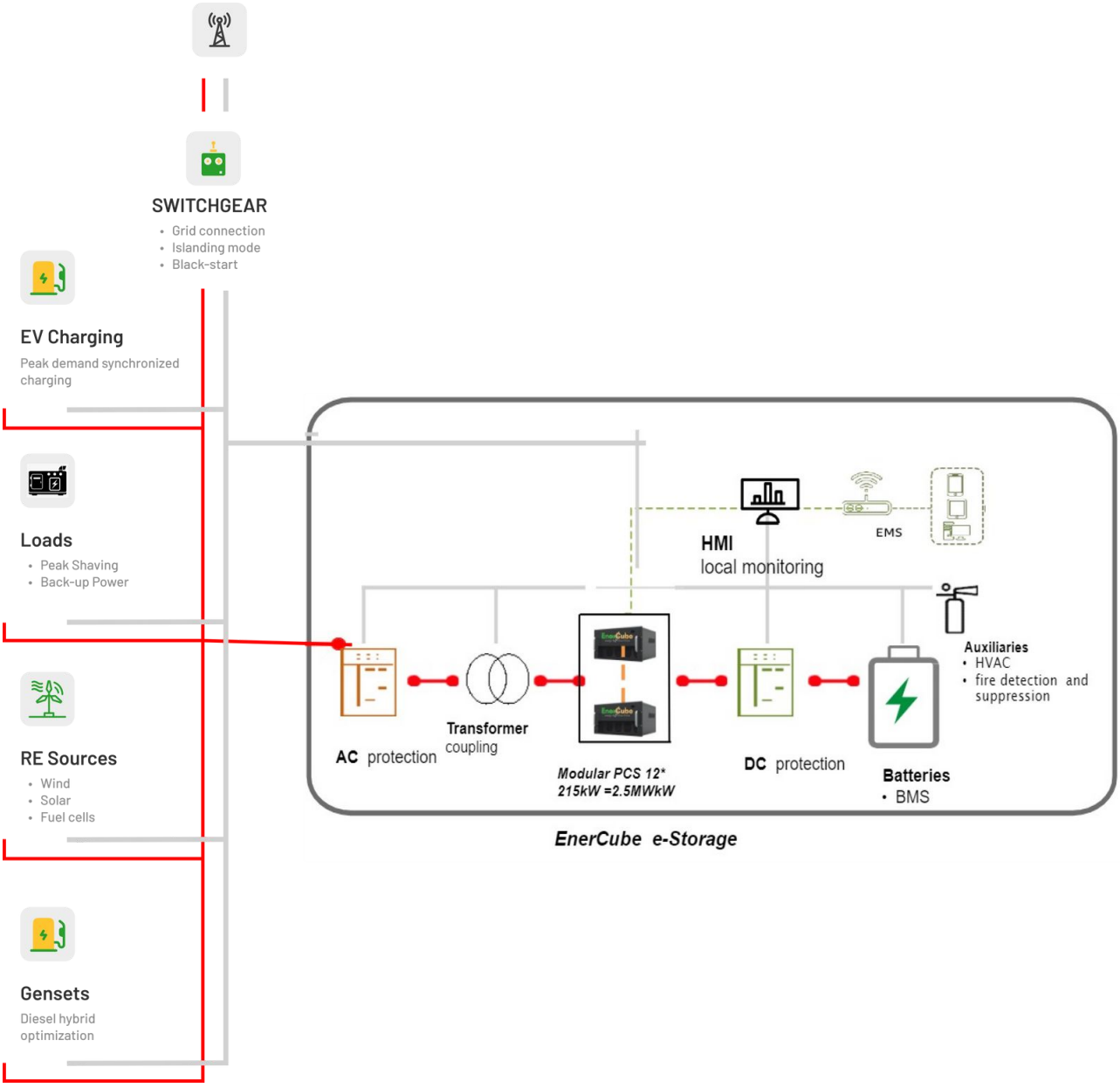
In- Built Energy Management System

EMS provides integrated control and monitoring functions for the whole Energy Storage System

BESS = Dumb Hardware + Intelligent Operating Software



Function with Energy Management System (EMS)

Energy management Software provides integrated control and monitoring functions for the whole scheme, collects and analyses the real-time data of various equipment in the ESS system, and monitors various key data parameters in real time.

Main Function

Power station monitoring

7 * 24-hour second level real-time monitoring and equipment control; Intelligent alarm, multiple notification methods.

Energy storage management

Demand management, power factor regulation, SOC display, charge discharge cycle display, load monitoring, electricity cost optimization.

Energy efficiency management

Year on year and month on month analysis: Energy consumption tracking; Quickly identify major energy consumers and consumption increasing points.

Equipment management

Equipment life cycle management; Electronic archives.

Efficient O&M

Unified online and offline operation and maintenance; Automatic tracking record of the whole process of operation and maintenance.

Power quality optimization

Active power automatic control, reactive power control, three-phase imbalance regulation; Visual monitoring of harmonics; Intelligent alarm.

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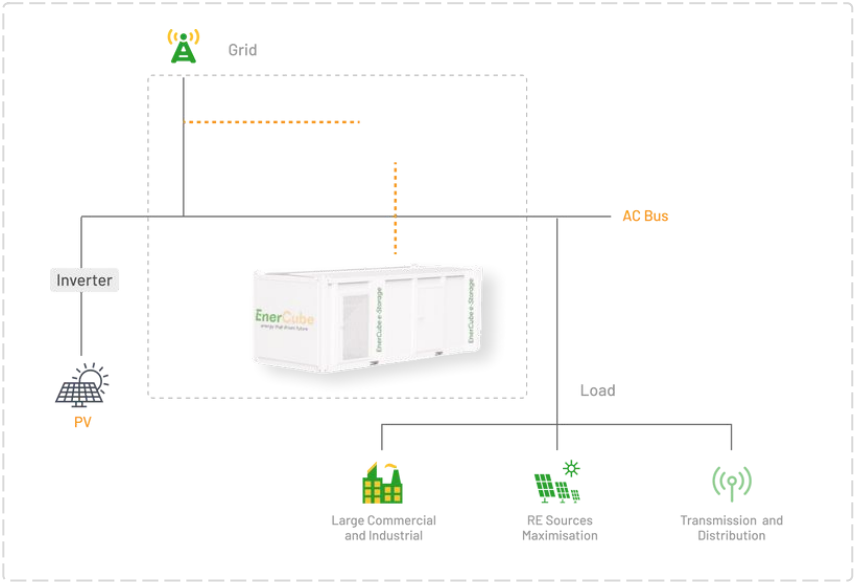
Highly Customized Integration
EnerCube e-Storage

Hardware Components

Manage Energy Cost	Improving Power Quality	RE Energy Maximization	DG Offset/ Back-up	Peak Shaving

Types of BESS

01. AC Coupled BESS



BESS Configuration

Suitable for

>300kWh ~ MWh.

Integrating with Renewable energy sources.

Work Mode

The RE Sources supply to loads through Grid Inverter firstly. Excess Solar PV power to the store in battery.

Auto switch between on/off grid during Peak tariff (energy shift) / Peak demand/ Capacity forming & Power quality

Auto discharge against the the electric grid is interrupted. SAVE THE DIESEL COST

02. DC Coupled BESS

BESS Configuration

Suitable for

>300kWh ~ MWh.

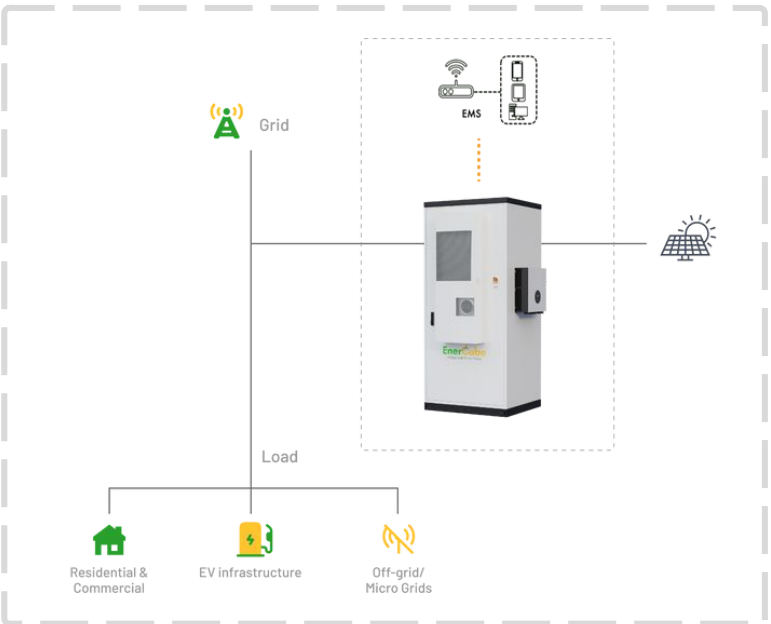
Integrating with Renewable energy sources.

Work Mode

The RE Sources supply to loads through Hybrid solar Inverter firstly. Excess Solar PV power to the store in battery.

Auto switch between on/off grid during Peak tariff (energy shift) / Peak demand/ Capacity forming & Power quality

Auto discharge against the the electric grid is interrupted. SAVE THE DIESEL COST



Key Considerations for BESS Configuration

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Capacity Matching

Ensure that the capacity of the energy storage system (battery energy capacity and PCS power capacity) is sufficient to meet the specific application's requirements, preventing the system from being either over or under-capacitated.

Matching of Sub system Parameters

Ensure that the battery voltage range matches the PCS DC voltage range, PCS AC voltage aligns with the grid (or load) standards, and PCS discharge current corresponds to the battery discharge rate, and so forth

System Efficiency and Performance Metrics

Consider the system's efficiency, including losses during charging and discharging processes. Additionally, focus on performance metrics such as cycle life and efficiency.

Safety and Protective Measures

Emphasize the system's safety, including considering protection mechanisms against overcurrent, overtemperature, and short circuits, ensuring the system's safety and reliability in various scenarios.

System Response Time and Dispatching Capability

Ensure the system has an adequate response speed to meet grid demands or load variations. Consider the system's dispatching capability to achieve flexible energy management.

Environmental Adaptability

Consider the system's adaptability to different environmental conditions, including temperature range, humidity, and altitude

Maintain ability and Remote Monitoring

Consider the system's maintainability, including a design that facilitates easy repairs and maintenance procedures. Configure a remote monitoring system for real-time monitoring and remote fault diagnosis.

Emergency Backup Power Capability

Consider whether the energy storage system can provide sufficient backup power in the event of a power outage to support the continuous supply of critical loads.

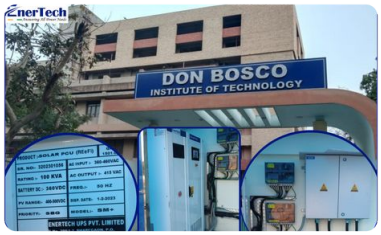
Cost-Effectiveness and Payback Period

Comprehensively consider the cost-effectiveness of the system, including equipment costs, installation expenses, and operational costs, while also assessing the system's payback period.

Site References

Application: Industry
Rating: 400kW/600kWh
Site location: Tamil Nadu, India

Application: Healthcare
Rating: 200kW/500kWh
Site location: Ponduchuerry, India



Application: Institute
Rating: 100kW/100kWh
Site location: Mumbai, India

Application: Poly House
Rating: 200kW/200kWh
Site location: Nashik, India

Application: Micro Grid
Rating: 100kW/200kWh
Site location: Ladakh, India

Application: Cold Storage
Rating: 300kW/400kWh
Site location: Kanpur, India

Application: Education University
Rating: 100kW/200kWh
Site location: Ladakh, India

Application: Resort
Rating: 250kW/300kWh
Site location: Goa, India

Over 120 MW & 20,000+ Customer across the globe & exported to Saudi, Dubai, Philippines, Myanmar, Bangladesh, Yemen, Lebanon, Dubai, Singapore, Zambia, Tanzania, Uganda, and Nigeria.

Product
Overview

Residential Solar Storage System
5kWh~5KWh

Plug & play Storage Cabinet
100kWh ~300KWh

All-in-one Hybrid Compact systems
50kWh ~200KWh

Energy Storage Container
500 kWh ~MWh

Energy Storage Container
500 kWh ~MWh

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Enertech Approach for EnerCube e-Storage

Sizing & Design

Analyze customer use case and needs

Model technical and financial parameters

Determine right size, technology and configuration for the customer

Turnkey execution

Fully integrated EnerCube BESS manufacturing at Facility

Shipping and installation post acceptance testing

Standardized site acceptence testing and commissioning

Operations & Maintenance

Dispatch strategy to maximise value from the ESS

Real time remote monitoring and data driven preventive maintenance

Warranties and Long-term capacity contracts

Solutions architects – expert support

Mobile /WhatsApp:
+91 9920051821 ,
+91 9373336340

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Enertech Industrial Solution LLP
S. No. 399/1-2, Bhare, P. O. Ghotawade, Near Pirangut,Taluka- Mulshi, Dist.- Pune – 412115 India

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