



**FJ POWER**  
& SECURITY SOLUTIONS

# **FJ Residential / C&I Solar Energy Storage Power Solution**

Meet FJ Power, Leading World Energy

# CONTENTS

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**01 Scenarios and requirement**

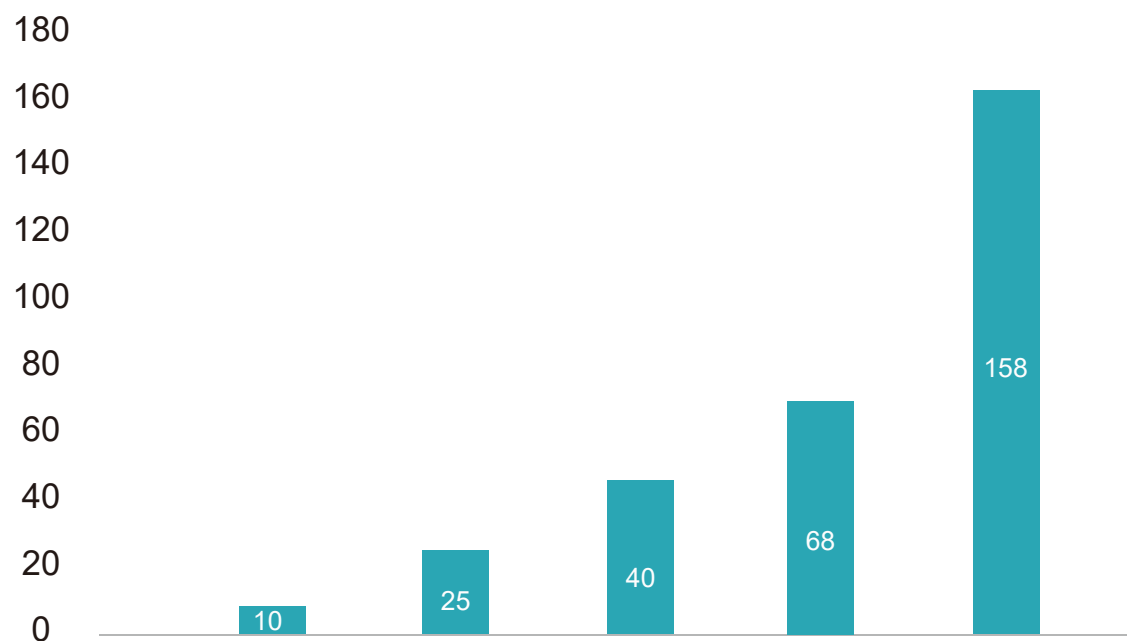
**02 FJ solar energy system solution and highlight**

**03 Successful case**

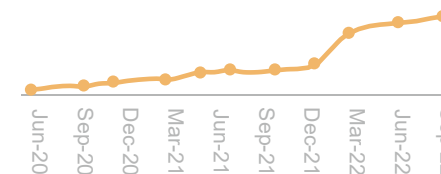
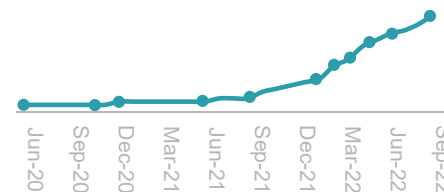
**04 Energy logging report**

**05 Our Service**

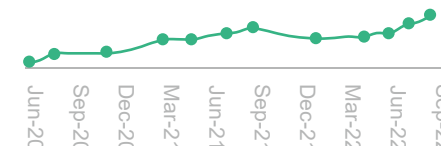
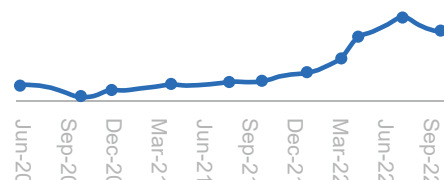
## Frequent Load Shedding



## Electricity Cost Keep Increasing



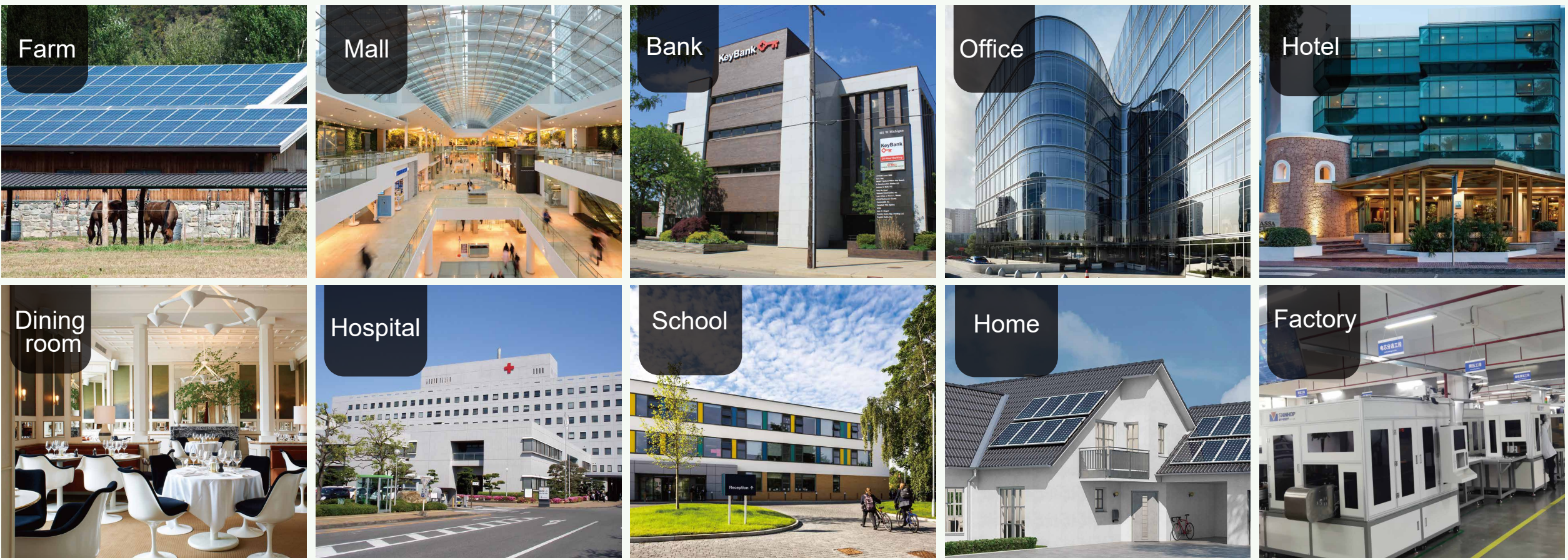
**Energy crisis & Russia-Ukraine conflict lead to shortage of diesel supply in Africa, electricity cost rose by 2-4 times in the last 2 years**



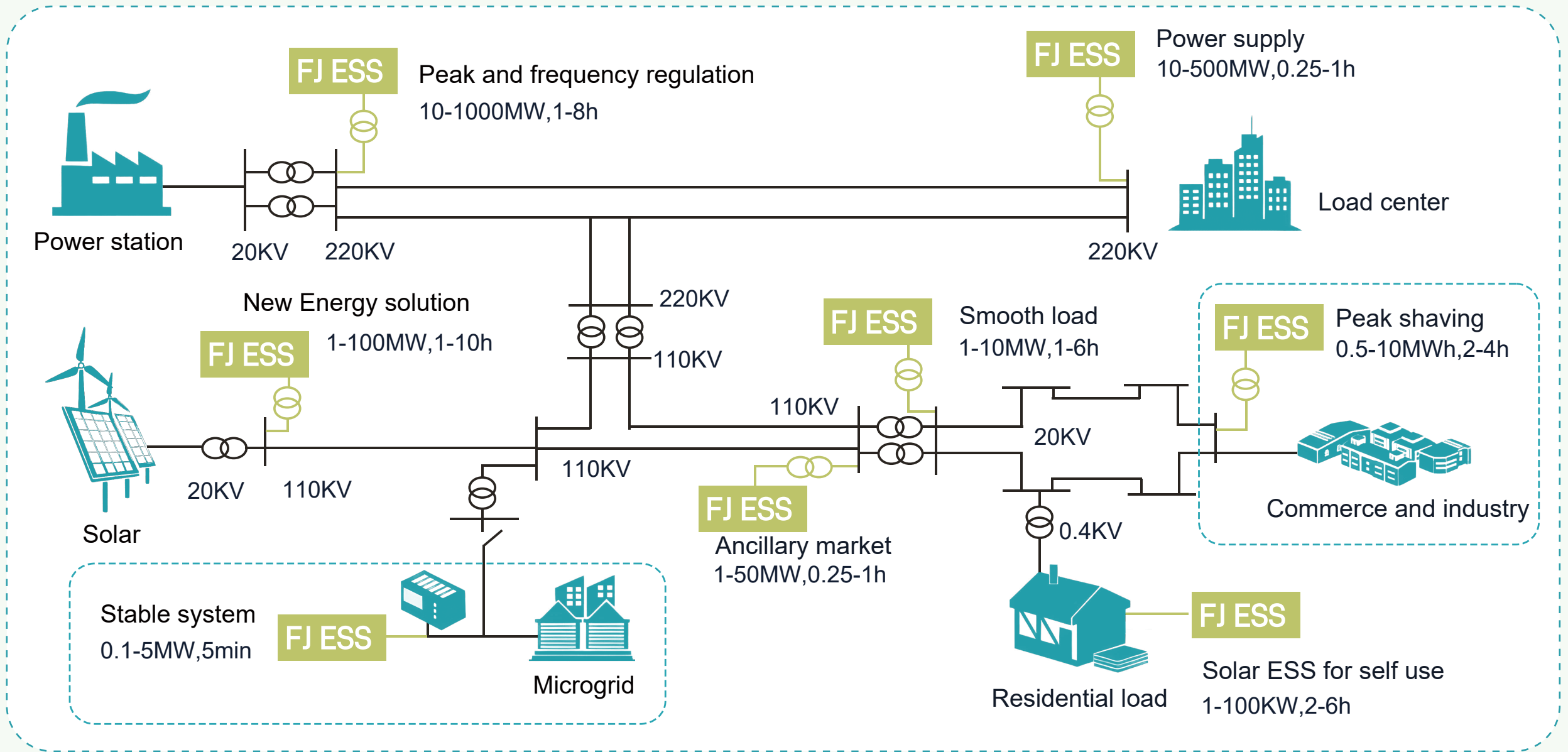
**In coming 3 years, load shading will continue and getting worse**



# Target sscenario: unstable grid or off grid C&l scenarios

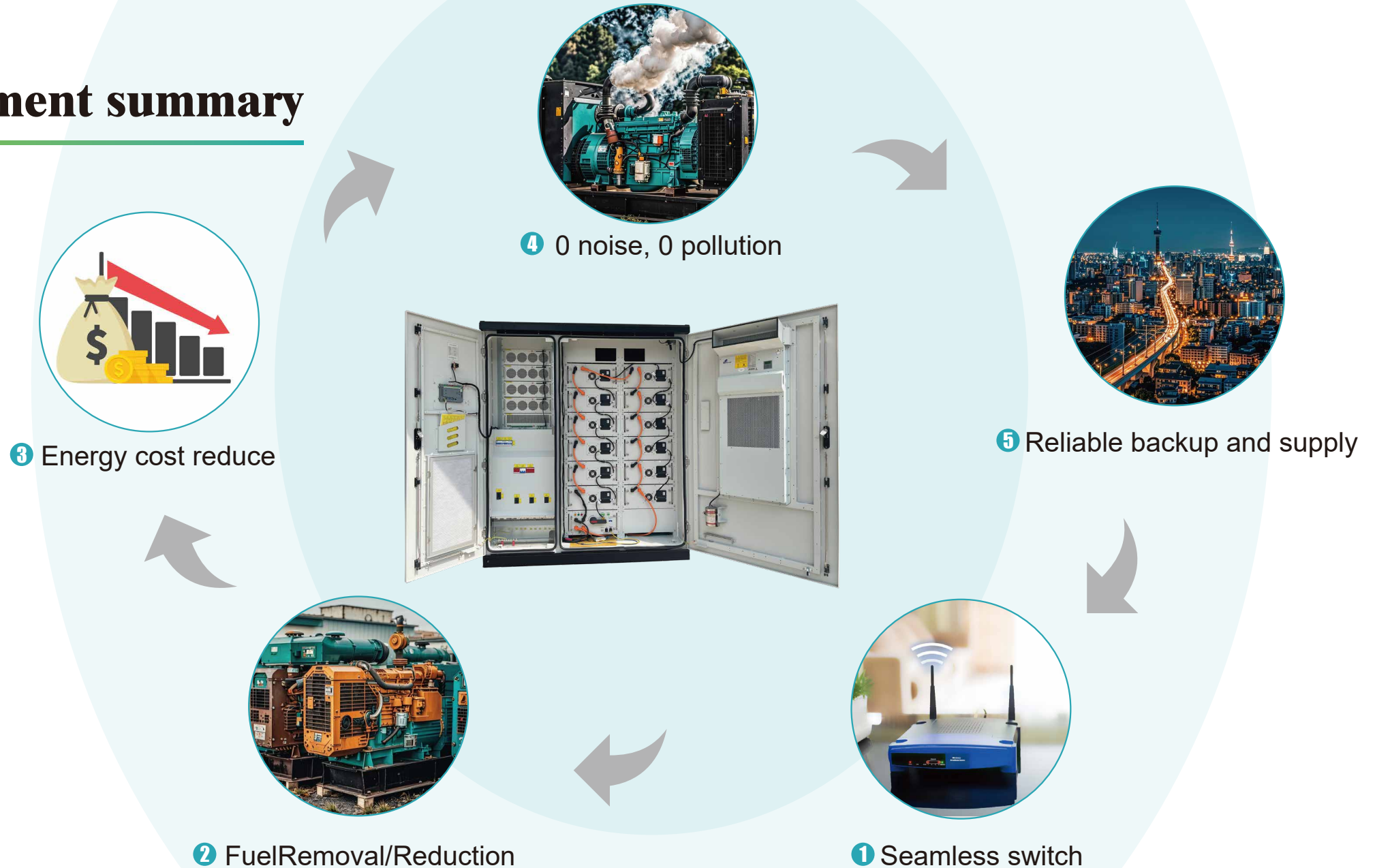


Typical power capacity is 3kw-5mw





# Requirement summary



# CONTENTS

---



**01 Scenarios and requirement**

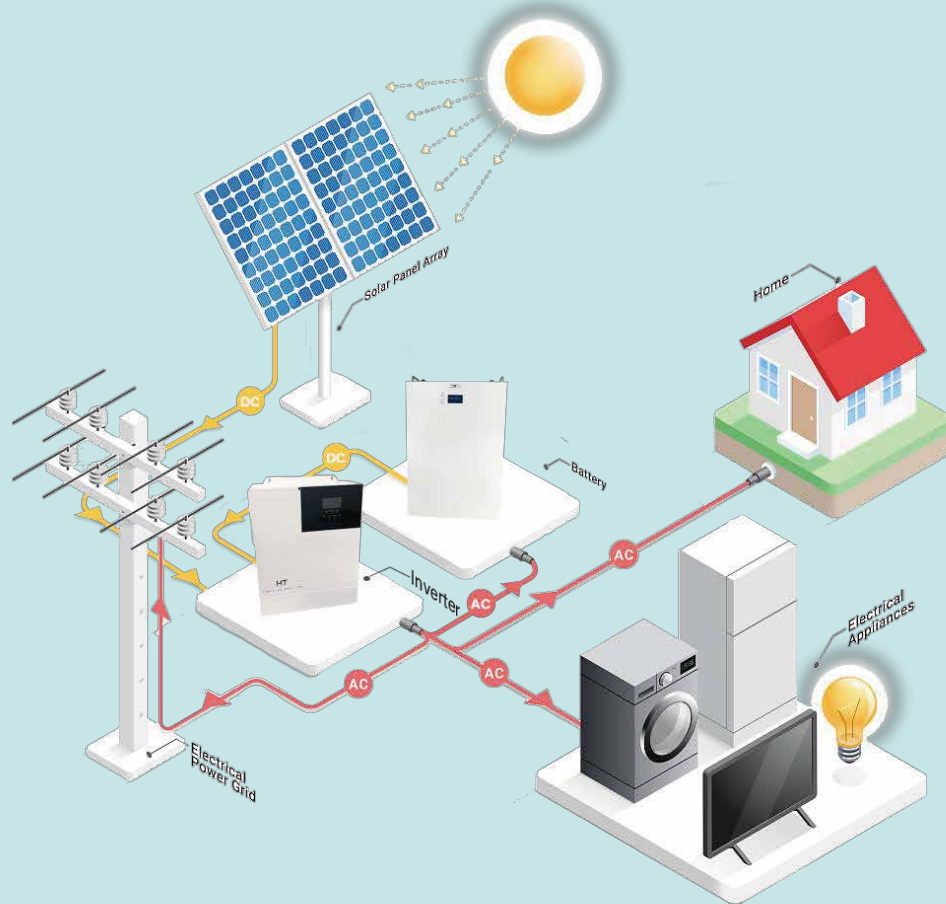
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**03 Successful case**

**04 Energy logging report**

**05 Our Service**

## Solar home energy system solutions



## FJ home solar energy system solution and highlight

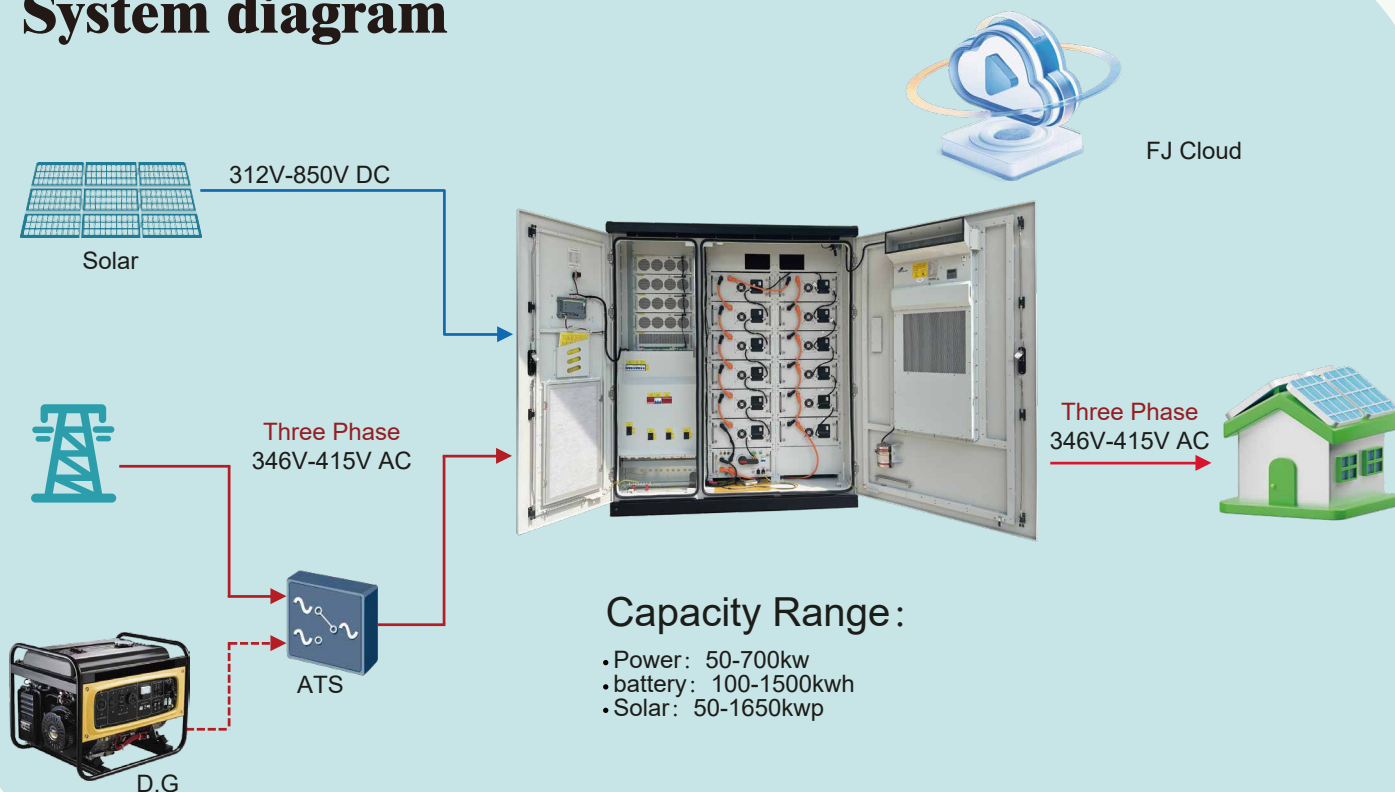
### ● Highlight

- 1 Customized solution design, design the most reasonable and economical solar solution according to the customer's electricity demand;
- 2 Long battery life, more than 6000 cycles;
- 3 Off grid system, hybrid system, and on grid system to meet the different needs of customers



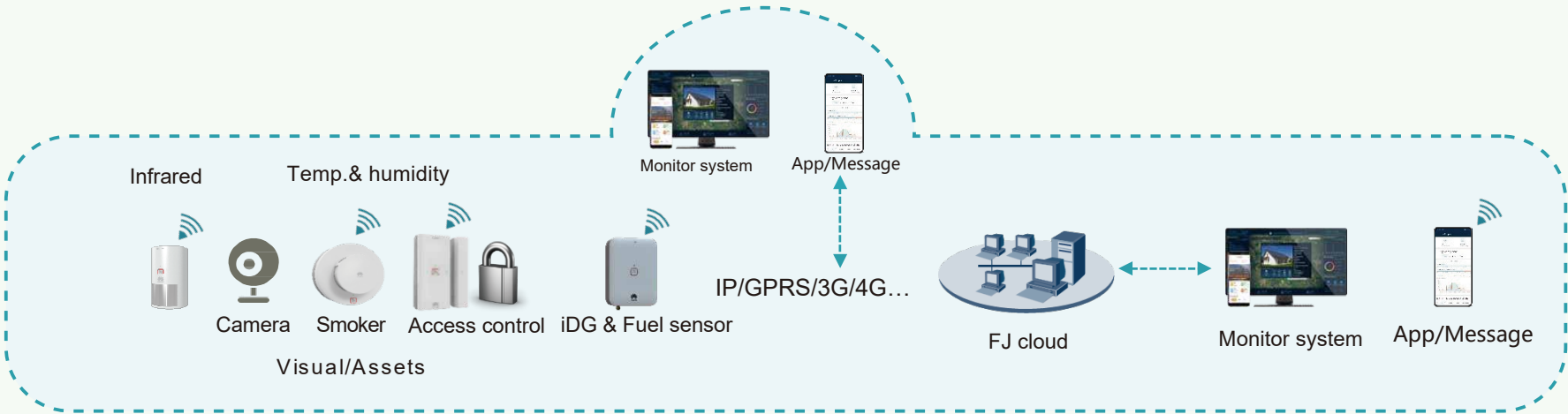
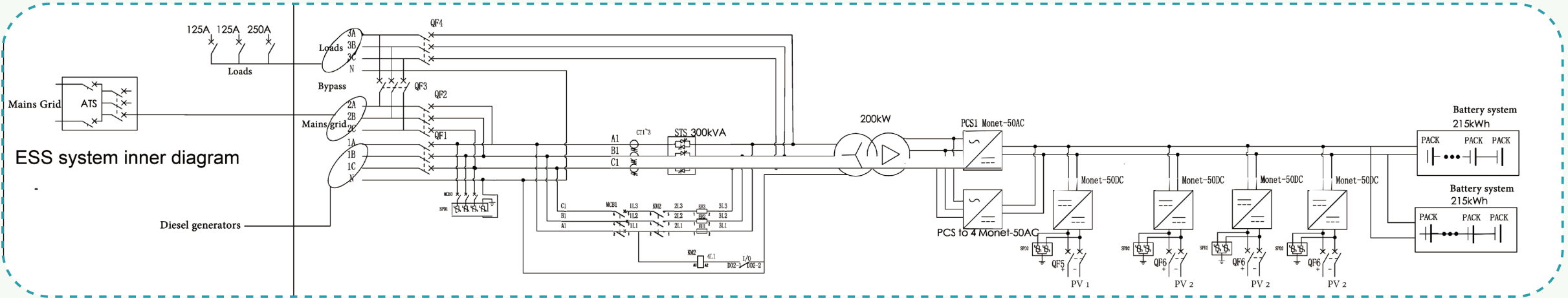
# FJ C&I outdoor BESS cabinet solution and highlight

## System diagram

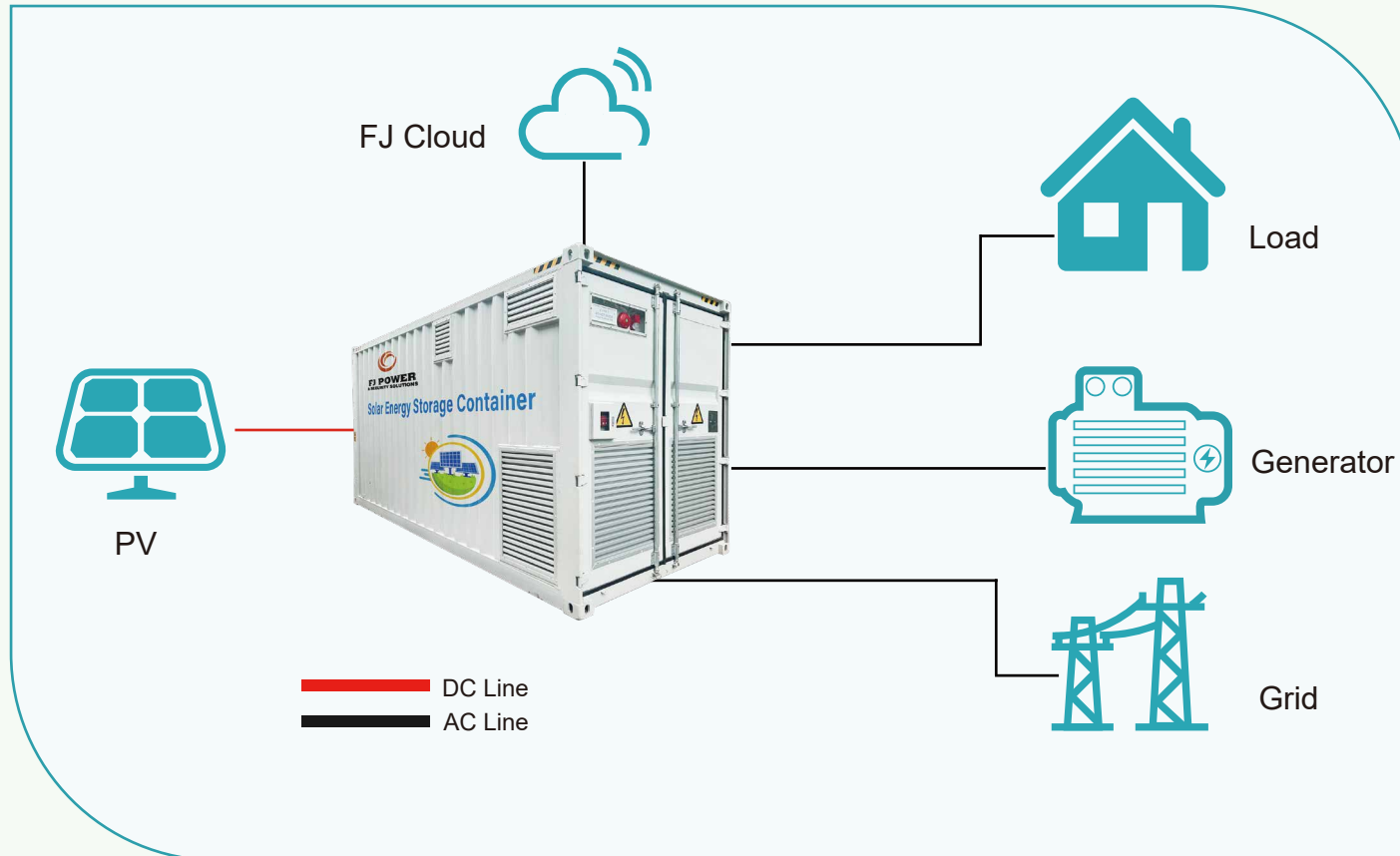


- 1 All in one, save space
- 2 Module integrated design, Easy extension & Easy maintenance
- 3 Pre-installation, Easy transportation and installation
- 4 Plug and play
- 5 Seamless switch, 0 interrupt
- 6 Intelligent Logic Control
- 7 Rapid deployment, 0 civil engineering
- 8 High efficiency  
94% conversion efficiency
- 9 With isolation transformer that protects the impact of excessive instantaneous start-up current and plays a buffer protection role. If not, it is easy to damage the equipment if you use it for a long time.
- 10 With STS module: On/off grid automatically switching within 10ms, ensuring uninterrupted use of the system
- 11 Intelligent EMS management system

# Electrical schematic diagram of FJ C&I cabinet energy storage solution

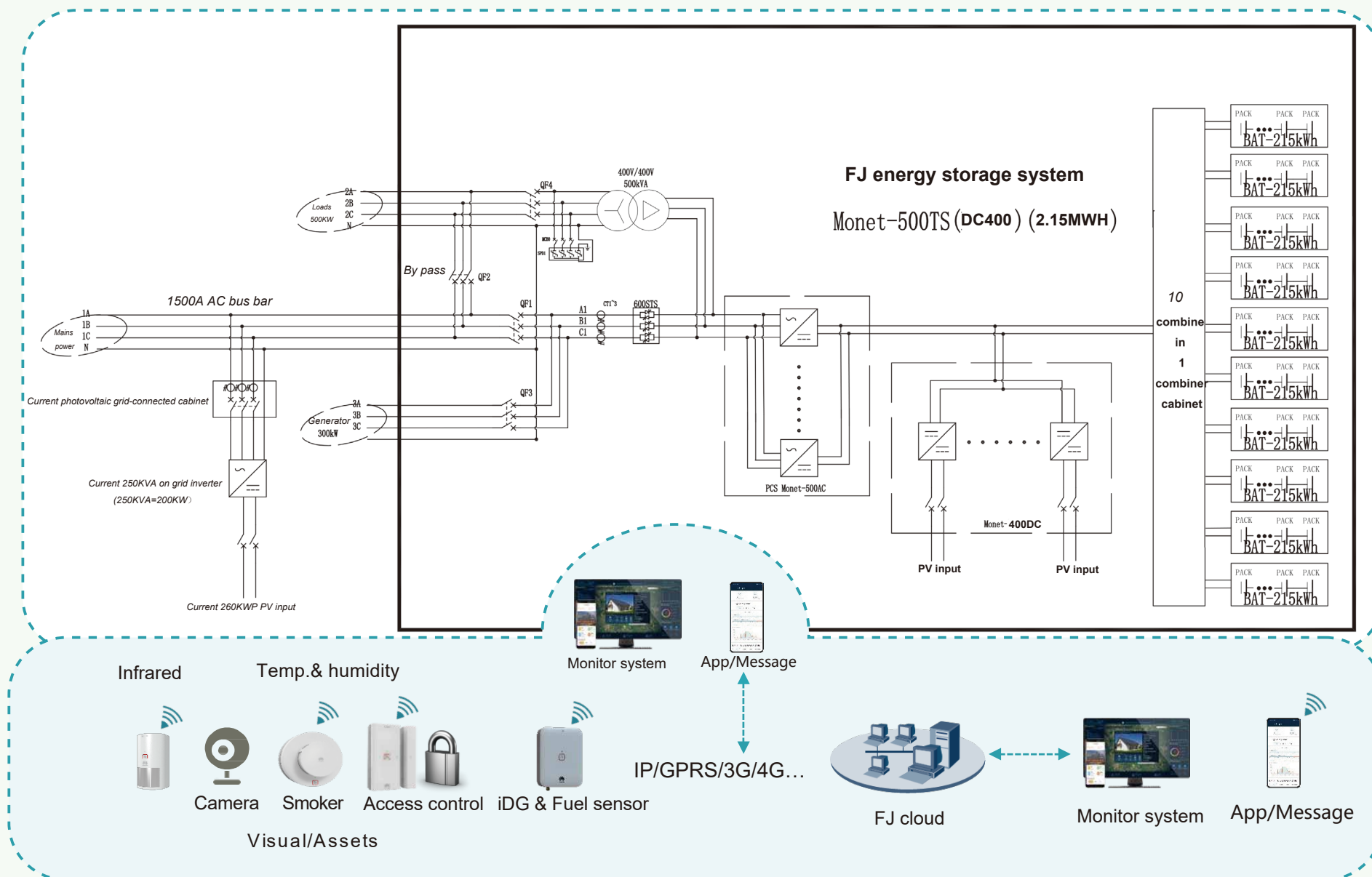


# FJ C&I outdoor BESS container solution and highlight



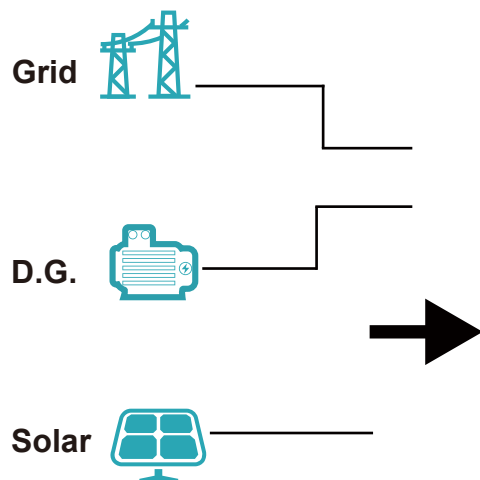
- 1 All in one, save space
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- 10 With STS module: On/off grid automatically switching within 10ms, ensuring uninterrupted use of the system
- 11 Intelligent EMS management system

# Electrical schematic diagram of FJ C&I energy storage solution



## All in one design, 1 set equals multiple sets

### Multiple energy input



### Multiple energy output

- 1 Bypass output-400V AC
- 2 AC output-400V AC
- 3 MIMO-camera /sensor
- 4 With temperature control system-air conditioner
- 5 With fire protection system



PCS/DC-DC/STS

+



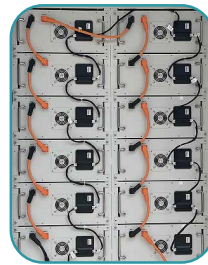
Distribution box

+



High voltage box

+



Battery module

+



EMS

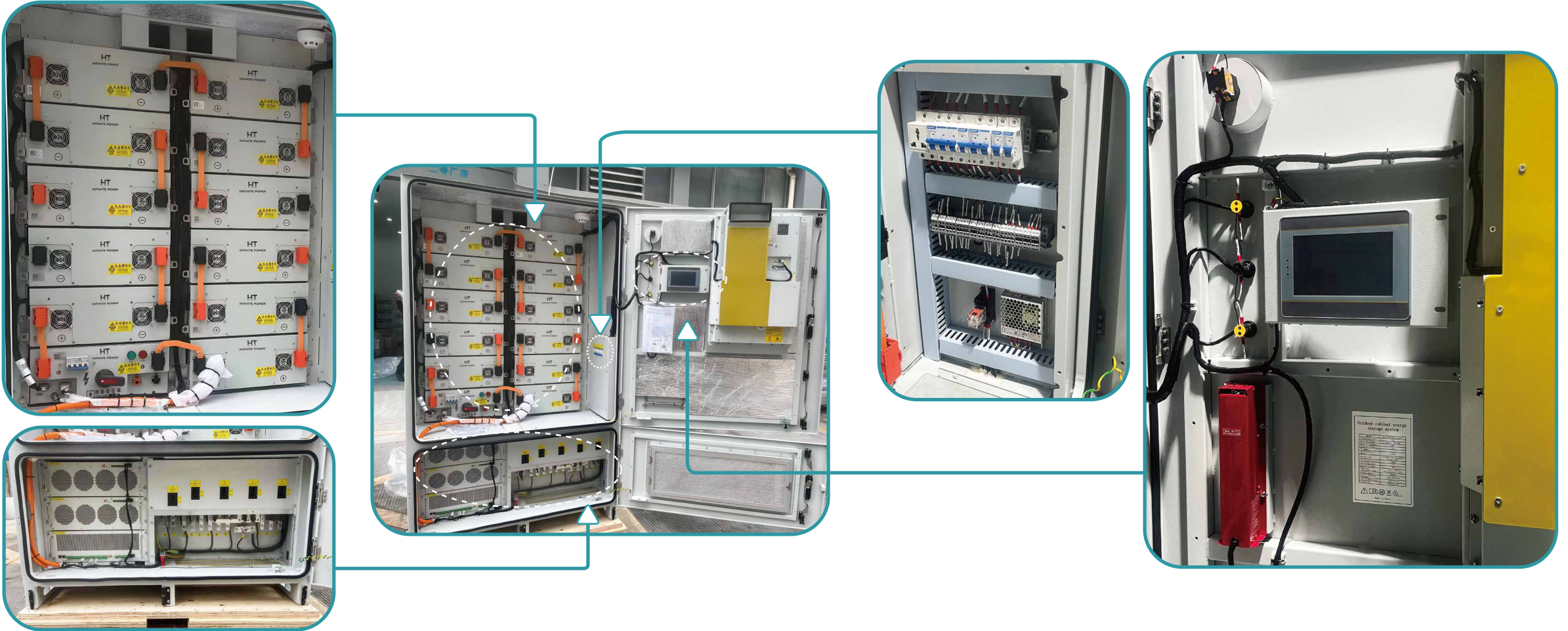
+



Isolation transformer

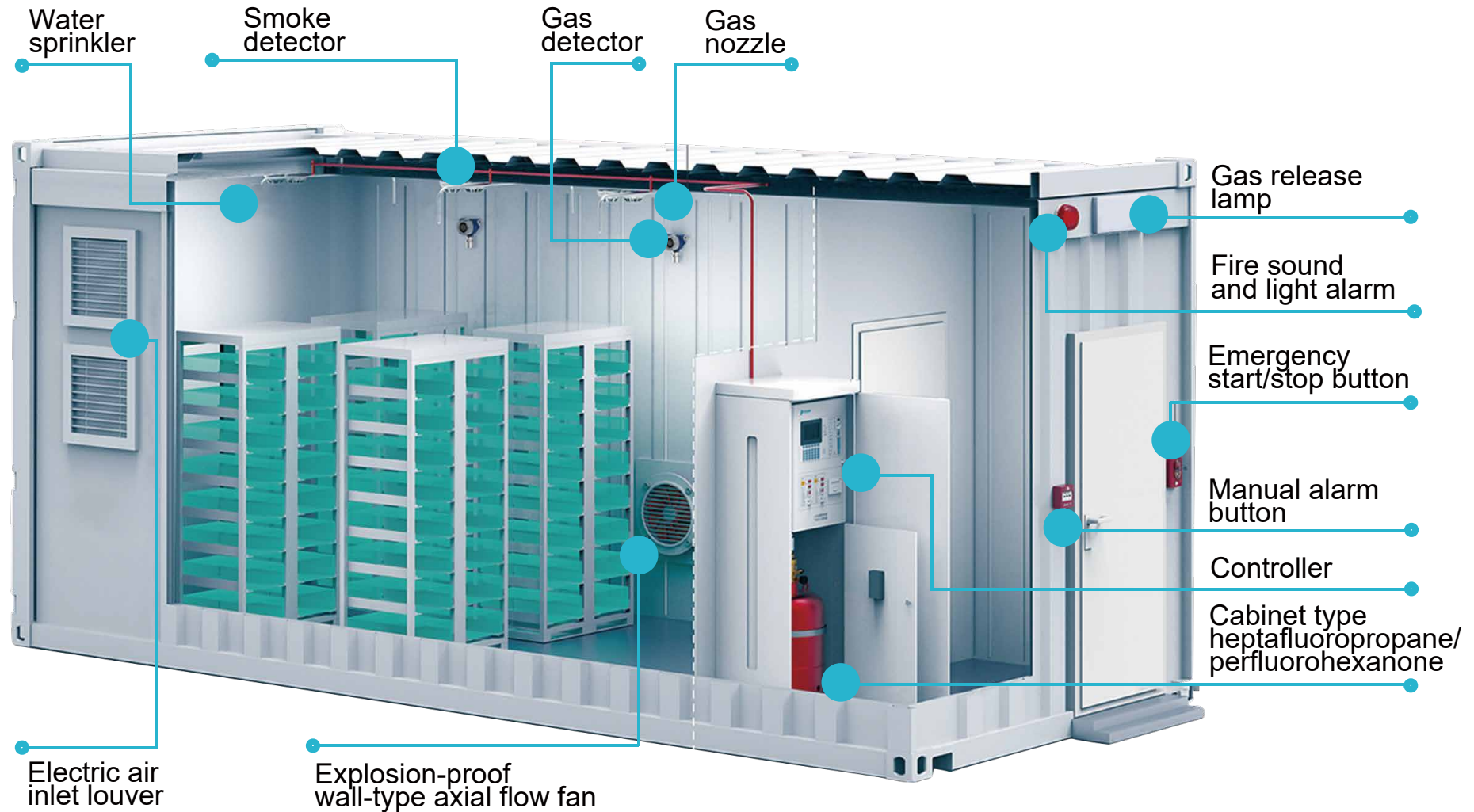


## Integrated design, all of commissioning and cable pre-integrated



**Reduce ~ 80% Installation time, Cabling time and Commission time, Enable < 1 Week TTM**

# Modular design, smooth evolution, lowest construction cost



## Seamless switch as UPS level, 0 interrupt

No sense of grid outage

**<10 ms**

**FJ switching time**

**0 Interruption for critical loads**

(Camera/Access control/Network/Computer/Lighting/TV etc.)

Support different energy sources(**PV**、**DG**、**Grid**, etc.)

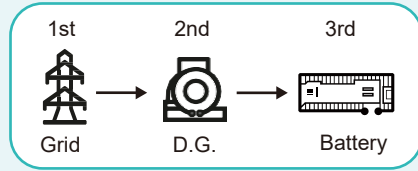
Consistent stable power, Seamless switch

Computer, network, lighting, medical equipment,  
impact loads etc.





# Intelligent logic control, DG from prime use to emergency

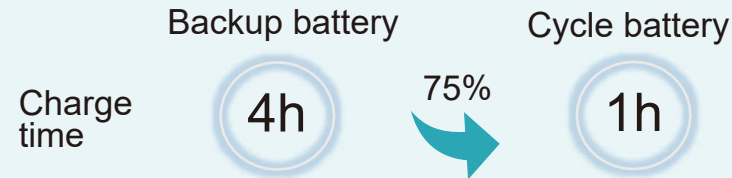


Traditional control logic

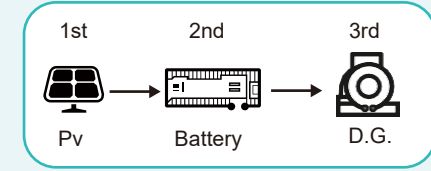


1 DG from **prime** to **emergency** use

2 Battery from **backup** to cycle use  
Battery from **slow charge** to **fast charge**



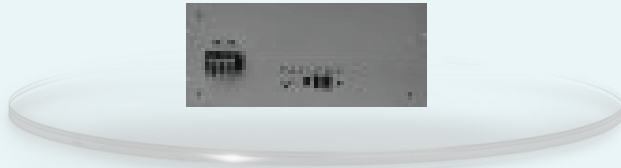
Reduce D.G. working time and related cost



FJ ESS: Grid as backup



# FJ cycle battery: 2x cycle life with cycle 1h supercharge



**3000** cycles @ 85% DOD  
Cycle **2~4h** fully charge

**Cycle life**  
**Charge time**

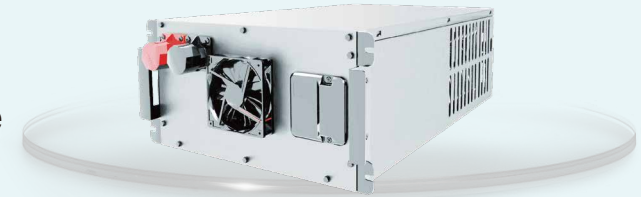
**Johannesburg**

**Industry Cycle 2~4h fully** charge  
(10min 1C charge)

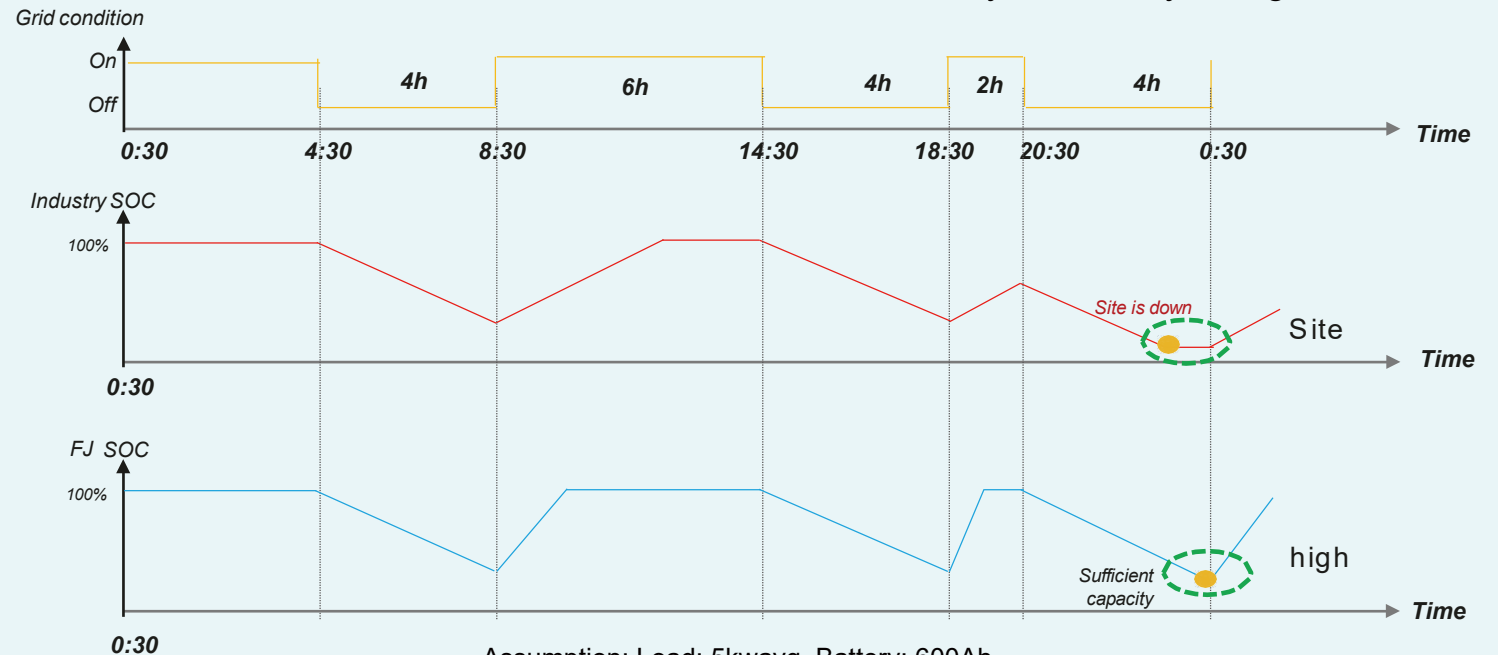
**V.S.**

**FJ supercharge**  
Cycle **1h** fully charge

**2X** cycle life **Reduce 75%** charge time



**6500** cycles @ 85% DOD  
Cycle **1h** fully charge





# More reliable, more safe

## With Isolation transformer



## With Isolation transformer more safety

- 1 The isolation transformer protects the impact of excessive instantaneous start-up current and plays a buffer protection role. If not, it is easy to damage the equipment if you use it for a long time.
- 2 Protecting people on the power supply side from electric shock

## Optional N+1

### Traditional: Device backup



### FJ: Modular backup

V.S.

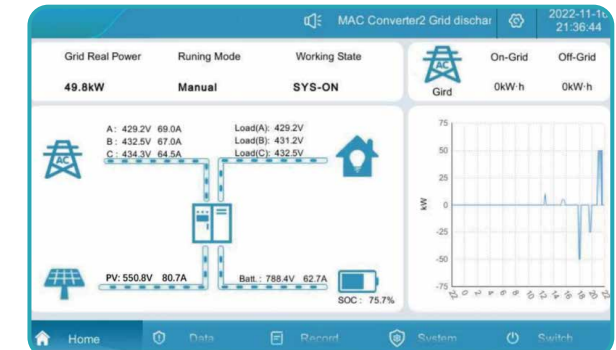
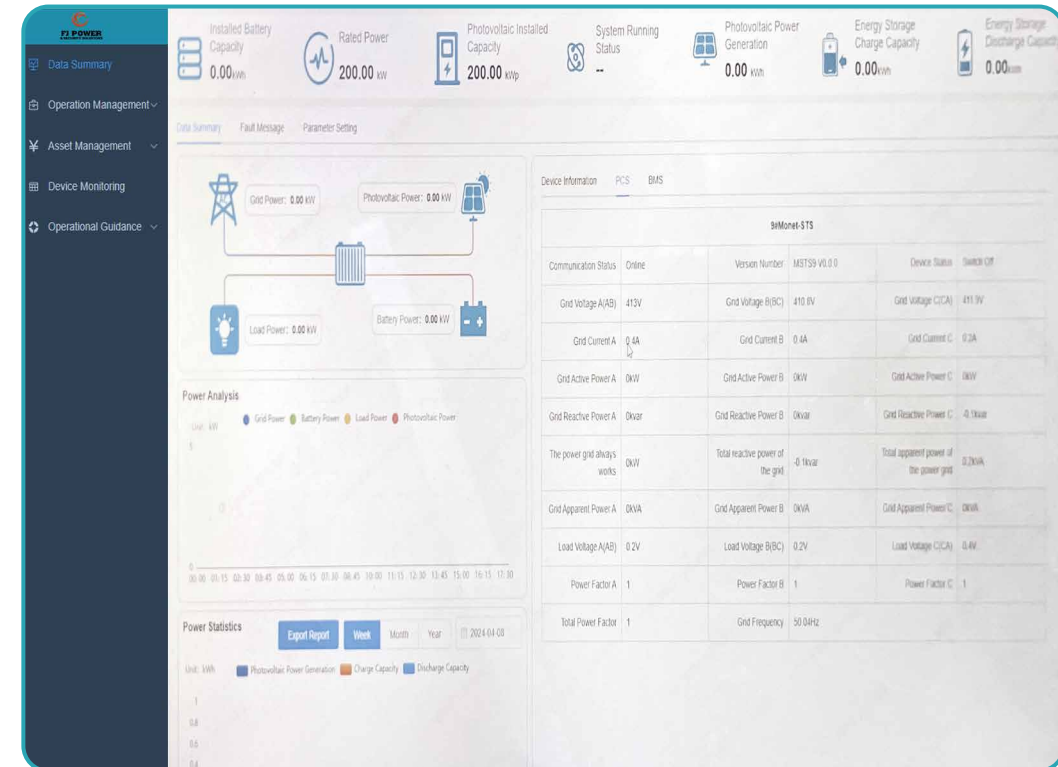


## Less investment, higher reliability

## Industry: 4~5 separate O&M system

O&M system 1: **Pv**    O&M system 2: **Battery**    O&M system 3: **Grid**    O&M system 4: **D.G.**    O&M system 5: **Power**

## FJ: Unified O&M system



# CONTENTS

---



**01 Scenarios and requirement**

**02 FJ solar energy system solution and highlight**

**03 Successful case**

**04 Energy logging report**

**05 Our Service**



## FJ help EV charger getting benefits from the peak-load shifting



### Europe

**Products:** 55kw solar +50kw/100kwh all in one cabinet

**Application scenario:** EV Charger

**Delivery date:** Feb, 2023

**Outdoor energy storage energy supply:** Integrated solar+storage+charging system to improve solar utilization efficiency. Saving electricity and getting benefits from the peak-load shifting.

## FJ help south africa farm reduce DG running&seamless power



### South Africa

**Products:** 110kw solar panels+100kw pcs+215kwh battery

**Application scenario:** Farm

**Delivery date:** Jan, 2024

Provide backup power service for farms,  
reduce the power supply from diesel  
generators  
seamless switch, not impact work



## FJ help europe villa reduce 85% electricity by solar, saving \$50k/year



**Sweden**

**Product:** 1 set 100mw/215kwh

**Application scenario:** Resort villas

**Delivery date:** Jul, 2022

**Outdoor energy storage energy supply:** The energy storage system is used as the compensation power of the grid for the power supply of the resort villas.

## FJ help kenya factory reduce 58% energy cost in off grid



### Kenya

**Products:** 800kw solar+750k  
pcs+2Mwh battery

**Application scenario:** Factory

**Delivery date:** Oct, 2023

Container energy storage energy supply: Connect to the PV system, as the backup power supply for the factory, to provide uninterrupted electricity for ensuring the production line working mode.

## FJ help europe dwelling reduce 60% electricity by solar, saving \$25k/year



### Sweden

**Products:** 1 set of 25kw solar panel+30kw inverter+40kwh battery

**Application scenario:** Home

**Delivery date:** May, 2022

Residential energy storage energy supply: Connect to the PV system, Powering underfloor heating, swimming pools, household appliances, save on the electricity bill.

# CONTENTS

---

**01 Scenarios and requirement**

**02 FJ solar energy system solution and highlight**

**03 Successful case**



**04 Energy logging report**

**05 Our Service**



# Energy logging report



Start Time	Power Consumption{kW}	Daily{kWh}	Night{KWh}	Start Time	Active power Consumption(KW)	Daily{kWh}	Night{KWh}
2024-02-28 00:00:00	3.4	136.8	78.8	2024-02-29 00:00:00	3.0	119.1	64.4
2024-02-28 01:00:00	2.6			2024-02-29 01:00:00	2.6		
2024-02-28 02:00:00	3.5			2024-02-29 02:00:00	3.0		
2024-02-28 03:00:00	3.1			2024-02-29 03:00:00	3.1		
2024-02-28 04:00:00	2.5			2024-02-29 04:00:00	3.0		
2024-02-28 05:00:00	7.5			2024-02-29 05:00:00	3.1		
2024-02-28 06:00:00	8.2			2024-02-29 06:00:00	4.6		
2024-02-28 07:00:00	8.5			2024-02-29 07:00:00	6.5		
2024-02-28 08:00:00	12.5			2024-02-29 08:00:00	5.1		
2024-02-28 09:00:00	7.0			2024-02-29 09:00:00	5.6		
2024-02-28 10:00:00	8.5			2024-02-29 10:00:00	9.2		
2024-02-28 11:00:00	9.5			2024-02-29 11:00:00	11.4		
2024-02-28 12:00:00	6.1			2024-02-29 12:00:00	5.0		
2024-02-28 13:00:00	5.5			2024-02-29 13:00:00	7.1		
2024-02-28 14:00:00	2.6			2024-02-29 14:00:00	3.2		
2024-02-28 15:00:00	2.5			2024-02-29 15:00:00	3.4		
2024-02-28 16:00:00	3.0			2024-02-29 16:00:00	3.9		
2024-02-28 17:00:00	4.2			2024-02-29 17:00:00	3.1		
2024-02-28 18:00:00	6.6			2024-02-29 18:00:00	4.3		
2024-02-28 19:00:00	6.8			2024-02-29 19:00:00	6.2		
2024-02-28 20:00:00	9.5			2024-02-29 20:00:00	7.5		
2024-02-28 21:00:00	4.1			2024-02-29 21:00:00	5.3		
2024-02-28 22:00:00	4.6			2024-02-29 22:00:00	3.4		
2024-02-28 23:00:00	4.5			2024-02-29 23:00:00	3.8		



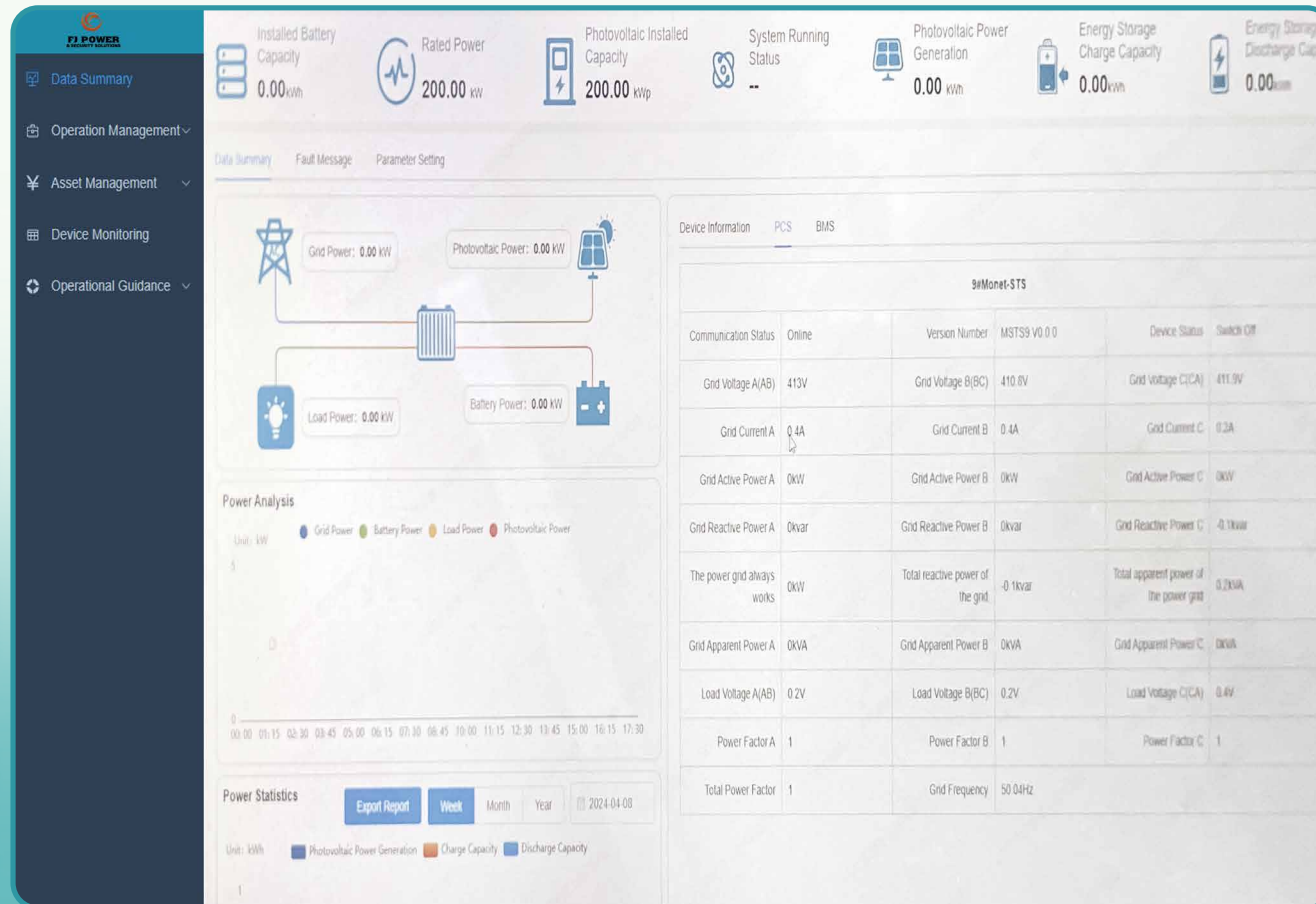
# Average total energy consumption



Start Time	Power Consumption(kW)	Daily{kWh}	Night{KWh}
2024-03-01 00:00:00	3.1	99.4	58.7
2024-03-01 01:00:00	3.5		
2024-03-01 02:00:00	3.3		
2024-03-01 03:00:00	3.2		
2024-03-01 04:00:00	3.3		
2024-03-01 05:00:00	3.6		
2024-03-01 06:00:00	2.8		
2024-03-01 07:00:00	2.4		
2024-03-01 08:00:00	8.1		
2024-03-01 09:00:00	5.1		
2024-03-01 10:00:00	6.5		
2024-03-01 11:00:00	5.2		
2024-03-01 12:00:00	5.1		
2024-03-01 13:00:00	2.1		
2024-03-01 14:00:00	2.2		
2024-03-01 15:00:00	2.5		
2024-03-01 16:00:00	2.4		
2024-03-01 17:00:00	6.8		
2024-03-01 18:00:00	3.5		
2024-03-01 19:00:00	6.2		
2024-03-01 20:00:00	8.6		
2024-03-01 21:00:00	4.5		
2024-03-01 22:00:00	2.2		
2024-03-01 23:00:00	3.6		

Start Time	Power Consumption {kW}	Daily{kWh}	Night{KWh}
2024-03-02 00:00:00	3.0	136.7	76.3
2024-03-02 01:00:00	2.9		
2024-03-02 02:00:00	3.1		
2024-03-02 03:00:00	2.5		
2024-03-02 04:00:00	3.5		
2024-03-02 05:00:00	6.0		
2024-03-02 06:00:00	9.1		
2024-03-02 07:00:00	7.6		
2024-03-02 08:00:00	7.2		
2024-03-02 09:00:00	7.1		
2024-03-02 10:00:00	9.2		
2024-03-02 11:00:00	10.6		
2024-03-02 12:00:00	7.6		
2024-03-02 13:00:00	6.0		
2024-03-02 14:00:00	6.3		
2024-03-02 15:00:00	1.5		
2024-03-02 16:00:00	3.0		
2024-03-02 17:00:00	6.6		
2024-03-02 18:00:00	5.4		
2024-03-02 19:00:00	8.1		
2024-03-02 20:00:00	5.5		
2024-03-02 21:00:00	5.1		
2024-03-02 22:00:00	3.8		
2024-03-02 23:00:00	4.0		

# EMS energy management system



## Intelligent EMS management system:

EMS is the core control center of the entire system, responsible for scheduling, balancing and maintaining the various components within the system in the best working condition. EMS can optimize the release and utilization of energy in the entire system.

# CONTENTS

---

**01 Scenarios and requirement**

**02 FJ solar energy system solution and highlight**

**03 Successful case**

**04 Energy logging report**



**05 Our Service**

# **Our service**

---

**Project site survey**

**01**

**Customized solar projects**

**02**

**Global insurance**

**03**

**On-site installation service**

**04**

**Clients training**

**05**

**24H after-sales services**

**06**