nexcharge
Exide Leclanche Energy Private Limited

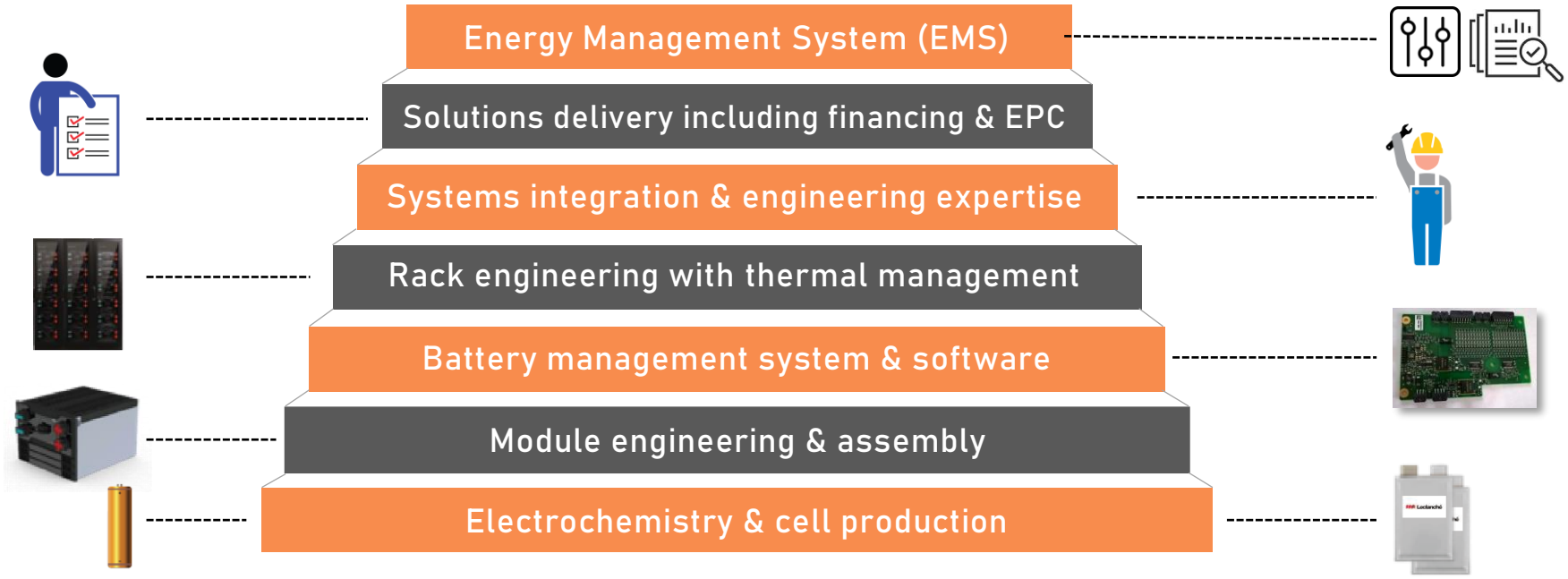
Energy Storage Solutions

BESS

- Arbitrage
- Asset life extension (T&D)
- AT&C loss reduction
- Black start
- Demand response
- Diesel displacement
- Peak shaving

- Grid congestion relief
- Power smoothing
- Ramp rate control
- Seamless power backup
- VAR control
- Frequency & voltage regulation

INDUSTRY & UTILITY SOLUTIONS



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Utility-scale Generation & Micro Grids

Applications

Grid services

- T&D deferral
- Peaker substitution
- Arbitrage
- Frequency regulation
- Voltage & reactive power regulation
- Ramp rate control
- Black start
- Grid congestion relief

Micro grid

- Diesel displacement
- Island operation
- Ramp rate control
- Hybrid generation control

Off grid

- Independence
- Power availability
- Hybrid generation control

Virtual Power Plant

- Aggregation of decentralized sources
- Peak delivery
- Load-aware power generation
- Arbitrage
- Energy trading
- Remote control

Demand management

- Demand response
- Load shifting
- Demand charge reduction

Residential ESS

- Self-consumption
- Back-up / UPS
- Energy cost management
- Smart Grid integration
- Vehicle to Grid

NEXCHARGE MICROGRID SOLUTION

Microgrid have traditionally relied on diesel generators for electric power, but with inclusion of renewable (Solar PV or Wind) energy, their dependence of diesel fuel decreases, however an Energy Storage System must be included with renewables to get maximum contribution from renewable energy.

Lithium-ion (Li-ion) batteries are the most suitable solution available for Energy Storage System because of high energy density that enables bigger systems to be deployed with a compact footprint.

Application - DG Offset

BESS independently or with Solar PV can be used to offset the use of diesel generators up to a great extent. It helps in reducing the air pollution & noise pollution along with the reduction in levelized cost of energy for customer.

Application – Island operation

In case of Grid unavailability/ outage BESS system can form an island grid and provide reference voltage & frequency for other sources (like Solar PV) to function.

BESS rating for microgrid can be classified in following ranges:

a. 50kWh to 1000kWh
b. 1MWh to 5MWh
c. Above 5MWh

Power generation from renewable sources is inherently intermittent and unpredictable. Hence large-scale integration of renewables into the electricity system requires BESS for energy storage and reliability of discharge. BESS rating for renewable integration varies from few kWh to MWh.

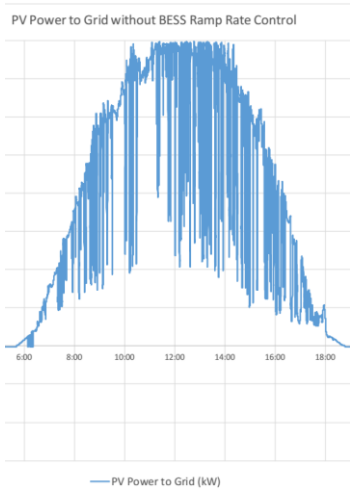
NEXCHARGE RENEWABLE INTEGRATION (SOLAR / WIND) STORAGE SOLUTION

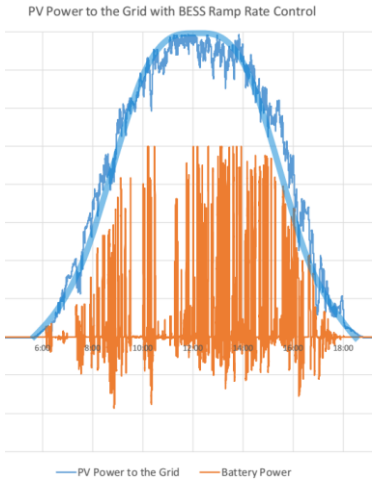
Application - Ramp rate control

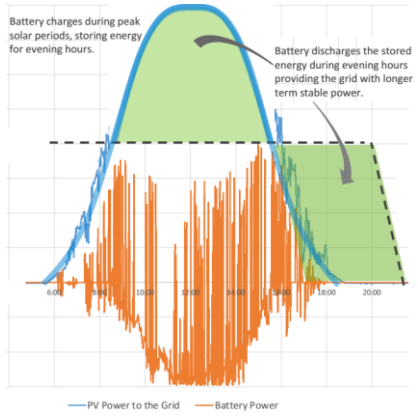
Solar PV plant output can fluctuate 80% in a second due to clouds. BESS is used to quickly charge and discharge batteries to smoothen the output of Solar PV Plant.

Application - Energy Shift

BESS is used in Solar PV Plants to store the energy whenever excess solar power is available and give the energy back to the system during off solar hours.







BESS rating for renewable integration can be classified in following ranges:

a. 50kWh to 1000kWh
b. 1MWh to 5MWh
c. Above 5MWh

NEXCHARGE GRID ANCILLARY SOLUTION

The Indian Electricity Grid Code (IEGC) 2010 defines ancillary services in power system as "services necessary to support the power system (or grid) operation in maintaining power quality, reliability and security of grid. With stricter framework including ancillary services through FRAS and governance, the frequency remains in the acceptable band to a large extent, but still, it remains over and above the upper limit of 50.05Hz for around 25% times. T&D network upgradation can also be deferred with the use of BESS.

Application – Frequency & Voltage stabilization

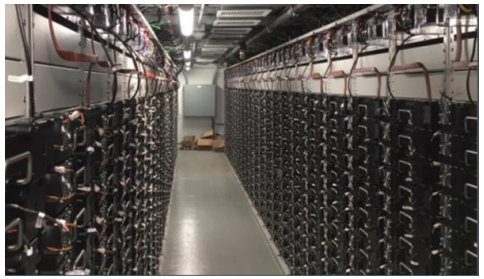
BESS is connected to Grid and charge/ discharge based on an algorithm to keep grid frequency and voltage within desired ranges.

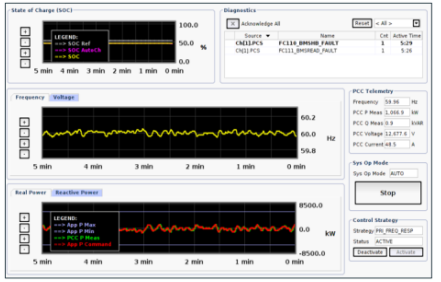
Application – Spinning reserve

BESS can quickly respond to the variation in load on utility and enables generators to work at optimum level without the need to keep the idle capacity for spinning reserve.

Application - T&D deferral

Enable deferral of utility investments by using relatively small amounts of storage for Congestion relief. This will also increase the life of infrastructure (ex. Transformer, distribution network etc.) by reducing the loading on them.





BESS rating for grid ancillary applications can be classified in following ranges:

a. 50kWh to 1000kWh
b. 1MWh to 5MWh
c. Above 5MWh