nexcharge
Exide Leclanche Energy Private Limited

Energy Storage Solutions

MICROGRID

With increasing Energy demand, rising grid tariffs and challenges in grid connectivity for rural & remote areas, Microgrid is a well-placed solution to tackle these challenges. Renewable Energy being an intermittent source of energy, battery storage has become critical component of a Microgrid.
Lithium-ion (Li-ion) batteries due to its higher cyclic life and energy density is a great enabler to extract the maximum benefits of a Microgrid system.

NEXCHARGE SMALL MICROGRID SOLUTION

Solution Features

- Reliable & Safe LiFePO4 cell technology
- Wide operating temperature range
- In-built HVAC solution
- Suitable for fast charging, saves fuel consumption of DG
- Less weight and compact footprint
- Compatible for communication with PCS
- State-of-Art Battery Management System
- Remote monitoring & diagnostics (Optional)
- Higher Cyclic life
- Longer Design life
- High round-trip efficiency
- Low Maintenance

Solution Range

Parameter	Details
Nominal Voltage	51.2 V
Module Ah rating	100 AH / 150 AH
Rack Configuration	1SXP

*The battery sizing & rack configurations shall be customized based on the specific application requirement

nexcharge
Exide Leclanche Energy Private Limited

NEXCHARGE LARGE 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

Application Value Proposition

nexcharge
Exide Leclanche Energy Private Limited

Technical & Safety

- LFP cell chemistry: Better operational temperature range resulting in better thermal safety and stability
- Advance Battery Management System (BMS) protecting the system against abnormal operating conditions e.g., Over charge/discharge, Current, Temperature, Voltage etc.
- Communication compatibility with computer and other power infrastructure for operation and diagnostics
- Optional features such as HVAC & Fire Extinguisher system for better life and added site safety
- Ingress protection with class IP 54 suitable for outdoor installation

Techno-economic

- Suitable for high discharge rates and deep discharge (80% DoD) leading to an optimal battery sizing
- High design calendar life
- Very high cyclic life compared to Lead acid alternative providing a long battery operational life
- Very compact size providing user greater savings on civil costs
- Suitable for fast charging, saves fuel consumption of DG
- High Round-Trip Efficiency
- Better LCOE (Levelized Cost of Energy) 1

1 Model LCOE illustration on next slide

Model LCOE

The right technology selection must always be driven by accurate evaluation of LCOE. Every project has a specific load and back up needs, grid conditions and tariff scenarios. While LCOE is a very specific affair, a model case is illustrated here to understand the criticality of it. Case specific LCOE need to be mutually worked out with the user.

Case Parameters

Parameters	UoM		
Site Load	kW	5	
Back up time	Hrs	6	
Unit Solar Tariff	₹	2.5	
Round Trip Efficiency		VRLA	Li-Ion
	%	85	95
Utilizable %DoD for sizing		VRLA	Li-Ion
	%	50	80
Estimated Cycle life at given DoD		VRLA	Li-Ion
	Nos.	1200	3500