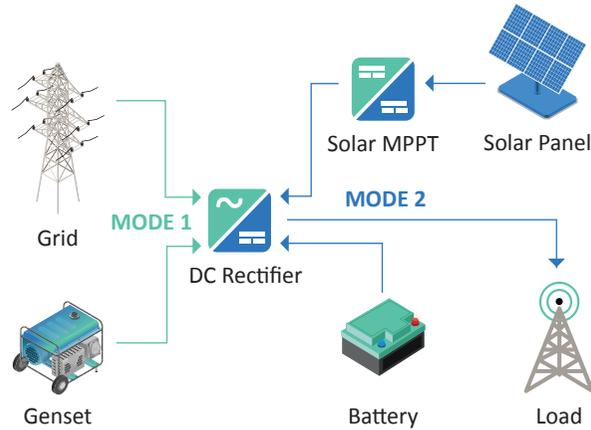


## Architecture:

The Architecture is configured to comprise two operation modes, MODE 1, powered by grid (on-grid) and genset (off-grid), MODE 2 being provided for by battery exclusively or, under alternative configurations, by solar power.



## Operation Modes

### MODE 1

- Powered by alternator or grid.
- Alternator or grid supplies power to AC/DC embedded power supply and AC220V load simultaneously.
- The AC/DC embedded power supply converts the AC220V current to DC48V current, and powers the signal tower and battery system of UPS at same time.
- When the battery system of UPS is fully charged, the power supply mode will be changed to be powered by battery system.

### MODE 2

- Powered by battery system.
- When the battery system of UPS is fully charged, the power from alternator or grid can be cut off. The power will be supplied from battery system.
- The battery system of UPS will power the signal tower and AC/DC inverter at same time. The AC/DC inverter will convert the DC48V current to AC220V current for the AC220V load.
- The UPS system should switch to the alternator or grid power supply mode before the energy of battery system dropping down to the preset value to turn off.

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## Commercial BESS for Off-Grid Cell Towers

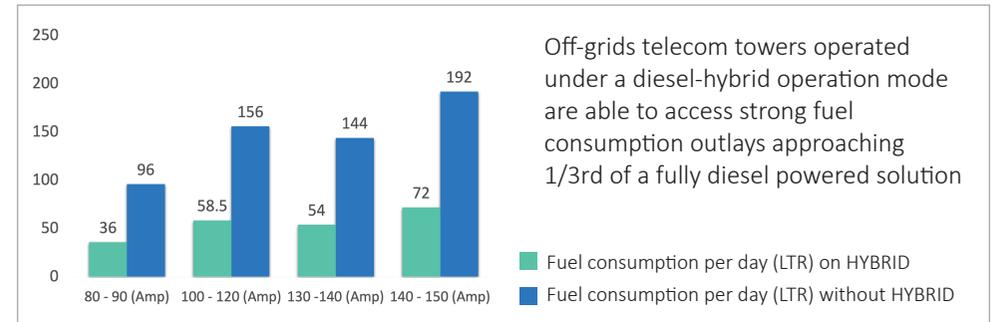
BOOST Hybrid power is a powerful solution that enables unprecedented monitoring & control capabilities and is especially suited to manage renewable energy sources in the Telco environment. The solution supports operators to considerably reduce the operational cost of telecom load sites and to improve the visibility of the energy consumed with additional modules chosen based on the operator's needs.



- Allows operators to considerably reduce their operational cost of their sites with an expected fuel savings of more than **40%**.
- Reduction in Genset operation of more than **50%**.
- This can lead to an overall operation cost reduction of up to **50%**, reduction in CO2 (more than **50%**), and return of investment (ROI) of less than **3 years**.
- Solar enhances operational efficiency and reliability, whilst extending cost reduction, and reducing reliance on the grid and diesel generators.

## Product Features

- Cut the fuel cost by up to 90%
- Compact size for space saving
- Reliable performance
- Vertical industrial chain
- Compatible with live network equipment
- 95% DOD with more usable capacity
- Cell supports 6C charge and 6C discharge
- Modular design for expandable capacity
- Super low failure rate
- Life span of 10+ years
- Flexible and scalable



## Key Components Of The Solution



Leading Lithium-Ion batteries with excellent lifetime performance.



Battery shelter with aircon to provide optimum ambient conditions for batteries (outdoor sites).



A hybrid controller to monitor and control all power components remotely.



Highly efficient 36kW AC/DC rectifier pack including 9 modules of 4kW each.



## Core Specifications

Hayat's BOOST BESS solution deploys DESTEN technology to improve the sustainability and profitability of off-grid Cell Towers

### BOOST 34.5kWh Off-Grid BESS

Parameter	Value
Nominal Energy	34.5KWh
Nominal Voltage	48VDC
Nominal Capacity	675Ah
System Dimensions (LWH)	1500mm*1200mm*2100mm
System Mass	950kg
Maximum Discharge Power	30kW
Maximum Charge Power	30kW
Maximum Charge and Discharge current	600A
Cooling	Air Conditioned

## System Parameters

### Module

Item	Mini	Typical	Max	Unit	Remarks
Battery capacity		34.5		KWh	6.9KWh*5
Dimension	L*W*H (795.58*500*182)			mm	One pack
Weight	Approx. 70			kg	
Discharge working voltage	46	48	57.6	V/DC	
Assemble mode	3P16S*5 packs				Can be extended
Prismatic cell	LFP-45Ah3.2V				Support 6C charge and 6C discharge
Max charge current			500	A	For 5 packs
Max discharge current			500	A	For 5 packs
Overcharge protection voltage		58.4		V	



### Rectifier

Maximum output power	Input voltage	Output voltage	Output current	Rectifier
36kW	380VAC	48V	600A	Full configuration of 9 modules



### Controller

Input power	12-24 VDC, 5W Max
Digital input/pulse	4 x 100Hz Pulse Input / Digital Input, 24 VDC
Digital output	2 x Digital Output (PNP), 24VDC / 1A
Analog inputs	4 x Analog Inputs
Serial ports	2 x RS485 Port, 1 x CAN Bus Port
USB port	USB Type A for Console

