

# OVERLEAP SOLAR GENERATOR

OVERLEAP ENERGY RESEARCH SOLUTIONS



Overleap Energy Private Limited  
SUNNYDAYS, HEADQ, HILITE PLATINO  
MARADU, COCHIN-682304

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WE RUN BIG FACTORIES  
WITH OUR BATTERIES

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## A QUANTUM LEAP WITH OVERLEAP

We, OVERLEAP -an Electricity Technology Company empower our customers to gain energy independence and energy freedom from Grid power, providing them electricity of international quality. We have vast experience and expertise in designing , installing and operating the three sides of power triangle namely, generation storage and distribution.

Our Solar Generator (SG) provides you uninterrupted international quality electricity – steady frequency and steady voltage. We provide life time service support for the system through our comprehensive AMC and guarantee uninterrupted quality power for 25 years from the date SG is installed in your establishment.

Solar power is our prominent power source. Energy bank made of 2V single cell heavy lead acid batteries is the energy reservoir and is supported by a PLC controlled Battery Management system in built in our integrator unit. Integrator unit is the heart and brain of SG which intelligently integrates and coordinates the triple functions of generation, storage and distribution of energy.

We have a diverse clientele of belonging to different sectors many of whom are export oriented units. We provide custom made energy solutions to our clients meeting their varied power demands at optimum cost. SG is designed customised and ensures energy cost savings of 60% for a payback period of 5 years and less.

Quality Electricity for higher productivity is our mission and we make you proud owners and consumers of your own power. A quantum leap with Overleap!

## SECTORAL FOOTPRINTS –SOME OF OUR MAJOR INSTALLATIONS

INDUSTRY SECTOR	CLIENT- COMPANY	PRODUCT	CAPACITY	STATUS
CHEMICAL	PYARELAL FOAMS- PALAKKAD	POLYMER FOAMS	1.2 MVA	ON TRIAL RUN
	INA INDUSTRIES- ALAPUZHA	FORMALIN	600 kVA	RUNNING
AGRICULTURE	REDLANDS ASHLYN PLC- COIMBATORE	AGRO MACHINERY	600 kVA	ONGOING INSTALLATION
COIR	WILTON WEAVERS- ALAPPUZHA	COIR CARPETS	600 kVA	RUNNING
	KERAFIBERTEX - KOCHI	COIR PRODUCTS	250 kVA	RUNNING
	TRAVANCORE MATS AND MATTING	COIR PRODUCTS	150 kVA	ON TRIAL RUN
FOOD	SAMRANS FRESH MEAT PRODUCTS-ERANAKULAM	MEAT PROCESSING	250 kVA	ONGOING INSTALLATION
TEXTILE	RADHAS TEXTILES- KOLLAM	TEXTILES	150 kVA	RUNNING
RETAIL	MARGIN FREE SUPERMARKET - ALAPUZHA	FMCG	150 kVA	RUNNING
	ANGEL AGENCIES - ALAPUZHA	COSUMER DURABLES	63 kVA	RUNNING
EDUCATION	DONBOSCO CAMPUS-ERANAKULAM	COLLEGE,CHURCH HOSTEL CAMPUS	150 kVA	RUNNING
HEALTH CARE	DHANYA MISSION HOSPITAL	HOSPITAL	150 kVA	ON TRIAL RUN
FMCG	SAPINS DIARY- KIZHAKKAMBALAM	DIARY	150 kVA	ONGOING INSTALLATION
PRINTING	ALUKKAS COLOR LAB- THRISSUR	PRINTING	250 kVA	RUNNING
HOSPITALITY	INN TEMPLE TOWN	HOTEL	250 kVA	RUNNING
	AMEYA RESORTS- ALAPUZHA	RESORT	83 kVA	<b>GRID INDEPENDENT- RUNNING</b>
CORPORATE OFFICE	KP NAMBOODIRI'S AYURVEDICS-THRISSUR	FMCG	125 kVA	RUNNING

## CORE TEAM



Dr. MOHAN NAIR  
**CEO & MD**

An energy professional with 25 years of experience in operations and design of energy installations & conceptualisation and execution of energy projects.

A Doctorate holder in Energy security, Mohan Nair is a graduate in Mechanical-Engineering & Postgraduate in Management.



AJITH M.S  
**CTO & DIRECTOR**

An electronics & Electrical Engineer with 20 years of technical expertise in Power Electronics, Networking, renewable energy research, development and technology implementation

Ajith is the founder of Zoladyne Solutions, our technological partner and subsidiary



MITHUN. V. VIJAYAN  
**COO & DIRECTOR**

18 years of varied experience in operation, implementation & development of exchange sales network for OEM automobile industry and later in portfolio management and other areas.

A graduate in Mechanical engineering & Postgraduate in management.



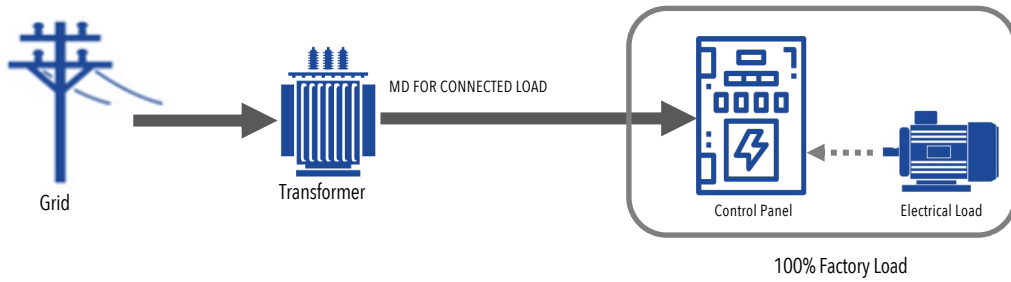
SURESH GOPINATHAN  
**FINANCE**

With more than 2 decades of experience in the financial area, Suresh has been in the forefront of many business transformation movements and has mentored budding businesses across the globe.

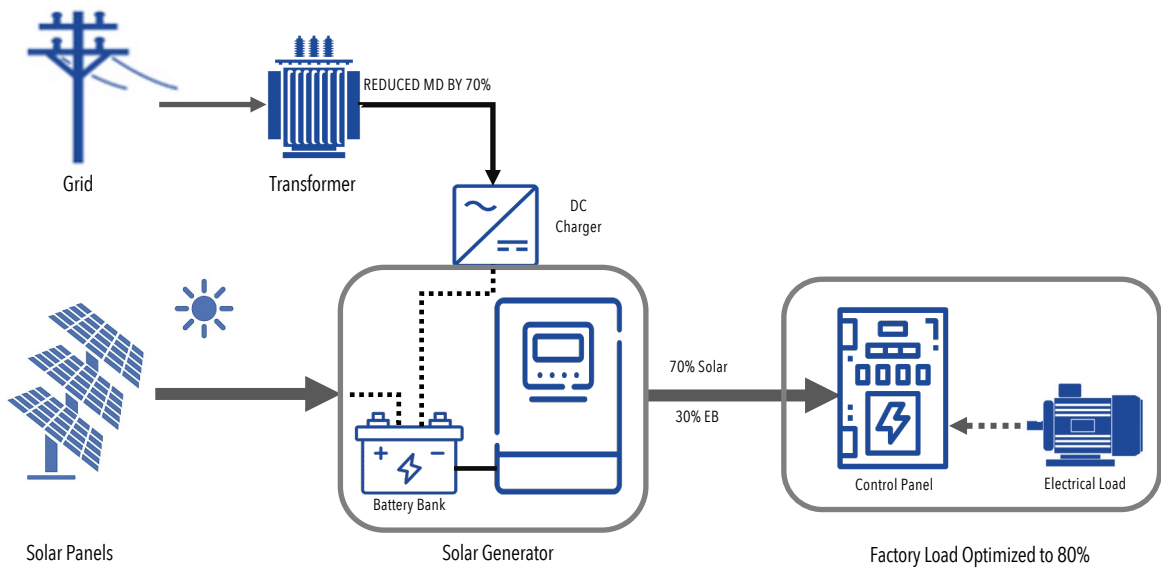
Other than the various financial degrees he has, he holds post graduation in risk management and business transformation management

# OVERLEAP SOLAR GENERATOR

## FACTORY LOAD ON EB (DIAGRAM-A)



## FACTORY LOAD ON SG (DIAGRAM B)



## FEATURES OF OVERLEAP SOLAR GENERATOR

- Normally, the load is run directly by utility power. As shown in the schematic diagram A.
- When utility power is not available a Diesel Generator can drive the load independently.
- The solar Generator drives the load directly just like a DG. It does not need any support from EB for driving the load. The role of utility power is only topping up the left-over charging requirement of the batteries after the solar option is exhausted. Hence the required capacity of EB is equivalent to the charger capacity. This way the contract demand on EB gets reduced to the capacity of the charger. See the schematic diagram B.
- A solar generator has three main components. Solar panels which utilises available solar power, the storage batteries from which energy is delivered to the load and the integrator unit which manages the load in coordination with the power storage power generation and lower requirement.
- The entire load connected to the solar generator will draw power from its energy tank–battery bank
- The solar generator tops up its energy tank from solar panels. However, flexibility to receive charge from other sources of electricity to top up the tank is inbuilt in it.
- The solar generator has a life equivalent to 25 years of useful solar panel life.
- The electricity delivered by the solar generator is of steady voltage, rated frequency, unit power factor and lower harmonic distortions giving following benefits.
- The power generated from the solar generator is the cheapest power, the cost of energy being Rs 2.5 to Rs 2.8 / unit during its life span of 25 years.

***Overleap Solar Generator provides energy independence to the user from utility and from fossil fuels.***

# OVERLEAP QUALITY ELECTRICITY

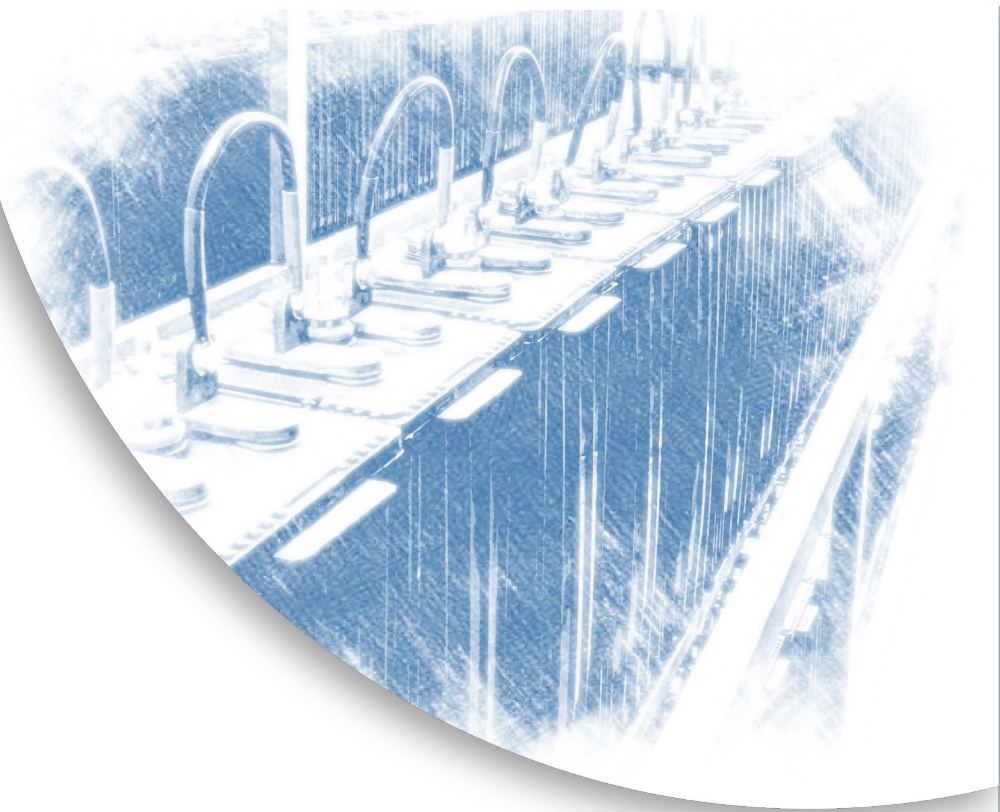
	NORMAL GRID POWER	OUR ELECTRIC POWER
<b>Reliability</b>	Not Guaranteed	24 X 365
<b>Voltage</b>	Set voltage +-15%	Set Voltage +-1%
<b>Frequency</b>	50 +-1%	50+-0.1%
<b>Power Wave</b>	Polluted with Harmonics	Perfect Sinusoidal form
<b>Harmonics</b>	International norms+-8% (Much higher in India)	Linear loads less than 3% and non-linear Less than 5%





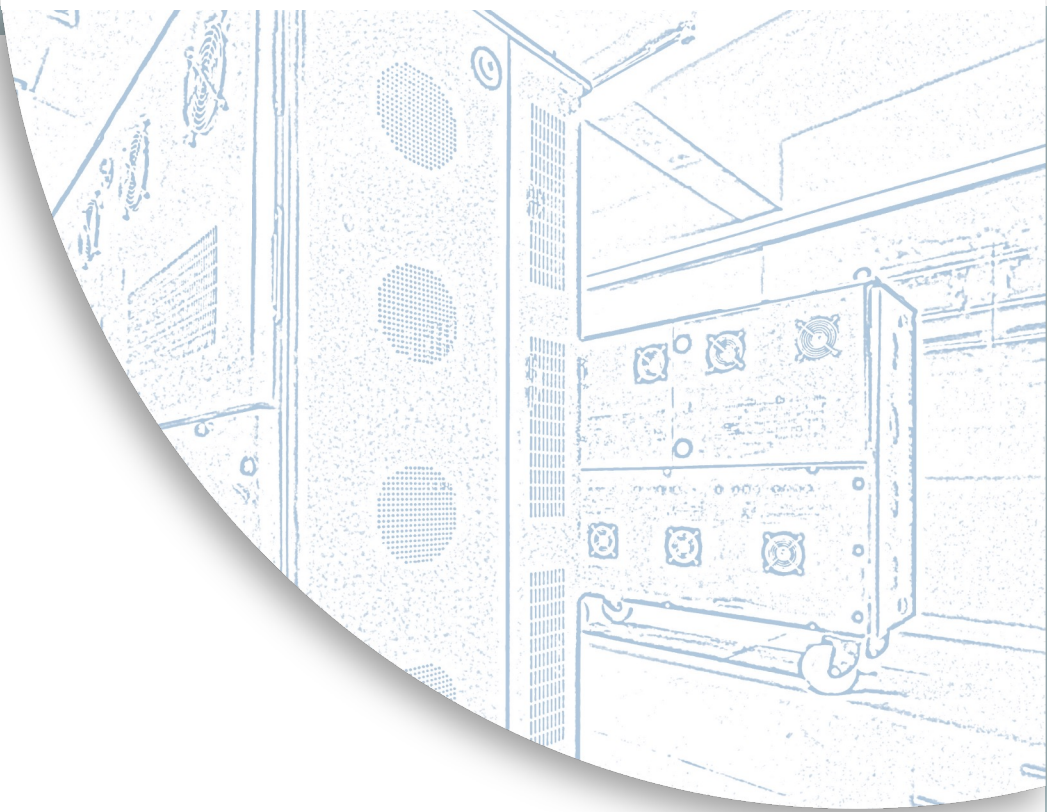
## OVERLEAP INTEGRATOR & BATTERY BANK WORKING AT SITE





## THE ENERGY TANK OF SOLAR GENERATOR

- ⚡ Energy tank of a solar generator is its battery bank.
- ⚡ The battery bank is made of 2V single cell Lead Acid Flooded Battery with proprietary chemical composition capable of delivering high surge currents.
- ⚡ Time tested rugged design, specially made for catering to rough loads from industries and commercial concerns.
- ⚡ Battery arrays in two tiers formed with fusible link interconnection between individual batteries.
- ⚡ Series and parallel connection of battery arrays form the battery bank in which performance of any single battery has no criticality.
- ⚡ Battery bank functions under the supervision of a Battery Management System installed in the Integrator.
- ⚡ Fusible link between terminal connections of two batteries in an array isolates any battery in case of its overheating.
- ⚡ Regulated gassing voltage to control generation of fumes
- ⚡ Specially designed Ceramic Vent Plugs to arrest emission of fumes and hydration of batteries
- ⚡ Battery terminals are covered with insulation caps to prevent accidental external shorting
- ⚡ Manual isolation and fuse protection for the battery bank



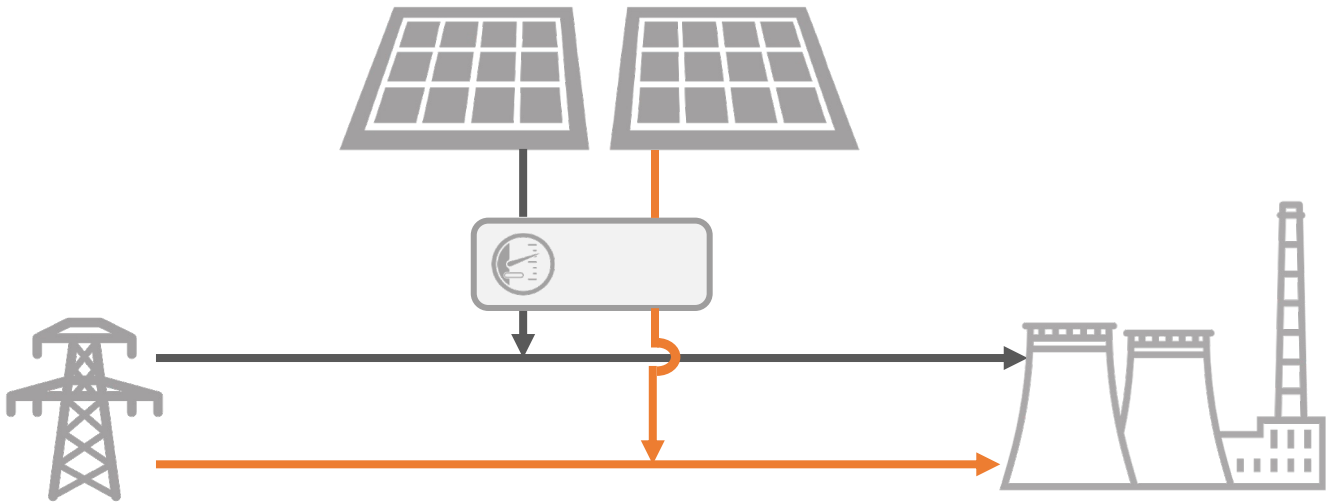
## THE ENGINE OF SOLAR GENERATOR – THE INTEGRATOR

IT CONSISTS OF

- ⌘ AC to DC Converter
- ⌘ DC to AC Inverter
- ⌘ Battery charger for AC and DC supplies
- ⌘ Step up/Step down transformers
- ⌘ Output Stabilizer Modules
- ⌘ Dynamic Source Selection Controls
- ⌘ Battery Management system
- ⌘ Load management system
- ⌘ Harmonic arrestors
- ⌘ Heat controllers
- ⌘ Electrical Safety Monitoring circuits
- ⌘ Remote Monitoring System

VOLTAGE OF OPERATION - 360 V

# CONVENTIONAL ONGRID SOLAR TRADITIONAL METHOD

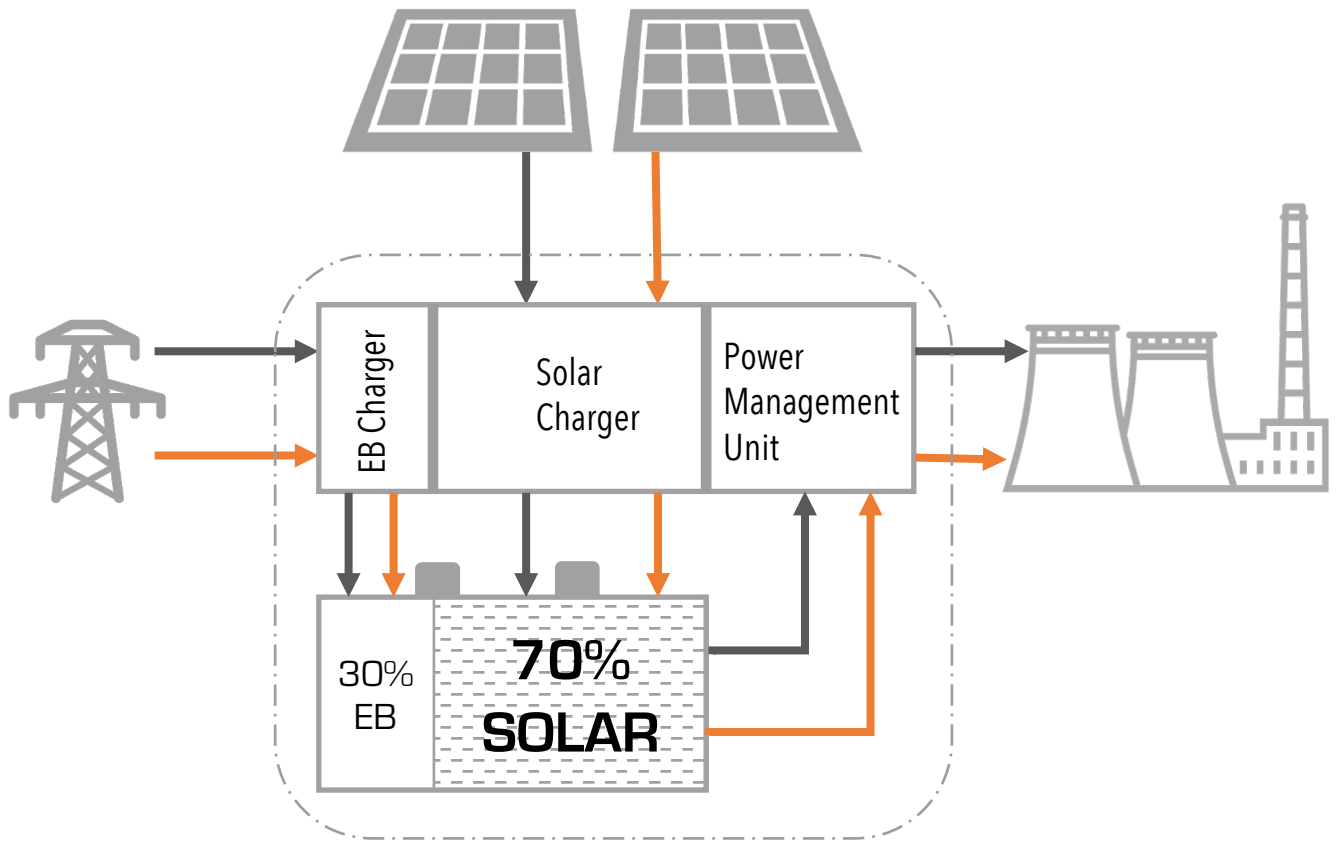


## ON GRID SOLAR

1. A conventional On Grid solar system is very simple. It has solar panels and inverters as its main components.
2. Solar PV cells in solar panels generate DC power as sunlight falls on them.
3. This power is converted into AC power and injected into EB grid using inverters in AC form.
4. This system has no responsibility towards driving the connected load. It will generate solar electricity and sell to EB. For driving the load, one has to take the required energy from EB.
5. In certain cases, it may be used to assist the load. But the solar power is heavily dependent on instantaneous conditions of sunlight which vary drastically. The power will fluctuate heavily, and no load can be connected to it with assurance, for which grid from EB line is only reliable. Mixing solar power with EB power while driving the load has serious technical limitations.
6. In-fact there is technical complications in export of solar power to EB lines as well. The actual export is restricted in effect to the timing between 11 AM to 2 PM during which the generation is at its peak. During the rest of the day the energy generation remains stagnant and is not put to any use in effect.
7. On the contrary, this power can be easily tapped for charging batteries all the time.

# OVERLEAP SOLAR SG-

## THE GEN NEXT RENEWABLE ENERGY EVOLUTION



### CONCEPTUAL FRAMEWORK

1. Any electrical load requires a power source for its operation.
2. If a power source of adequate capacity is given, any load can be operated. For ordinary AC motors the power source may be EB grid or DG set. But they can also be operated with a Battery bank with an inverter, as is done at home, but with high capacity.
3. But only a charged battery bank can deliver power. Hence the batteries are to be charged for operating the load. Solar PV cells in solar panels can be used to charge the batteries with the help of charge controllers.
4. In short, if adequate number of solar panels are installed, the battery bank can be fully charged and a charged battery bank can deliver power to drive the load with out EB power.
5. In case the panels are not adequate in number, there will be shortage of charge in the battery bank. This shortage can be compensated by charging the batteries from EB line using a battery charger like home inverter- battery sets.
6. When the solar panel shortage is known in advance, the compensating charger capacity can be designed in advance and installed. This charger capacity will become the load of the system as only this charger is connected to EB line.
7. We operate loads using battery bank of very high capacity this way. The power we require from EB for driving the load is limited to the charger capacity only , the rest is managed with solar panels. SG this way is a capacity multiplier.

## OVERLEAP SG

## TYPICAL ON-GRID SYSTEM

Power for the entire electrical load of the unit is supplied by SG from its battery bank.

No control over power supply. Power is supplied by the utility from the grid as it is.

Provides uninterrupted power supply, the unstated factor of production, to the industrial unit.

No control over power supply. Power disruption possible. Industrial unit gets the same grid power as supplied.

Incomparable power quality +/- 1 % voltage range and +/-0.1% frequency range.

No control over quality and timing of power supply. Power characteristics unsteady and polluted with Harmonics as supplied by Utility.

Responsible for productive power supply to the client.

No responsibility for supply of power.

Every watt of solar power is captured, stored and delivered for consumption from the battery bank with minimum conversion loss.

Export to grid is limited by inverter ability to match unsteady solar power input to Grid conditions. Time loss due to mismatches results unresolved.

Reactive power from inductive loads effectively utilized getting 15% net fall in power consumption.

No ability to influence reactive power and harmonics generation and reduce power consumption.

Dependency on grid supply is reduced by reducing both Maximum demand and energy charges. Bill reduction up to 70 % possible.

Can contribute sparingly to reducing energy charges. No control over fixed charges Limiting ability to reduce Total Electricity Bill.

## COMPONENTS OF A TYPICAL 100 kW<sub>p</sub> SG

SL NO	COMPONENT	SPECS
1	SOLAR PANELS	100 kW <sub>p</sub>
2	INTEGRATOR ASSEMBLY	100 kW
3	BATTERY BANK	200 kWh
4	ELECTRICAL PANELS, CABLES AND ACCESSORIES	As required
5	SOLAR PANEL MOUNTING STRUCTURE	For 100 kW <sub>p</sub>

## SPACE REQUIREMENT FOR 100 kW<sub>p</sub> SG

SL NO	COMPONENT	SPACE
1	SOLAR PANELS	6000 sqft
2	INTEGRATOR ASSEMBLY	200 sqft
3	BATTERY BANK	200 sqft

## SAVINGS FROM A TYPICAL 100 kW<sub>p</sub> SG INSTALLATION

Avg Units of electricity generated per day for consumption	400 Units
Assumed average consumption from a 100 kW connected load per hour in normal working hours	40 Units
Assumed average consumption from a 100 kW connected load per hour in night hours	15 units
Projected total consumption from a 100 kW connected load per month	22800 units
Projected average power consumption savings per month with SG installation from Solar Panels alone	12000 units
Savings from Reactive Power Management (Upto 10-20% of consumption)	3000 units
Net savings in Electricity Unit Consumption	15000 units
Diesel consumption saved with SG installation	400 litres
Production increase due to quality, uninterrupted electricity	25% per day
Contract demand fixed charges savings upto	70 %
Maintenance cost savings	50 %



# SG BENEFITS FOR INDUSTRIES

- ✓ Uninterrupted quality power supply from battery to all the systems of the establishment 24 X 365
- ✓ EB to DG change over not required. Hassle free operation
- ✓ Improves the productivity of plant/establishment as it will be operating without any power disruptions
- ✓ The power generated from solar panels is exclusively used for plant/establishment usage. No export to the grid
- ✓ Reduction in maintenance issues at the establishment caused by poor quality power from the grid
- ✓ Designed power capacity will adequately take care of future expansion
- ✓ Can accommodate the power for a multi point DC fast charging station for EV
- ✓ Can provide DC power for Impressed Current Cathodic Protection

# SCALABLE MODULAR SOLUTIONS

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- Preliminary survey of machines to determine inefficiencies on full load/part load
- Machine specific solutions to mitigate inefficiencies
- Clustering of inefficient machines as a module and isolation from grid
- Supply of Overleap Quality Electricity from our energy reservoir to the above module
- Performance and productivity analysis of the module for a period of 6 months
- Scaling up the size of the module to include more units and upgradation of facilities to SG grade

## OVERLEAP BENEFITS FOR YOU - AT A GLANCE

- Generates YOUR own power for YOUR own consumption – Green and Clean.
- Reduces Electricity bill up to 100% of the present bill
- Single phase supply enough up to 50 kW load.
- Load is connected only to our battery bank and not to the grid.
- EB transformer capacity need not increase when connected load increases.
- Can increase capacity without new EB transformer.
- Taps multiple sources of energy -Renewables, Utility Grid, Diesel generators for charging the battery bank.
- Battery bank gets charged even when it operates the load as required.
- Intelligent source selection for charging - priority to the cheapest source of energy at any time.
- Contract Demand from EB can be reduced considerably.
- Drastic Fall in EB Bill
- A de rated diesel generator can top up the battery bank during extended power cuts and heavy monsoon
- Battery bank - 2V, single cell High AH batteries with our proprietary cell chemistry and design.
- No power failure – load runs nonstop.
- Steady, Quality power- No maintenance problems for electrical machines.
- No idling manpower due to power cuts or maintenance shutdowns.
- Remove all UPS from your establishment- No need for UPS/ Inverters at all.
- Separate Stabilizers for sensitive equipment are not required.
- Saving in Mains Panels and DBs as UPS/ panels, DBs, cabling, and earth conductors are not required.
- 10 years Warranty for Integrator and years Warranty for Battery. 25 years Warranty for Solar Panels

# Service, Warranty and AMC

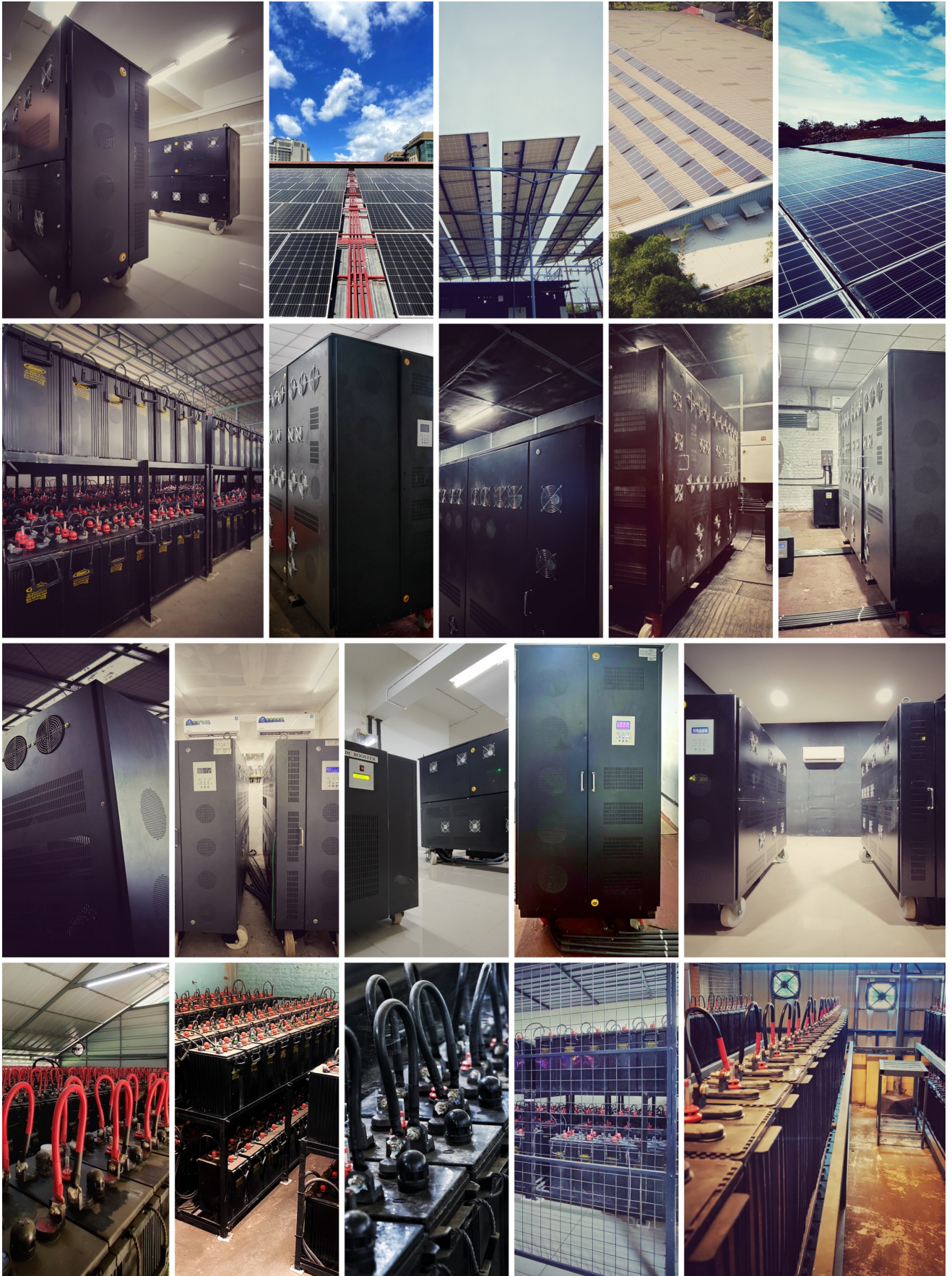
## SERVICE & WARRANTY

- 1-year free service from the date of installation.
- Output of solar modules is warranted for 25 years.
- 10 years Warranty for Integrator (Invalid without AMC).
- 10 years Warranty for Battery (Invalid without AMC).
- 10-year replacement warranty for other components (Invalid without AMC).

## COMPREHENSIVE AMC

- Full maintenance support, Minimum response to call time
- 1<sup>st</sup> Year Free service
- 2<sup>nd</sup> year to 5<sup>th</sup> year : 0.5% of project cost + Taxes Applicable
- Subsequent years at annual increment of 0.1% of the project cost + Taxes Applicable. ie. on the 6<sup>th</sup> year the AMC will be 0.6% of the total project cost + Taxes Applicable.

# GLIMPSES





## Vision

*@green energy summit by value creation*

## Mission

*Quality electricity for high productivity*

## Values

- Listen to deliver and bow to listen;*
- Win a heart through will and skill*
- Quality in words and quality in deeds;*
- An extra mile for an extra smile!*

# THANK YOU



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