ENERIV POWER NIGERIA LIMITED

CONSULTING, ENGINEERING, INSTALLATION & MAINTENANCE

Head Office: Hub 28 Prince Bode Adebowale Crescent, Lekki Phase 1, Lagos

OUTLINE

Why Eneriv?

Prospective Market Locations

Executed Projects

Products and Services

Partners and Clients

Our Profile

OUR PROFILE

Vision

01

To led the world in optimal integration of energy sources towards reliable power systems sustainability

Mission

02

Provide reliable electric power and affordable integrated energy for global sustainability

Our Commitment

03

Seamless integration of multiple energy sources toward providing affordable, reliable power for residential and commercial facilities.

Our Team

04

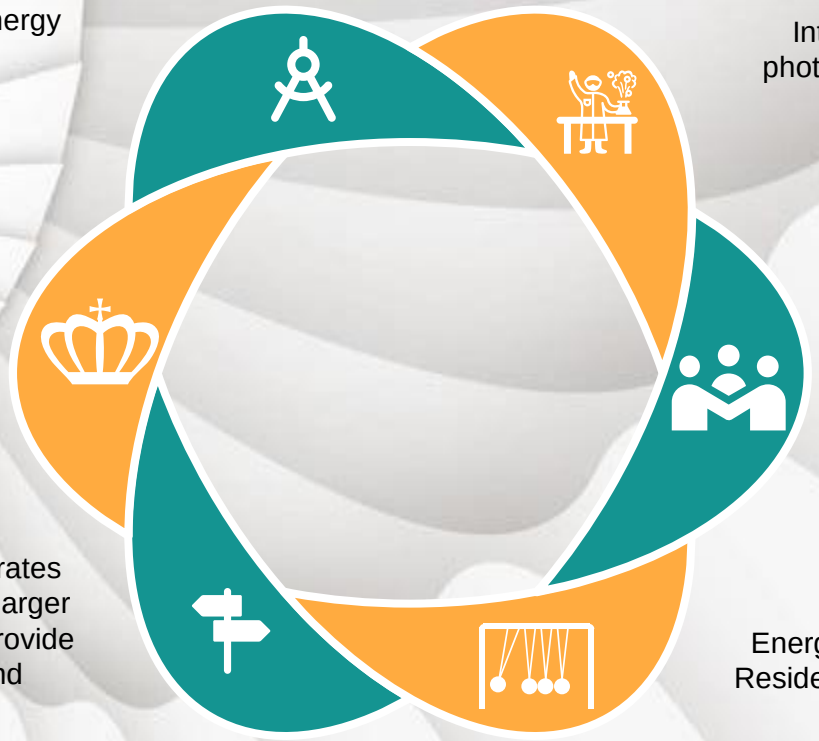
Management with 70 years of combined experience in energy and power. Experienced Developers and Technologists Experienced Designers and Engineers Certified Installers and Technicians

ENERIV STRATEGY AND EXECUTION TACT

Eneriv - An Integrated Energy Company.

We Deliver Reliable, Affordable and Sustainable Energy for Residential and Commercial Application

Use multifunctional inverter (integrates inverter, solar controller, battery charger and power management PLC) to provide reliable power for residential and commercial demands



Integrate high performance photovoltaic panel for maximum power generation

Integrate the optimal energy storage design and technology for specific application (Lead Gel Acid, Lithium Iron Phosphate, Redox Flow) Batteries.

Energy Efficient Design (EED) for Residential and Commercial Utilities

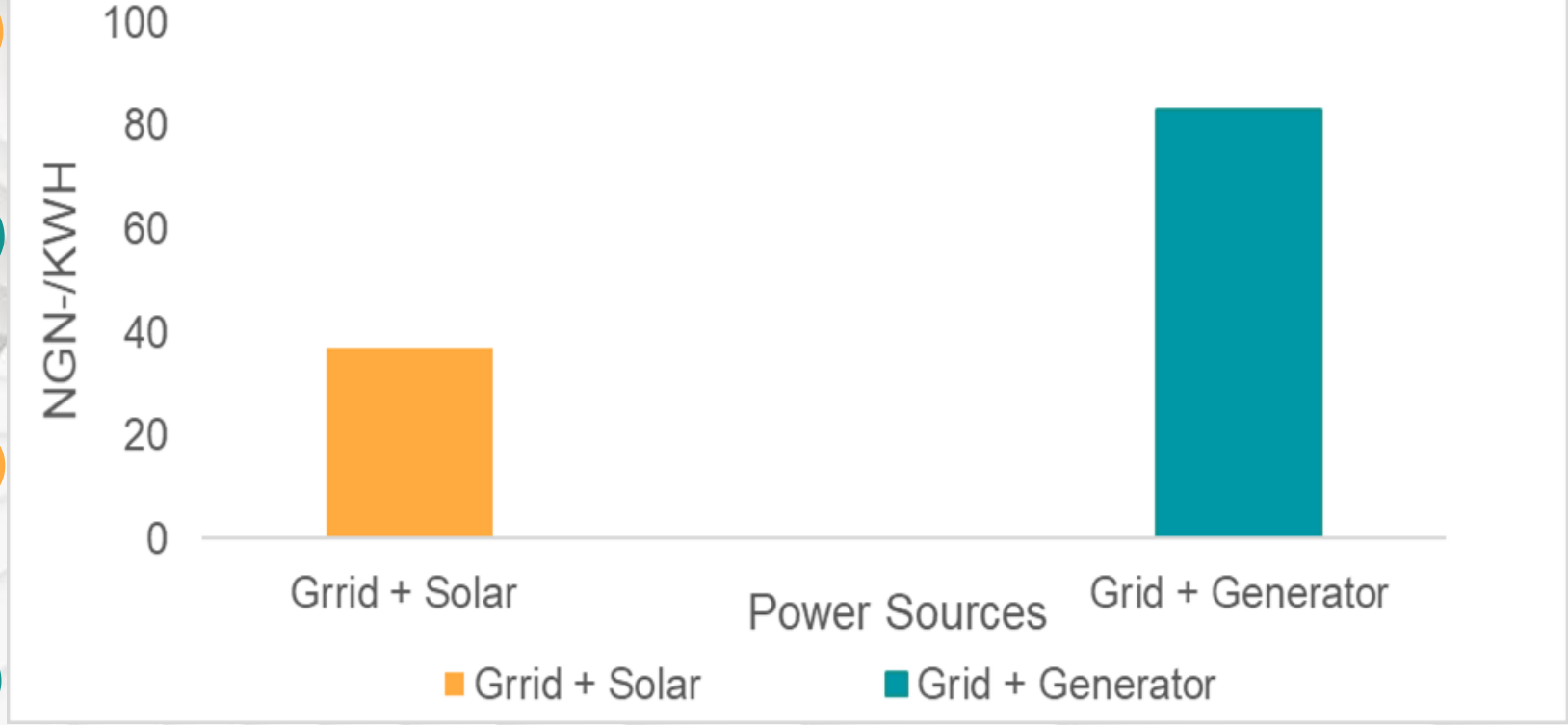
WHY ENERIV?

- Smart System
- Integrated Unit
- Six and More Energy Choices
- Automatic Change Over
- Safety and less Space
- Cost Effectiveness

SUBSTITUTE YOUR GENERATOR WITH SOLAR ENERGY

ENERIV SOLAR SOLUTION	YOUR GENERATOR
❑ Pay 50% Less	❑ Pay 50% More
❑ Zero Maintenance	❑ High Maintenance Cost
❑ Reliable with Smart Operation	❑ Unreliable and Unpredictable
❑ Clean Energy	

5 YEARS LEVELISED COST OF ENERGY (LCOE)



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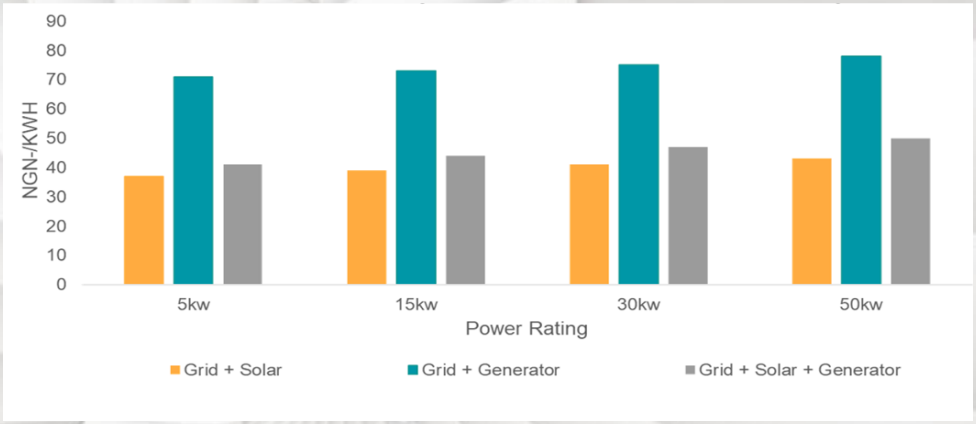


Unit Power Rating (kW)	5	15	30
Unit Daily Energy (kWh)	120	360	720
Typical / Recommended Unit	4 Bedroom	Duplex	Mini-size Supermarket

ASSUMPTIONS:

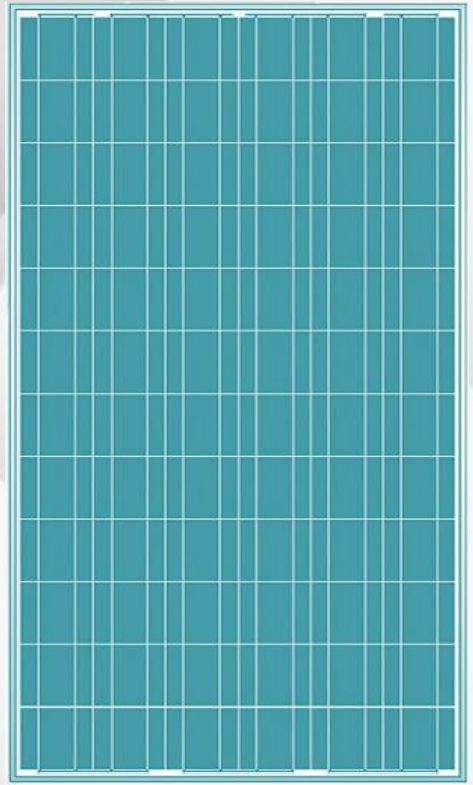
- ❑ 50% Grid + 50% Solar (24 hours/day)
- ❑ 50% Generator + 50% Grid (24 Hours/Day)
- ❑ 50% Solar + 40% Solar + 10% Generator (24 Hours/Day)
- ❑ 120 kWh/day for 5kW for 4 Bedroom or Less
- ❑ 15kw For 5 Bedroom Upwards
- ❑ 30kW for Mid Size Supermarket
- ❑ 50kW for Commercial Buildings

PRODUCTS AND SERVICES

	PRODUCTS	SERVICES	
P1			S1
P2	❑ Double Edge High Performance PV Module	❑ Sales of PV Modules ❑ Designs of Integrated Smart System	S2
P3	❑ Low Voltage Energy Storage System (48V Lithium Battery).	❑ Sales of low Energy Storage System (Lithium Battery) ❑ Site and Cost Analysis	S3
P4	❑ Smart Integrated System (Hybrid Inverter)	❑ Installations (Residential System, Commercial System and Mini-grids).	S4

DIFFERENTIATED PRODUCTS (RISEN SOLAR PANEL)

- High Performance Bifacial Monocrystalline Module
- 370-390 Watts Power Output Range
- 1500 VDC Maximum System Voltage
- Maximum Efficiency and Excellent low irradiance performance
- Industry leading Manufacturer with 12 years product and service warranty
- Anti-reflective & anti-soiling surface minimize power loss from dirt and dust
- Severe salt mist, ammonia & blown sand resistance, for seaside, farm and desert environments



MECHANICAL DATASHEET FOR THE SOLAR PANEL

Mechanical Datasheet	
Solar Cells	Monocrystalline 156.75 x 78.375 mm, 5BB
Cell Configuration	144 cells (6 x 12 + 6 x 12)
Module Dimension	2016 x 998 x 25mm
Weight	26Kg
Superstrate	2.0mm High Transmission, Low Iron, Tempered ARC Glass
Substrate	2.0mm, Tempered Glass
Frame	Anodized Aluminum Alloy type 6063T5, Silver Color
J-Box	Potted, IP67, 1500VDC, 3 Schottky bypass diodes
Cable	4.0mm², (12AWG), Positive (+) 270mm, Negative(-) 100mm
Connector	Risen Twinsel PV-SY02, IP67

ELECTRICAL DATASHEET FOR THE SOLAR PANEL

Electrical Data (STC)	
Model Number	RSM144-6-390BMDS
Rated Power in Watts-Pmax(Wp)	390
Open Circuit Voltage-Voc(V)	48.30
Short Circuit Current –Isc(A)	10.30
Maximum Power Voltage Vmpp(V)	40.25
Maximum Power Current –Impp(A)	9.70
Module Efficiency (%)	19.4
STC: Irradiance 1000w/m², Temperature 25 °C, Air Mass AM1.5 according to EN 60904-3	
Bifacial factor: 75% ± 5%	

SOLAR PANEL TEMPERATURE AND MAXIMUM RATINGS

Temperature & Maximum Ratings

Nominal Module operating Temperature (NMOT)	45°C ± 2°C
Temperature Coefficient of Voc	-0.29% / °C
Temperature Coefficient of Isc	0.05% / °C
Temperature Coefficient of Pmax	-0.39% / °C
Operational Temperature	-40°C ± 85°C
Maximum System Voltage	1500VDC
Max Series Fuse Rating	20A
Limiting Reverse Current	20A

SOLAR PANEL UNIQUE FEATURES

- 1500VDC Maximum System Voltage
- Bifacial cell result in additional 10%-30% yield gain from rear side

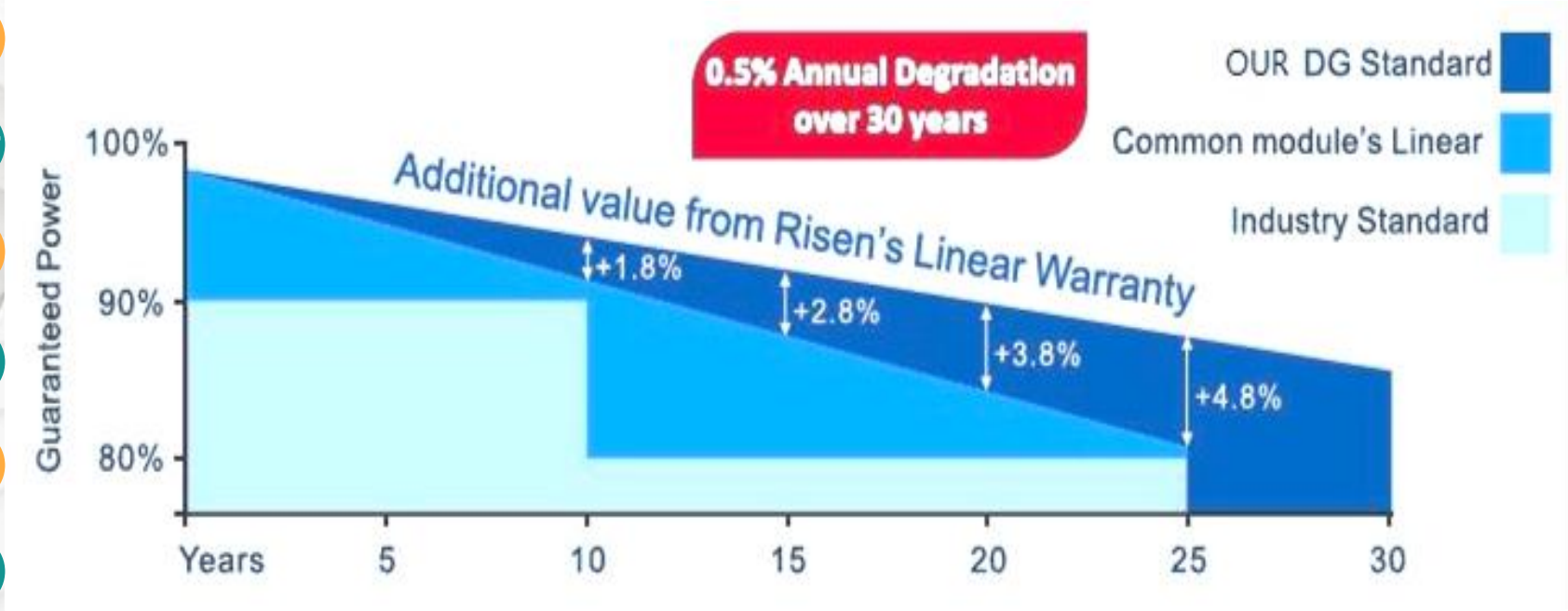
- 20.6% Maximum Efficiency
- 2034×1000×30mm Module Dimensions
- 144 Cell Monocrystalline Module

- Low current density technology to decrease the internal power consumption effectively
- 390Wp Power Output

- MBB and HC technology to reduce the negative affection to yield caused by Micro crack and shadow Easier installation with frame

SOLAR PANEL LINEAR PERFORMANCE WARRANTY

12 Years Product Warranty / 30 Years Linear Power Warranty



ENERIV BATTERIES UNIQUE FEATURES

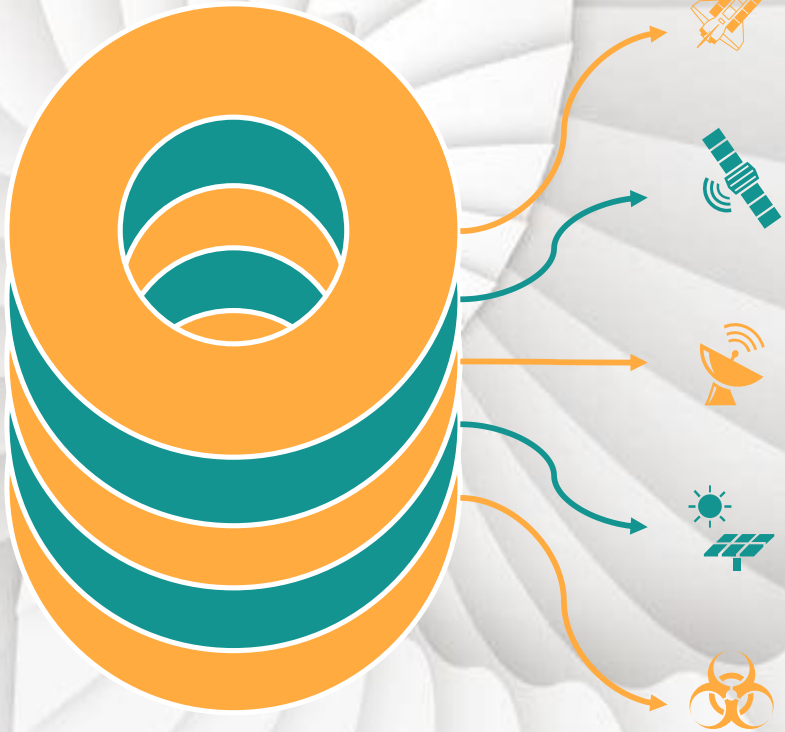
Latest Technology: We use the safest, environmentally friendly Lithium Ferro Phosphate technology.

All-in-one Solution: Smart energy management system supports multiple applications.

Lowest Energy Cost : Competitively priced, easy to install, and high round-trip efficiency.

Long Lasting: 10 year warranty up to 6,000 cycles.

ENERGY STORAGE (BATTERY) OPTIONS



- Lithium, Flooded AGM, Redox Flow Batteries adopted based on System Objectives
- Latest Technology - We use the safest, environmentally friendly Lithium Iron Phosphate technology
- All-in-one Solution - Smart energy management system supports multiple applications
- Lowest Cost Per Cycle - Competitively priced and easy to install with high round-trip efficiency
- Long Lasting - 10-year warranty; up to 6,000 cycles
- Built-in Battery Management System for excellent performance:
  - Overcharge and Deep Discharge Protection
  - Over-heat protection
  - Over Current Protection
  - Cell Monitoring and Balancing
  - Voltage and Temperature Monitoring

ENERGY STORAGE SYSTEMS

EVAULT 18.5KWH PRODUCT SUMMARY

Technical Specification eVault 18.5	
Total Energy (Kwh)	18.5
Capacity (Ah)	360
Nominal Voltage (V)	51.2(48)
Recommended Charge Current (A)	45-58.4
Max. Charge Current (continuous) (A)	100
Max. Discharge Current (continuous) (A)	170
Max. Pulse Current (for 10 Sec) (A)	180
Charge Temperature (F)	200
Discharge Temperature(F)	32 to 113
Recommend Storage Temperature(F)	32 to 113
Dimension (W x D x H, inch)	50 to 95
Weight (lbs)	19.2 x 21.3 x 38.8
Enclosure Protection Rating	476
Mounting Rating	IP21
Certificate	Floor Standing
Warranty	UL 1642
Scalability	*5/10 years
Communication	Maximum 12 Parallel (222kwh)
High Current Breaker	250A
Efficiency	>98%

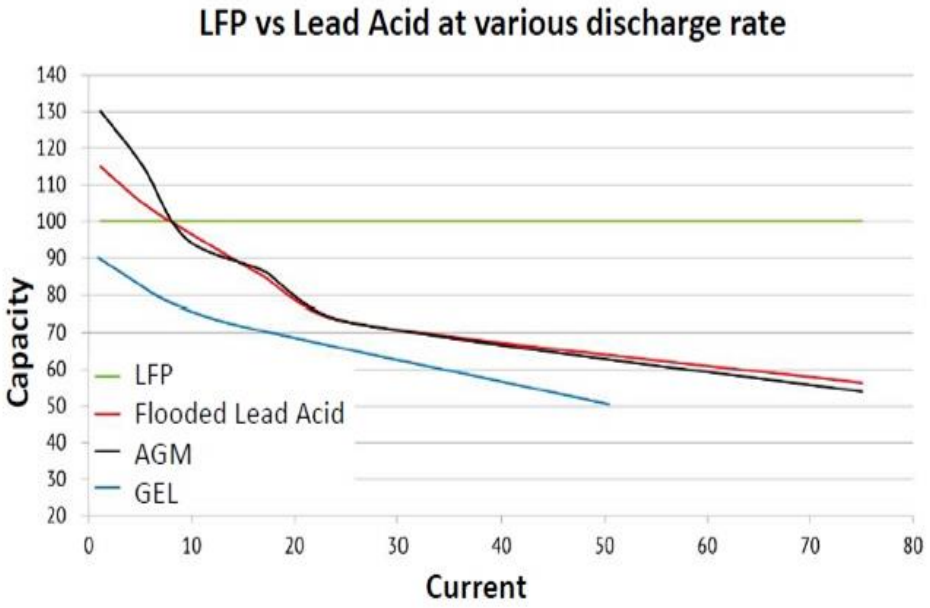
COMPARISON OF DIFFERENT BATTERY TECHNOLOGY

Comparison of Different Battery Technologies

	Fortress LFP	Lithium Ion	Li-Polymer	Flooded LA	AGM	Carbon AGM	Nickel Iron
Round trip Efficiency	98%	95%	95%	80%	88%	95%	65%
Usable Power (MSRP)	6900	6999	4500	2800	3600	5000	18000
Cycle Life	6000	2500	1500	600	750	2400	8000
Off Grid Years	16.4	6.8	4	2.7	2	6.5	21.9
Cost Per kwh Cycle	0.11	0.28	0.30	0.46	0.48	0.21	0.23
Safety	Yes	No	No	No	No	No	Yes
Free Maintenance	Yes	Yes	Yes	No	Yes	Yes	No

*Additional $ 1,000 may apply to Flooded LA – Nickel Iron batteries

PERFORMANCE OF DIFFERENT BATTERY TECHNOLOGY



Disadvantages of Lead Acid:

- *Capacity drops significantly when output current increases*
- *6 times more space*
- *Higher cable cost and longer installation time*

HYBRID INVERTER UNIQUE FEATURES

Reliable

- ❑ PV lighting protection, Anti-islanding protection, Leakage current protection etc.
- ❑ Support store energy from DG when needed, ensure the system working within 7*24H
- ❑ IP65 protection degree, adapt to indoor and outdoor using automatically switch from on-grid to off-grid mode within 5ms
- ❑ Zero exporting function, fast reaction within 200ms in zero export mode

Smart

- ❑ Programmable charging and discharging schedule
- ❑ Solar panels can be connected as DC input power
- ❑ Max. 16 units can be paralleled for higher system power
- ❑ Retrofitting of existing solar systems to energy storage systems

Hybrid-Inverter

HYBRID INVERTER UNIQUE FEATURES

Higher Yields

- ❑ Improve self-consumption ratio up to 80%, reducing your electricity bill
- ❑ DC/AC ratio up to 1.3, completely suitable for double-side PV modular
- ❑ Two MPPT design, Max. Efficiency of 97.6%

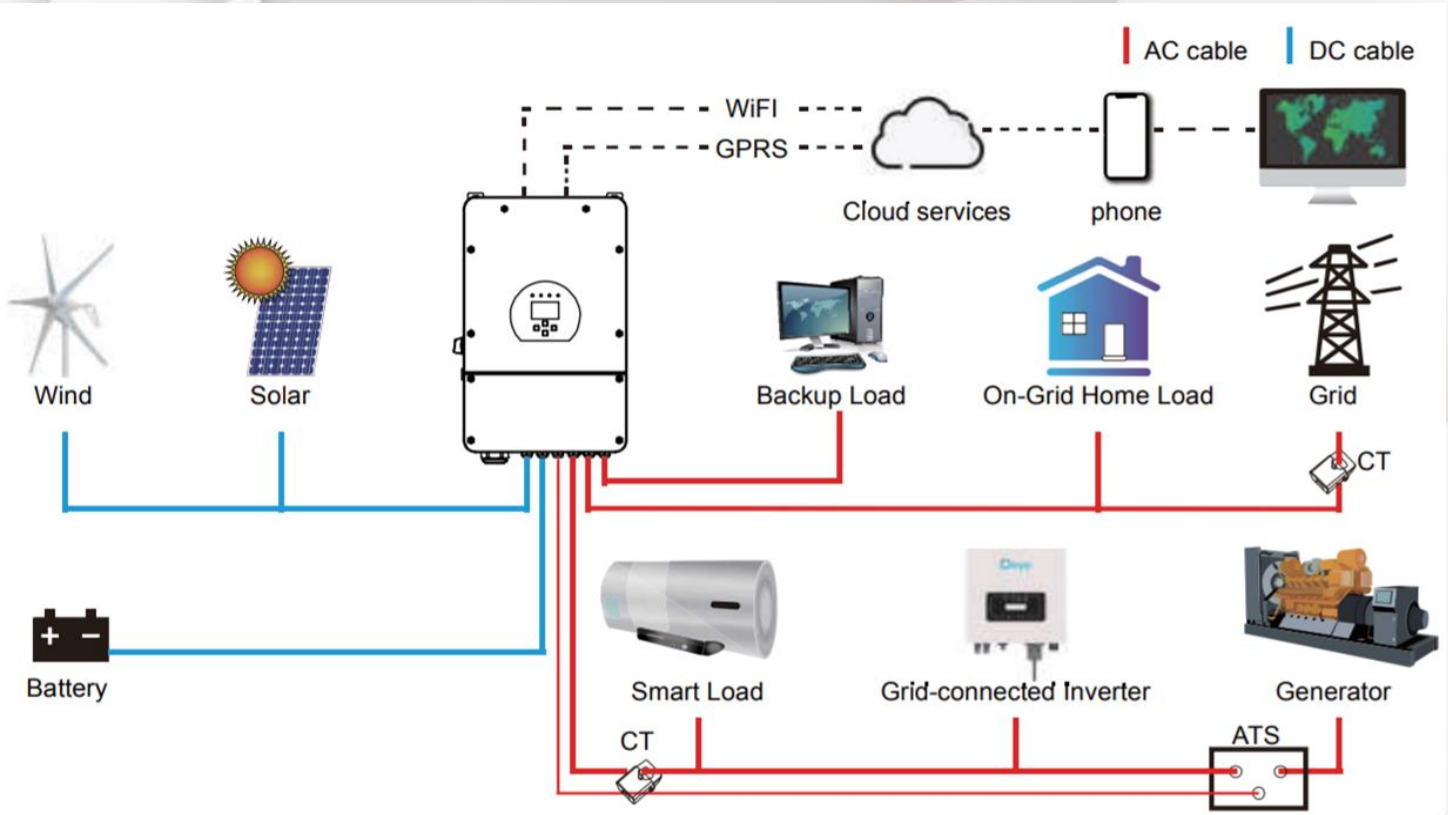
User-Friendly

- ❑ LCD Touch screen and buttons, easy operation
- ❑ Compatible with lithium-ion battery and lead acid battery
- ❑ Web browser and mobile App monitoring supported

Hybrid-Inverter

HYBRID INTEGRATED SOLAR SYSTEM

RELIABLE AND AFFORDABLE INTEGRATED POWER SYSTEM



10KVA SOLAR SYSTEM INSTALLATION

01

- Total Number of Batteries required: Two 18.5kwh eVault Battery (37 kwh)

02

- Total Number of Panels: 40 pieces of 390W Risen Solar Panel

03

- Inverter Rate: 10kw hybrid Inverter (Two 5kw hybrid each)
- Maximum Load: 8kw

04

Power

- Workstations

05

- Deadman Door
- Servers

06

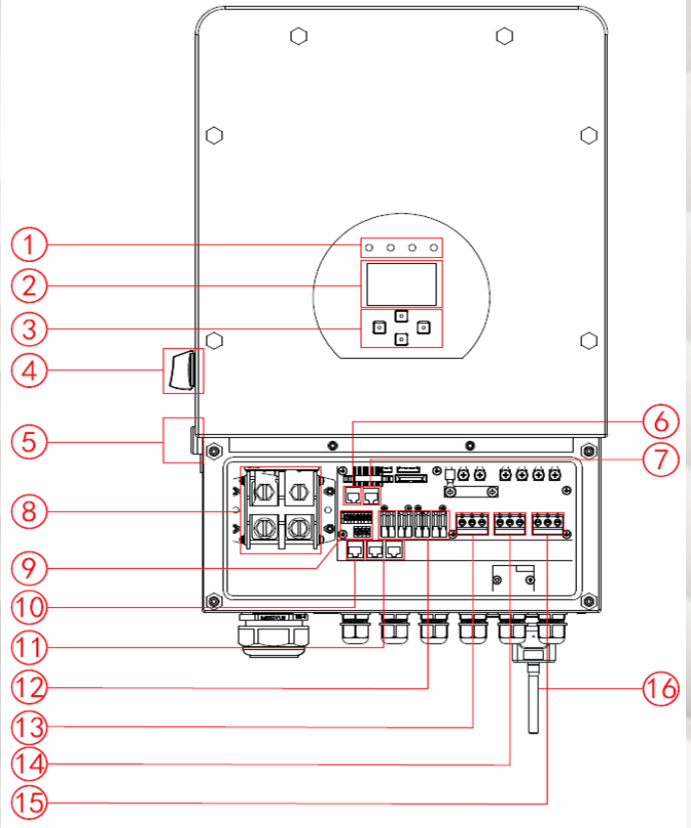
- ATM
- Lightning Points

37KWH LITHIUM BATTERY INSTALLATION

- Safe
- Competitively Priced
- Lowest Cost per Cycle
- Long Lasting

- Best Round-Trip Efficiency
- Easy Installation
- Maintenance-Free

DEYE INVERTER OVERVIEW



1. Inverted Indicators
2. LCD Display
3. Function Buttons
4. DC Switch
5. Power on/Off Button

6. RS 458 Port
7. CAN Port
8. Battery Input Connectors
9. Function Port
10. Parallel Box (Master)

11. Parallel Port
12. PV Inputs with Two MPPT
13. Grid
14. Generator Input
15. Load
16. WiFi Interface

EXECUTED PROJECTS WITH PICTURES

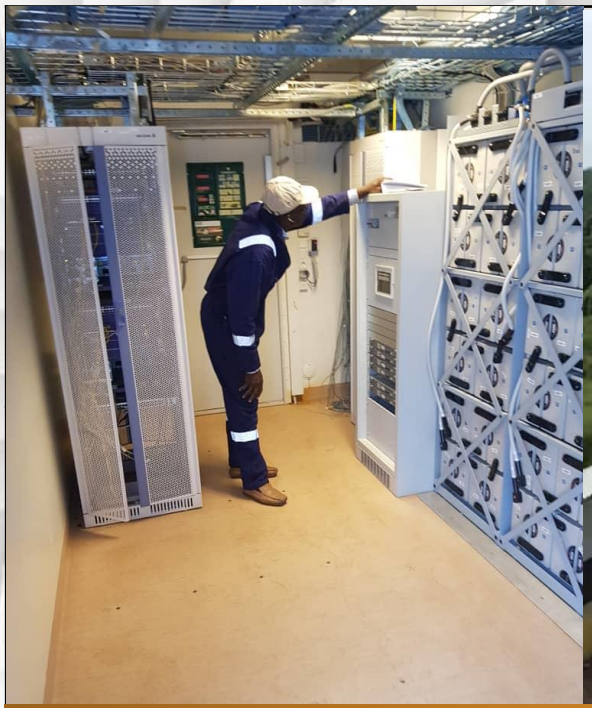
Installation of Hybrid Solar System for Union Bank Security Operation Service

Design, Installation & commissioning of Solar Power System for Energy & Plant Technology Limited

Installation of 120KVA Battery System and Inverter for Dimension Flex Limited Lagos Nigeria

Installation of 2x120KVA UPS System for Industrial Supply at Durumi, Abuja Nigeria

EXECUTED PROJECT WITH PICTURES



Installation and Commissioning of Solar Power System in Obiaruku Modern Market

EXECUTED PROJECTS WITH PARTNERS

OWO PROJECT

Design, Installation and commissioning of Solar power system for MTN office OWO

CORAL COURT PROJECT

Design, Installation and commissioning of Solar power system for Coral court Lekki

DURUMI PROJECT

Installation of 2x120KVA UPS system for industrial supply at Durumi, Abuja

IJEDE PROJECT

Installation and Commissioning of 30KVA Solar Power System for industrial Supply in Ijede Ikorodu Lagos

LAB MODEL PROJECT

Installation and commissioning of Solar Street Light for Lab Model Secondary School Port-Harcourt

MODEL PROJECT

Installation of Solar Power System on the Administrative Block of Model Secondary School AGIP Junction Port Harcourt

EXECUTED PROJECTS WITH PARTNERS

OBIARUKU PROJECT

Installation and Commissioning of Solar Power System in Obiaruku Modern Market

AROGUNJO PROJECT

Design, Installation and commissioning of Solar power system at Arogunjo

UNION BANK PROJECT

Installation of Hybrid Solar System for Union Bank Security Operation Services

EDMPROJECT

Design, Installation and commissioning of industrial Solar power system for EMD Akure

KARISHI PROJECT

Design, Installation and commissioning of 5KVA Solar power system at Karishi

EPT PROJECT

Procurement, Installation and commissioning of 5KVA industrial Solar power system for Energy and Plant Technology Limited, Lekki Phase 1 Lagos

EXECUTED PROJECTS WITH PARTNERS

NJIKOKO PROJECT

Installation and Commissioning of Anambra State Solar Farm System in Njikoka LGA

NASENI PROJECT

Installation and Commissioning of Solar Power System NASENI Abuja

PEDI PROJECT

Installation And Commissioning Of 5KVA Solar System , PEDI Ilesa

UBE PROJECT

Installation & Commissioning Of Solar System For UBE Primary School Port Harcourt

UNION BANK PROJECT

Installation Of Hybrid Solar System For Union Bank's Automated Teller Machine (ATM) Operations

MODEL PROJECT

Installation and commissioning of Solar Street Light for Model Secondary School GRA Port Harcourt

PROSPECTIVE MARKET LOCATIONS

- LAGOS
- ABUJA
- IBADAN
- PORT-HARCOURT

PARTNERS & CLIENTS

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THANK YOU