

SMART GRID SOLUTION USING SOLAR

- **GREEN ENERGY**

IoT-Based Mobile Hybrid Solar Power System
Stand-Alone Power Supply System

IoT-BASED MOBILE HYBRID SOLAR POWER SYSTEM



Product Feature

Standard	Specification
Electricity Storage Capacity	10kwh
INPUT	PV(DC), AC220V
OUTPUT (LOAD)	AC220V
OUTPUT POWER	3kw
Monitoring System (Energy Management System), PC AND SmartPhone	

Basic Item	Specification	Manufacturer
Solar Panels	360w * 6pcs	KOREA
Battery	Gel Type DC12V 200Ah * 4pcs	KOREA
Hybrid Inverter 3kw	Output Power 3kw	TAIWAN OEM
Power terminal box	Breaker (AC, DC)	KOREA
Trailer Type	Single Axcle, 3,550mm(L) 1,610mm(W) 620(mmH)	KOREA
Mini PC	7Inch (Linux OS)	KOREA
Digital meter	Inverter DATA vs Digital Meter DATA Statistical Data Provision	KOREA

Optional Item	Specification	Manufacturer
Battery	LiFePO4 DC48V 70Ah * 3pcs, With BMS	KOREA
Battery	Redox Flow Battery 10kwh With BMS	KOREA
Backup Generator	Output Power 2kw, Diesel or gasoline	KOREA
Hybrid Inverter 5kw	Output Power 5kw	TAIWAN OEM
Full Automatic Power Switching System	Charge from Generator To Battery	KOREA
HYGEN	Allowable DC Current 20A Max, Input Voltage 48VDC	KOREA

* Capacity Add-On Product (Extend Battery Only)

Electricity Storage Capacity : 20kwh

Battery : Gel Type 4pcs OR LiFePO4 3pcs

Notice

- Standard Products : 10kwh / 20kwh
- Bigger Or Smaller Products Beyond The Range 10 To 20kwh Are Vailable On Demand.
- Product Design Is Subject To The Customer's Requirement.

- Portable Stand-Alone ESS Of Trailer Type and Multi-Purpose
- The Inside Of The Structure Is Composed Of the Moving Part, The Control Part, The Communication Part, And The Battery Part (Gel, lithium Iron Phosphate, Redox Flow Battery), etc.
- Able To Be Used Wherever The Power Supply Is Needed
- The EMS Based On IoT Can Utilize The Platform Functions That Can Become The Sharing Economy (The Rental Service)
- **Specification :** Maximum Storage Capacity Of 10kwh or 20kwh, Output Power Of 3kwh Or 5kwh

- Sliding Type
(Solar Panel 360W*3)

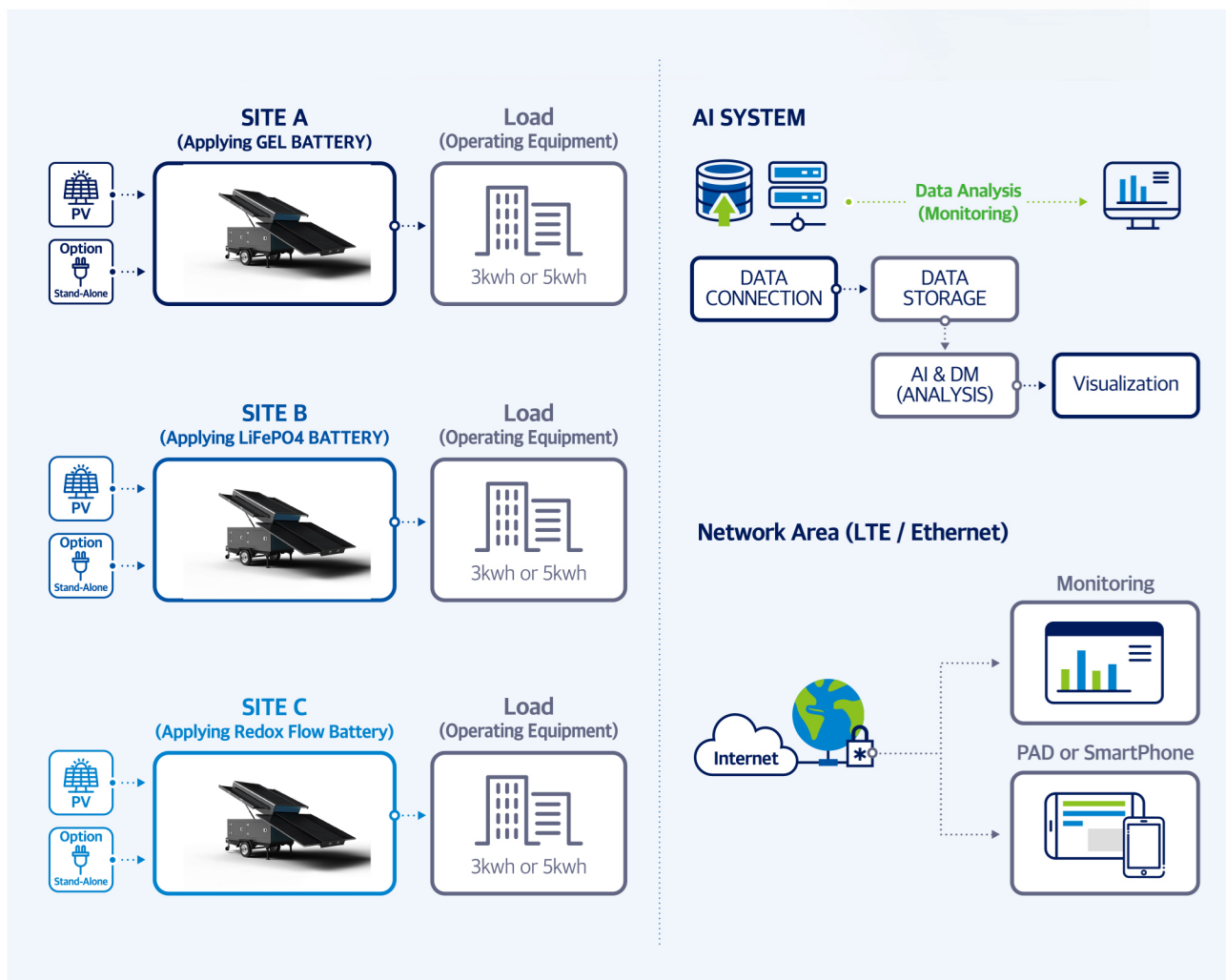
- Sliding Type
(Solar Panel 360W*3)

- Break LIGHT



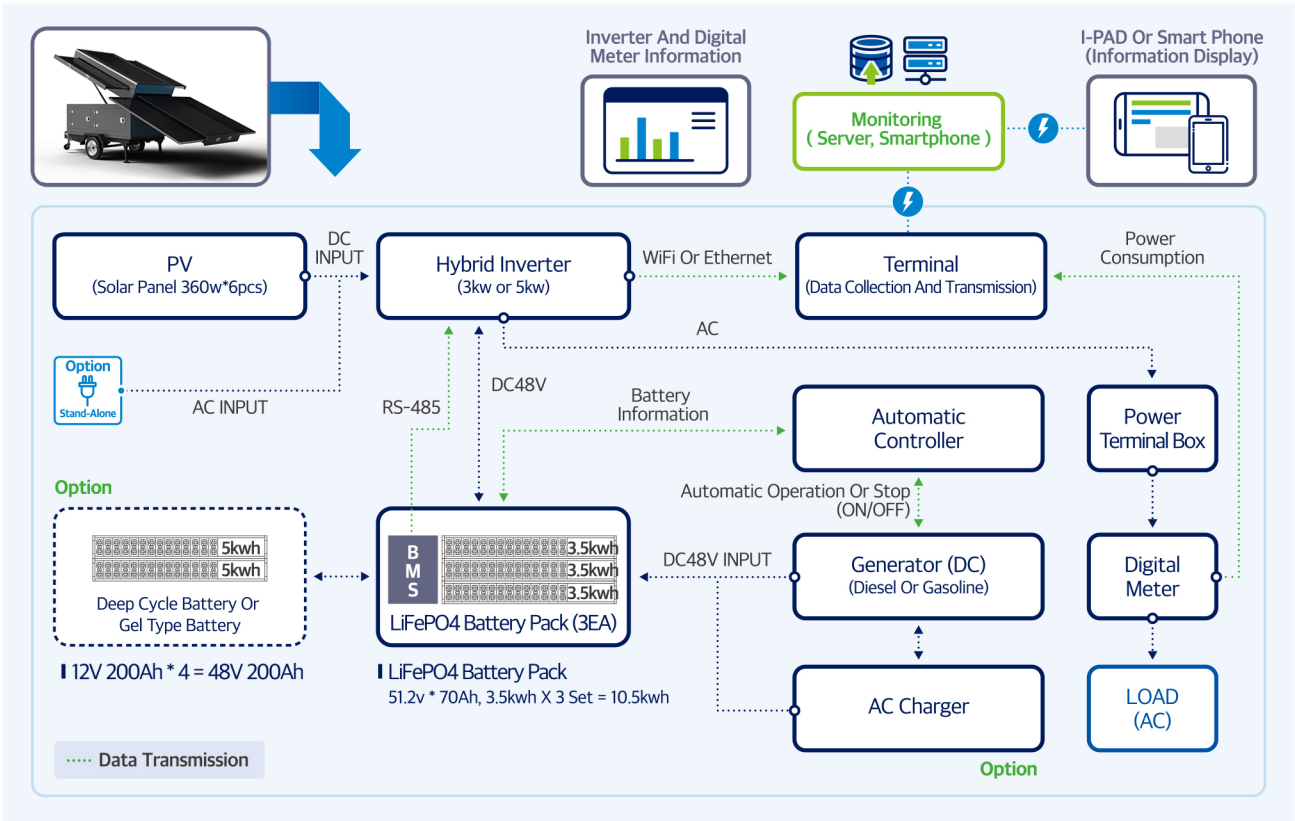
- MINI PC (OS: LINUX)
- LCD
- Generator
- Auto-Controller
- Distribution Board
- Digital Meter
- Hybrid Inverter
- Battery

* Design And Specifications Are Subject To Change Without Notice For Product Improvement Or Future Release.



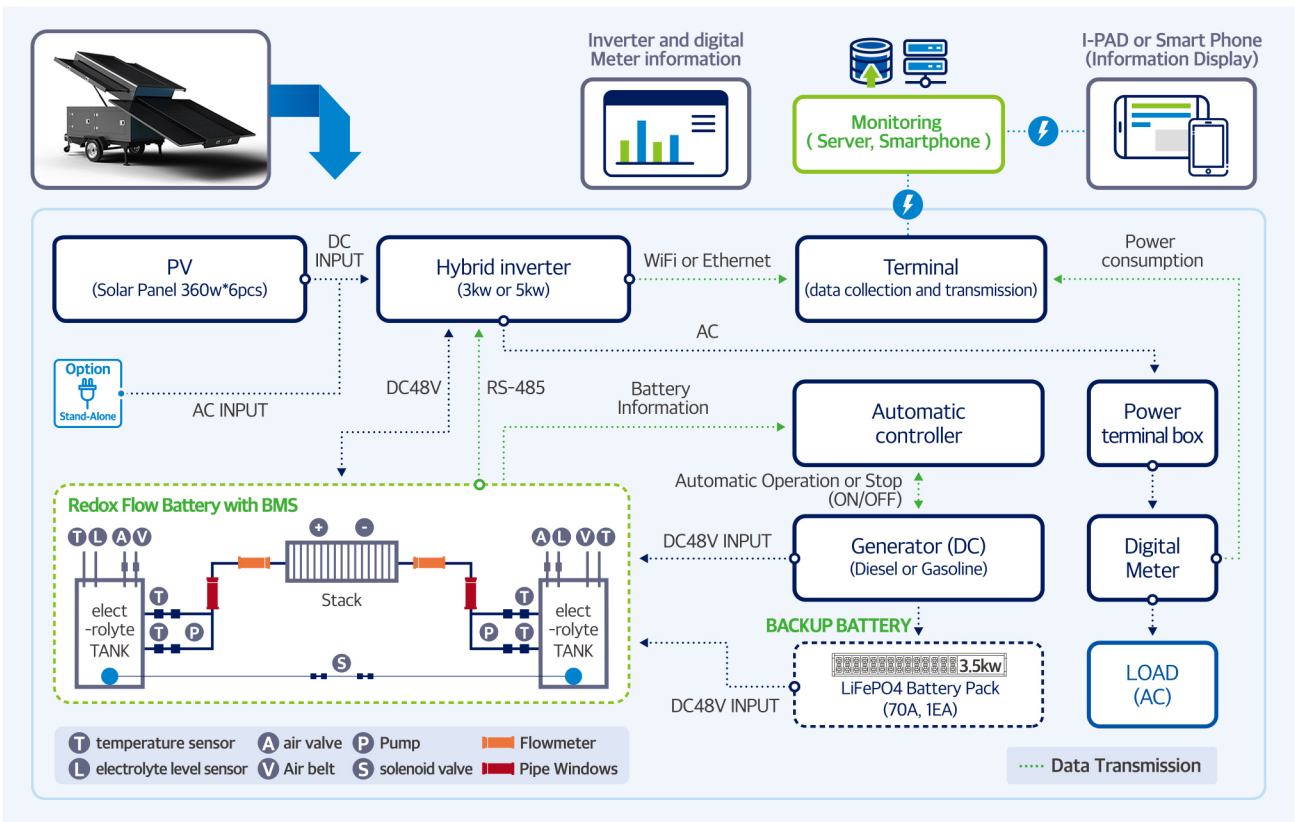
Product Block Diagram

- When GEL TYPE Battery Or Lithium Iron Phosphate (LiFePO4) Battery Is Used Panel Board



Product Block Diagram

- When Redox Flow Battery Is Used



HYBRID INVERTER PRODUCT FAMILY

- Product That Can Be Linked With EMS (Energy Management System)
- MODBUS, Wi-Fi BOX Are Separate

MODEL	InfiniSolar 2KW	InfiniSolar Plus II 3KW	InfiniSolar Plus 5KW	InfiniSolar 3P 10KW	InfiniSolar 3P 15KW
PHASE	1-phase in / 1-phase out			3-phase in / 3-phase out	
MAXIMUM PV INPUT POWER	2250 W	4500 W	10000 W	14850 W	22500 W
RATED OUTPUT POWER	2000 W	3000 W	5000 W	10000 W	15000 W
MAXIMUM CHARGING POWER	1200 W	2880W	4800 W	9600 W	15000 W
GRID-TIE OPERATION					
PV INPUT (DC)					
Nominal DC Voltage / Maximum DC Voltage	300 VDC / 350 VDC	360 VDC / 500 VDC	720 VDC / 900 VDC	720 VDC / 900 VDC	720 VDC / 900 VDC
Start-Up Voltage / Initial Feeding Voltage	80 VDC / 120 VDC	116 VDC / 150 VDC	225 VDC / 250 VDC	320 VDC / 350 VDC	320 VDC / 350 VDC
MPP Voltage Range	120 VDC ~ 320 VDC	250 VDC ~ 450 VDC	250 VDC ~ 850 VDC	400 VDC ~ 800 VDC	400 VDC ~ 800 VDC
Number Of MPP Trackers / Maximum Input Current	1 / 1 x 15 A	1 / 1 x 18 A	2 / 2 x 10 A	2 / 2 x 18.6A	2 / A: 37.65A; B: 18.6A
GRID OUTPUT (AC)					
Nominal Output Voltage	101/110/120/127 VAC	208/220/230/240 VAC		230 VAC (P-N) / 400 VAC (P-P)	
Output Voltage Range	88 - 127 VAC*	184 - 265 VAC*		184 - 265VAC* Per Phase	184 - 264.5VAC Per Phase
Nominal Output Current	18 A	13 A	21 A	14.5A Per Phase	21.7A Per Phase
Power Factor	> 0.99				
EFFICIENCY					
Maximum Conversion Efficiency (DC/AC)	95%		96%		
European Efficiency@ Vnominal	94%		95%		
OFF-GRID OPERATION					
AC INPUT					
AC Start-up Voltage/Auto Restart Voltage	60 - 70 VAC / 85 VAC	120 - 140 VAC / 180 VAC		120 - 140 VAC per phase / 180 VAC per phase	
Acceptable Input Voltage Range	80 - 130 VAC	170 - 280 VAC		170 - 280 VAC Per Phase	
Maximum AC Input Current	30 A			40 A	
PV INPUT (DC)					
Maximum DC Voltage	350 VDC	500 VDC	900 VDC	900 VDC	900 VDC
MPP Voltage Range	150 VDC ~ 320 VDC	250 VDC ~ 450 VDC	250 VDC ~ 850 VDC	400 VDC ~ 800 VDC	350 VDC ~ 850 VDC
Number Of MPP Trackers/Maximum Input Current	1 / 1 x 15 A	1 / 1 x 18 A	2 / 2 x 10A	2 / 2 x 18.6A	2 / A: 37.65A; B: 18.6A
BATTERY MODE OUTPUT (AC)					
Nominal Output Voltage	101/110/120/127 VAC	208/220/230/240 VAC	202/208/220/230/240 VAC	230 VAC (P-N) / 400 VAC (P-P)	230 VAC (P-N) / 400 VAC (P-P)
Output Waveform	Pure Sinewave				
Efficiency (DC to AC)	90%	93%		91%	91%
HYBRID OPERATION					
PV INPUT (DC)					
Nominal DC Voltage / Maximum DC Voltage	300 VDC / 350 VDC	360 VDC / 500 VDC	720 VDC / 900 VDC	720 VDC / 900 VDC	720 VDC / 900 VDC
Start-up Voltage / Initial Feeding Voltage	80 VDC / 120 VDC	116 VDC / 150 VDC	225 VDC / 250 VDC	320 VDC / 350 VDC	320 VDC / 350 VDC
MPP Voltage Range	150 VDC ~ 320 VDC	250 VDC ~ 450 VDC	250 VDC ~ 850 VDC	400 VDC ~ 800 VDC	350 VDC ~ 850 VDC
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Output Voltage Range	88-127 VAC*	184 - 265 VAC*		184 - 265 VAC* per phase	184 - 264.5 VAC per phase
Nominal Output Current	18 A	13 A	21 A	14.5 A per phase	21.7A per phase
AC INPUT					
AC Start-up Voltage / Auto Restart Voltage	60 - 70 VAC / 85 VAC	120 - 140 VAC / 180 VAC		120 - 140 VAC per phase / 180 VAC per phase	120 - 140 VAC per phase / 180 VAC per phase
Acceptable Input Voltage Range	80 - 130 VAC	170 - 280 VAC		170 - 280 VAC per phase	170 - 280 VAC per phase
Maximum AC Input Current	30 A	40 A			40 A
BATTERY MODE OUTPUT (AC)					
Nominal Output Voltage	101/110/120/127 VAC	208/220/230/240 VAC	202/208/220/230/240 VAC	230 VAC (P-N) / 400 VAC (P-P)	230 VAC (P-N) / 400 VAC (P-P)
Efficiency (DC to AC)	90%	93%		91%	91%
BATTERY & CHARGER					
Nominal DC Voltage	48 VDC				
Maximum Charging Current	Default 25A, 5A - 25A (Adjustable)	Default 25 A, 5A - 60A (Adjustable)	Default 60A, 5A - 100A (Adjustable)	Default 60A, 10A - 200A (Adjustable)	Default 60A, 5A - 300A (Adjustable)
GENERAL					
PHYSICAL					
Dimension, D x W x H (mm)	107 x 438 x 480		204.2 x 460 x 600	167.2 x 500 x 622	219 x 650 x 820
Net Weight (kgs)	15.5		29	40	62
GRID OUTPUT (AC)					
Communication Port	RS-232/USB		RS-232/USB		RS-232, USB And Dry Contact
Intelligent Slot	Optional SNMP, Modbus and AS-400 Cards Available				
ENVIRONMENT					
Humidity	0 ~ 90% RH (Non-Condensing)				
Operating Temperature	0 to 40°C		-10 to 55°C		
Altitude	0 ~ 1000 m				

BATTERY PRODUCT FAMILY

Gel Type Battery



MODEL	Delkor Solar SP2000
AH(20HR)	200 Ah
RC	430 Min
Post Type	STUD
Polarity	L (-, +)
SIZE	510mm(L) * 275mm(W) * 238mm(H)

LiFePO4 Battery



MODEL	Delkor Solar SP2000
Voltage	51.2 V
Capacity	70 Ah
Recommended Charge Discharge Current	70A (Max 200A)
SIZE	400mm(L) * 250mm(W) * 275mm(H)
Weight	Max 35kg

BE-LFPA-70



Item	Technical Parameter	
Battery Model	BE-LFPA-70	
Nominal Capacity	70 Ah	
Rated Voltage	3.2V	
Energy Density(Wh/kg)	100	
Internal Resistance	≤ 3.5m Ohm	
Charge(CC-CV)	Charged With Constant Current To 3.55V And Then Charged With Constant Voltage To 3.5A	
Charge(Float)	≤ 3.5V	
Max Charging Current	1C (70A)	
Recommended Charging Current	0.5C(34A)	
Standard Charging Voltage	3.55 ± 0.05V	
Max. Continuous Discharging Current	2.5C(175A)	
Max. Pulse Discharging Current(15seconds)	3C(210A)	
Recommended Discharging Current	1C(70A)	
Max. End-Off Discharged Voltage	2.5V	
Self Discharged Rate (Monthly)	3%	
Dimension(W*L*H)	36*115*200	
Weight(Approx.)	1.55kg	
Working Temp.	Charging	0~45°C
	Discharging	-10~60°C
Storage Temp.	In one month	15~35°C
	In six month	20 ± 5°C

Applications

EV, ESS, UPS Power & Other Power System;

- Long Cycle Life ≥ 1,200 Cycles
- Good Performance At High / Low Temperature
- Excellent Safety Performance
- 1C Rate Continuous Discharge
- Environment-Friendly

HYGEN (OXYHYDROGEN GENERATOR)

Specification

Item	Description
Type Of Electrolyzer	In line Dry Cell
HHO Gas Output	5000ml/min Max
Available Input Voltage	VDC48, VDC36, VDC24, VDC12
Allowable DC Current	30A Max
System Cooling Method	Air Cooling With Fan
Water Tank Capacity	4 Liter
Water-Service	Manually
Ambient Conditions	No Flames Within A 1m Radius Of The Electrolyzer And The Output Port Of HHO Gas
Operation Temperature	-25°C ~ 55°C
Dimension (L × W × H)	425 × 320 × 384 (mm)
Dry Weight	26kg (Empty Water Tank), 30kg(Full Water Tank)

Oxyhydrogen

Hydrogen Has A Clean Flame And Is Good For Use On Aluminums. It Can Be Used At A Higher Pressure Than Acetylene And Is Therefore Useful For Underwater Welding And Cutting. It Is A Good Type Of Flame To Use When Heating Large Amounts Of Material.

The Flame Temperature Is High, About 2,000 °C For Hydrogen Gas In Air At Atmospheric Pressure, And Up To 2800 °C When Pre-Mixed In A 2:1 Ratio With Pure Oxygen (Oxyhydrogen).

Hydrogen Is Not Used For Welding Steels And Other Ferrous Materials, Because It Causes Hydrogen Embrittlement. For Some Oxyhydrogen Torches The Oxygen And Hydrogen Are Produced By Electrolysis Of Water In An Apparatus Which Is Connected Directly To The Torch.

The Oxygen And The Hydrogen Are Led Off The Electrolysis Cell Separately And Are Fed Into The Two Gas Connections Of An Ordinary Oxy-Gas Torch. The Mixed Oxygen And Hydrogen Are Drawn From The Electrolysis Cell And Are Led Into A Special Torch Designed To Prevent Flashback.

Application

Cleaning Of The Motor Vehicle Engine, Marine Engine And Engine For Construction Equipment, Welding & Cutting, Boiler, Small Furnace, Gas Burner Etc.



Design And Specifications Are Subject To Change Without Notice For Product Improvement Or Future Release.

STAND-ALONE POWER SUPPLY SYSTEM (ESS 10KWH, 30KWH) PRODUCT FAMILY

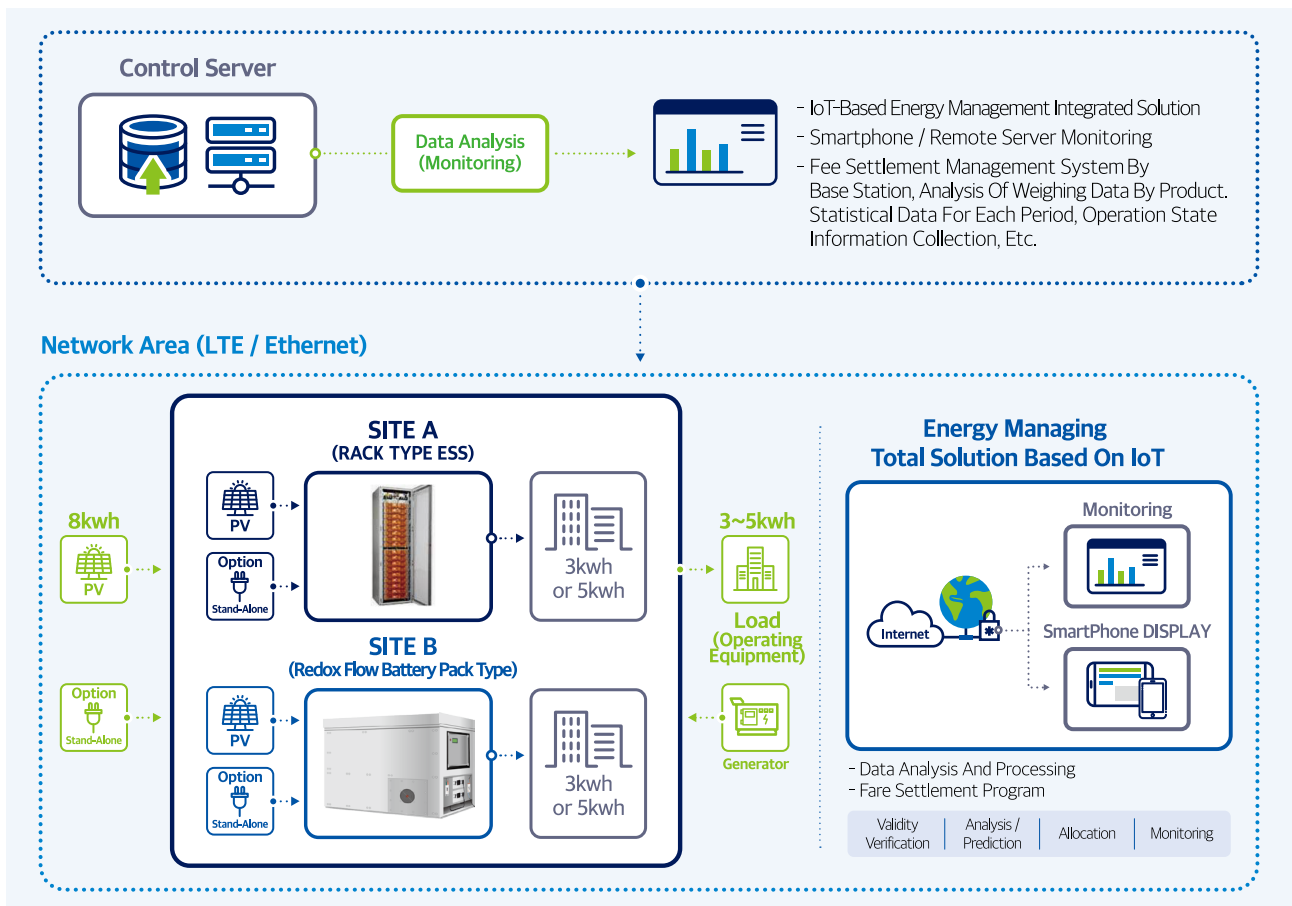
- For Redox Flow Battery

Product Features

- The System That Can Manage The Status Information In Connection With The Inverter As Redox Flow Battery BMS For The Product Configuration Of 10~30kwh ESS And 5kw Output
- The Technology For Managing The Information Of Each Product Element And Electrolyte Flow Status As The BOP (Balance Of Plant) Component Product And The Battery That Converts The Chemical Energy Into The Electrical Energy By The Flow Of Electrolyte
- The Function To Display The Data Such As Flow Information, Temperature Information, Level Information, Charging Information, Etc. On The LCD Display And To Transmit The Data To The Outside

System Configuration Diagram

IoT-Based Standalone ESS For Base Stations And Multipurpose Applications Weighing Data Collection And Monitoring System

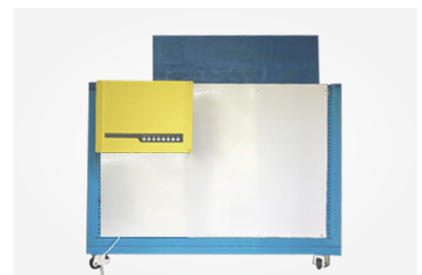


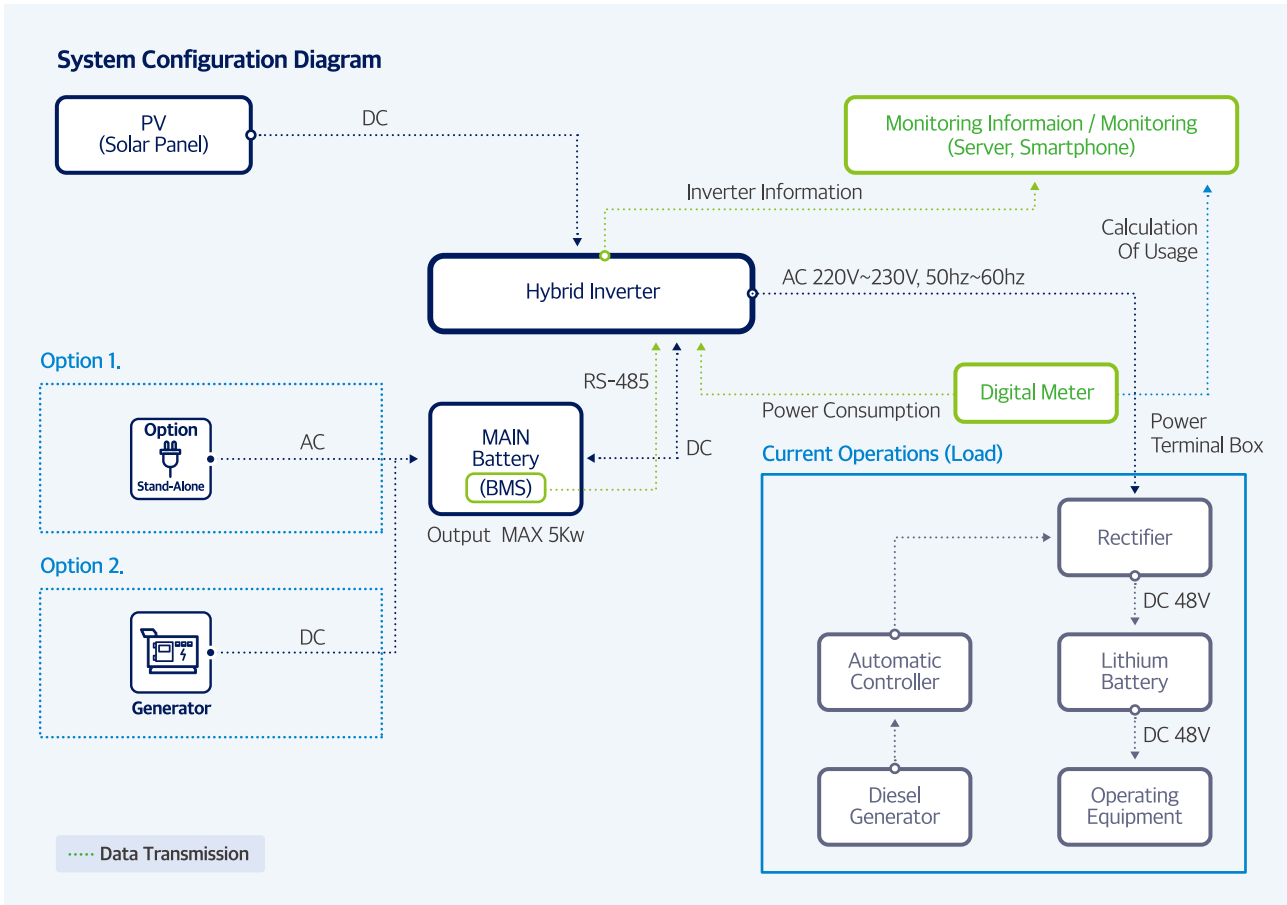
Base Station Installation Case



- Solar Panel 360w * 20pcs
- PV1 : 360w*10
- PV2 : 360w*10
- 10*2 Connected In Series

Inside Of Installation (ESS 30kwh)





Stand-Alone ESS

(10Kwh class)



- Output voltage 3kw or 5Kw
- Energy Storage Capacity 10kwh
- HYBRID INVERTER 3kw or 5kw
- Redox Flow Battery BMS
- STACK * 1EA
- PUMP
- Electrolyte
- TANK 100L * 2EA
- Size : Horizontal 1,000m * Vertical 1.300mm * Depth 800mm
- Weight: about 250kg

Stand-alone ESS

(30Kwh Class)



- Output Voltage 3kw or 5Kw
- Energy Storage Capacity 30kwh
- HYBRID INVERTER 3kw or 5kw
- Redox Flow Battery BMS
- STACK * 1EA
- PUMP
- Electrolyte
- TANK 100L * 2EA
- Size : Horizontal 1,000m*Vertical 1.300mm*Depth 800mm
- Weight: About 400kg



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