



## 33<sup>rd</sup> ISA SUNMEET

### Solar Generator & Hybrid Storage Systems

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# Hybrid/Off Grid System Overview



As Solar is not a constant source of Power, to supply constant power to loads, solar requires another source of power to complement it.

The solar PV systems, which are not connected to the utility grid and use a battery bank to complement solar power, are called off grid Solar PV systems.

**The term 'hybrid' refers to a combination of solar and energy storage which is also connected to the Electricity Grid.**

Hybrid Systems can be designed to meet any below number of situations

- Backup Power Supply – Stand Alone Power System
- Reducing Maximum Demand – Load Shaving
- Maximizing Time of Use Metering – Load Shifting
- Power Quality Filtering and Correction
- Rural Off Grid Systems

## Why DG PV Hybrid System ?

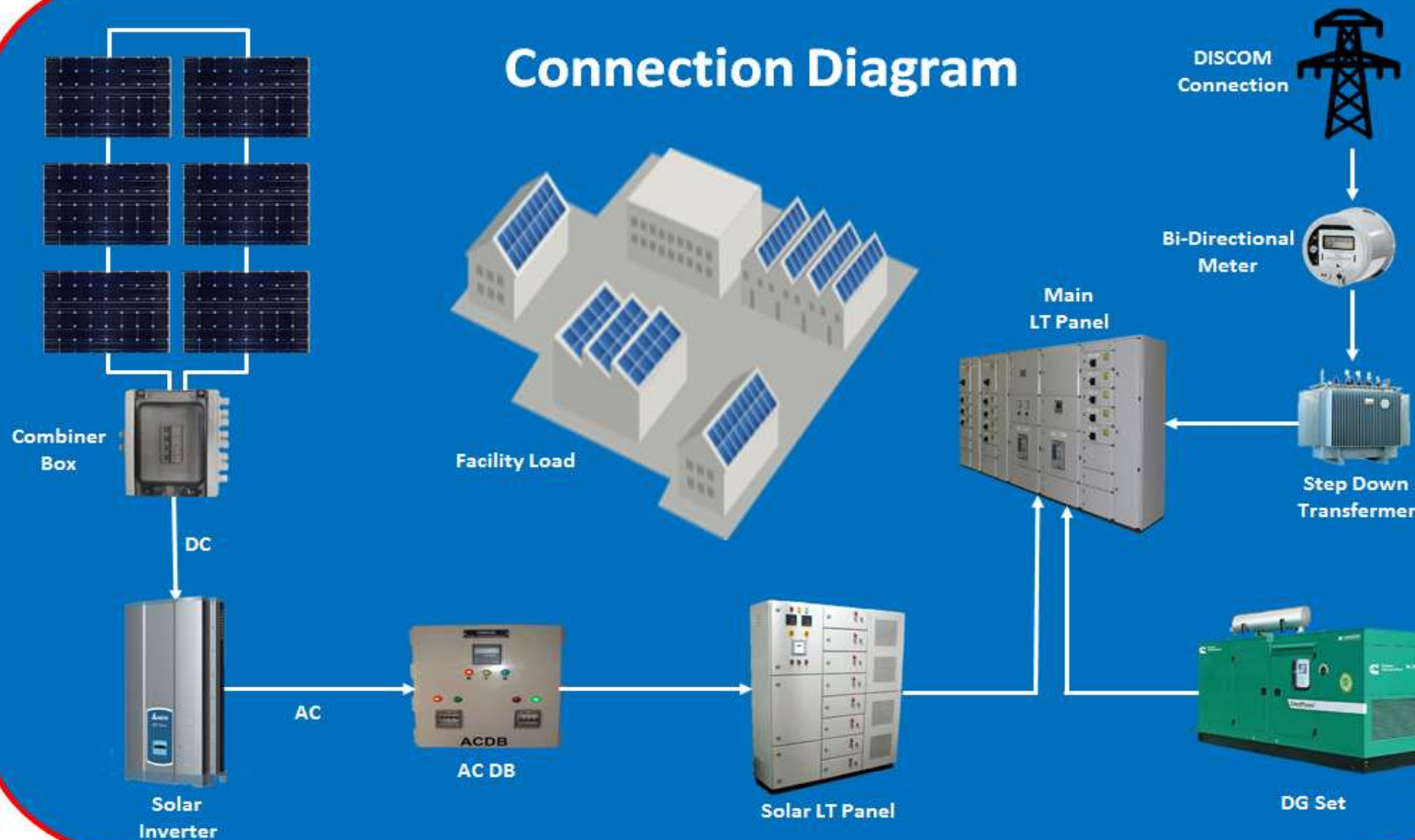


- DG running cost is high so can be integrated with PV to make it more economical.
- PV Solution with existing DG to make it reliable source of power ( 24 X7)
- Reduce diesel consumption
- With Battery System , it reduces running of DG operating hours

# Solar Technology: Grid tie system with Single DG set



## Connection Diagram



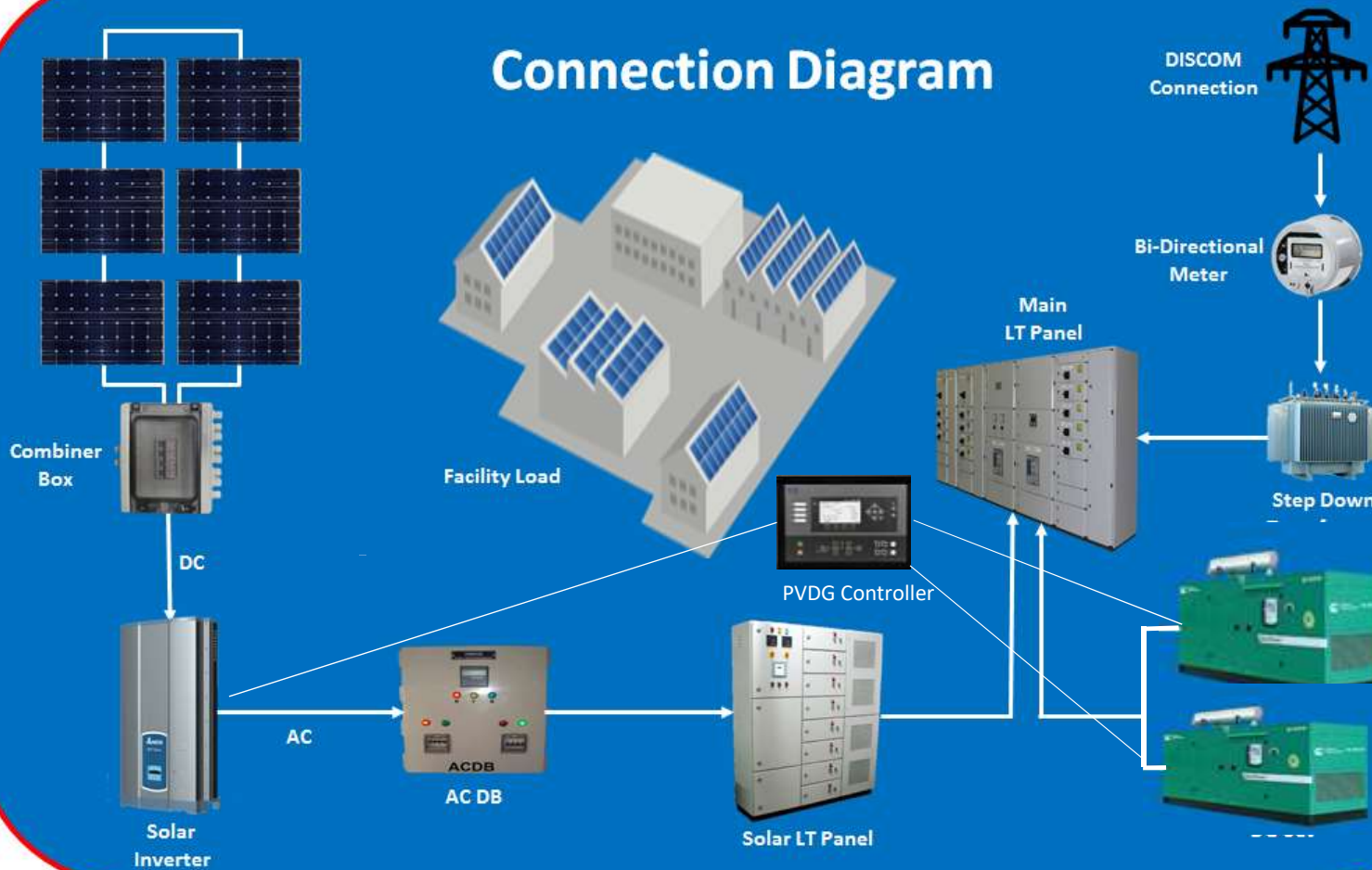
System Component:

1. PV Solar Module
2. On Grid Inverter
3. ACDB
4. DG ( used in AMF Operation)
5. Grid supply

# Solar Technology: Grid tie system with Multiple DG set



## Connection Diagram



System Component:

1. PV Solar Module
2. On Grid Inverter
3. ACDB
4. DG ( used in Synchronization)
5. Grid supply
6. PVDG Controller:

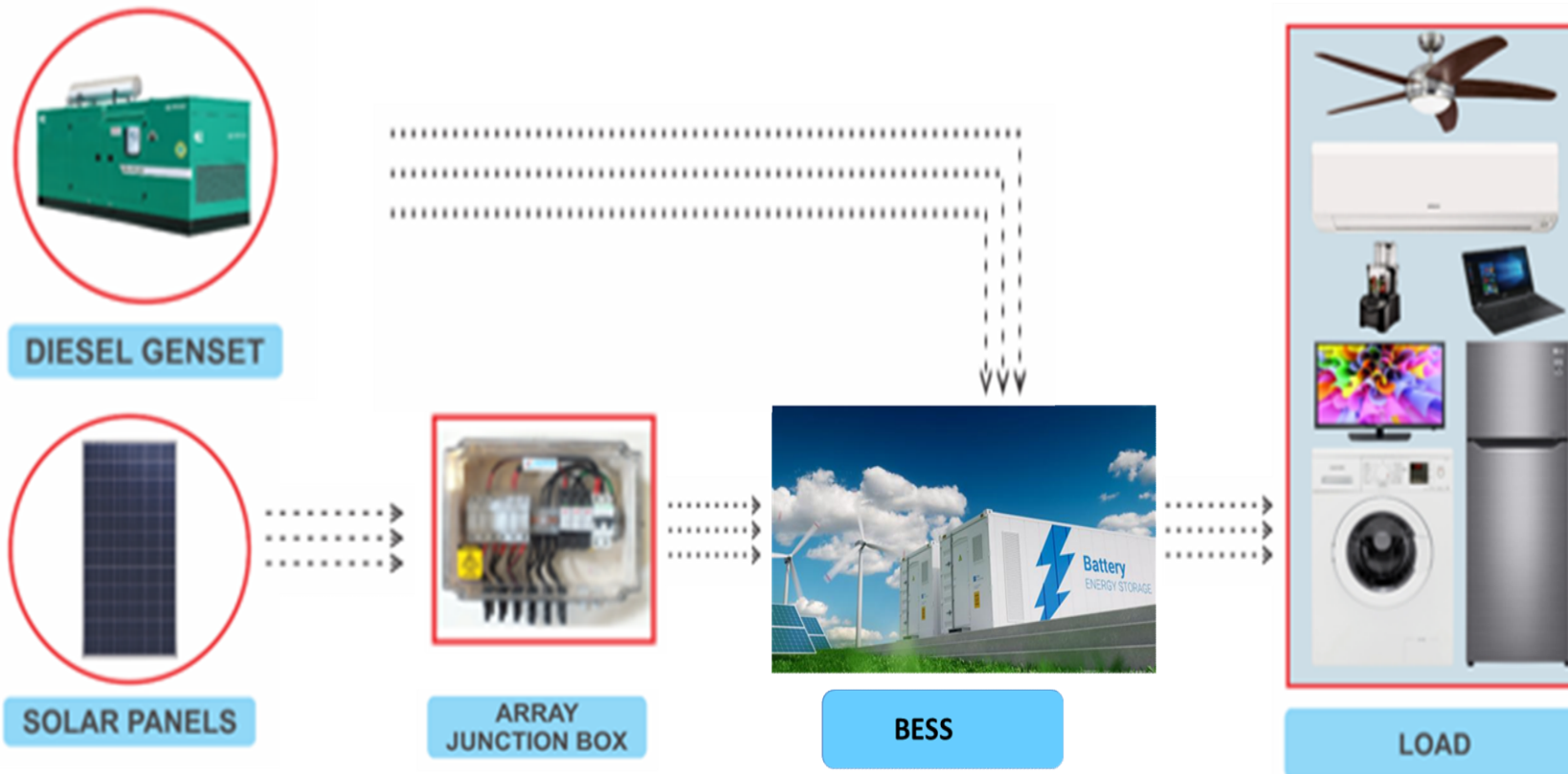
# Solar Technology: PVDG Controller



## **Working of PVDG Controller:**

- ✓ When Grid fails Operator starts the DG & load shift form GRID to DG .
- ✓ GRID breaker trip at the same time, Solar continue to operate with DG or GRID.
- ✓ At the same time PVDG system will ensure the minimum loading on DG (30% or settable parameter) and also control the generation on the Solar Invertor.
- ✓ Now Solar is running with DG & as per the load condition PVDG system will control the solar power generation by communicating with Invertor & the running DG will continue to run on the minimum 30% load
- ✓ Now the operator will check the condition at site & start or stop the other generator as per the plant requirement.

# Solar Technology: Hybrid System with Storage



System Component:

1. PV Solar Module
2. Hybrid Inverter
3. ACDB
4. DG ( used in AMF)
5. Grid supply(Optional)
6. BESS ( Battery Energy Storage System)



# Solar Generator

Ratings: 1.7 KWp / 2 KWp



## Features

- Compact unit with movable as well as foldable module mounting structure
- Hybrid Power Solution - Solar, Battery and Grid.
- Instant power with easy Installation and O&M
- No noise & emissions
- Robust tiltable structure engineered for harsh operating conditions
- Capable to store surplus power for usage during night
- Single point warranty for all components



PLUG & PLAY



PORTABLE



VERSATILE



MODULAR & EXPANDABLE

## Foldable Module Structure





# Models



PARAMETERS	1.5 kWp	2 kWp
PV POWER	1.5 kWp	2 kWp
NO. OF PANELS	6 X 250Wp Polycrystalline type	6 X 325Wp Mono PERC type
INVERTER POWER (KVA)	2 KVA/48V	2KVA / 48V
BATTERY BANK CAPACITY	4 X 150AH/12V LMLA type	4 X 200AH/12V Tub. Gel type
RECOMMENDED LOAD	1.2 kW	1.6 kW
BACK UP HOURS	3	3
DIMENSIONS	2700x4000x2700 mm	2700x4000x2700 mm
WEIGHT	780 KG ( Approx.)	815 KG ( Approx.)

# Who we are



## India's leading EPC Solutions, Distributed Energy & Solar Company

**1947**

Year of  
Establishment

**₹2500**

(INR Crores)  
Annual Revenues

**2200**

Employees  
Across Locations

**3**

Manufacturing  
Plants

**30+**

Offices  
in India

**45000+**

Customers  
Served in India &  
Abroad

**38**

Channel Partners for  
Diesel Genset  
Business

**69**

Channel Partners for  
Solar Products  
Business

**20000+**

Annual DG  
Manufacturing  
Capacity

**1 GW**

Solar  
EPC Projects

**1 GW**

Enhancing Solar  
Modules  
Manufacturing  
Capacity

**300 MW**

Solar IPP  
Plants



**International  
Offices**

- Bangladesh
- Dubai
- Singapore
- Nepal
- Bhutan

# Our Evolution



**+ Hybrids**



**2020**

**+ EPC Solutions**



**2012**

**+ Solar**



**2010**

**Diesel Gensets**



**1980's**

*Presence across the  
energy value chain*

*Investments in renewables and  
energy solutions of the future*

*Committed to build a  
sustainable energy company*



# THANK YOU

For any further Clarifications, requirement please write to us at  
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