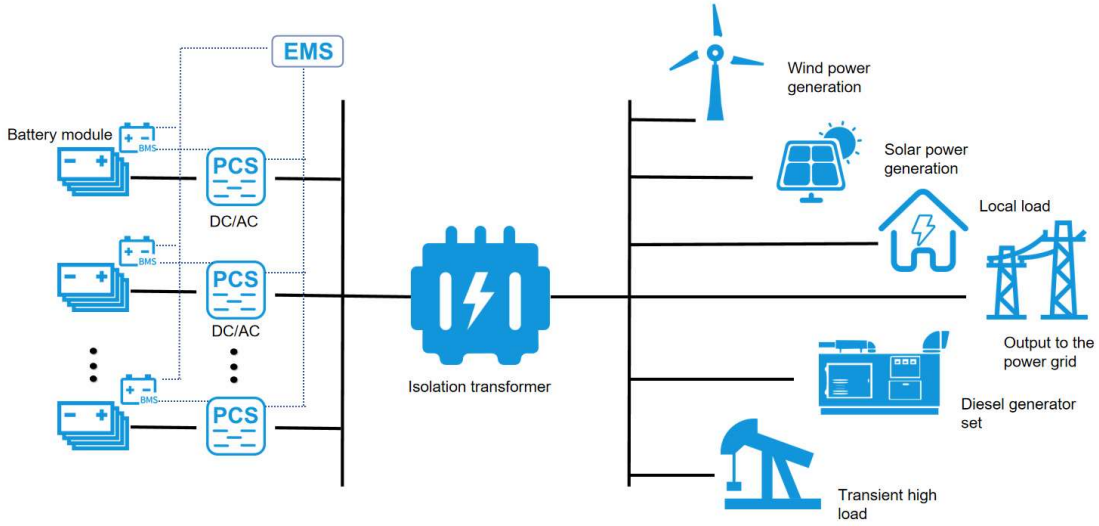
V&P Energy Storage System

● Company Introduction

V&P is a diesel genset manufacturer with decades of experience. Our gensets are widely used both domestically and internationally, particularly renowned in the fields of diesel microgrid and black start applications. In line with the global trend towards low-carbon energy, we have introduced an energy storage cabinet designed to complement diesel generator sets. V&P energy storage system （ESS）provides users with a reliable platform to integrate diesel generation, wind power, and solar energy cost-effectively. It allows diesel generator users to have the flexibility to incorporate renewable energy sources in the future. With the advantages of energy storage, this solution takes a significant step towards green living and promotes energy efficiency and emission reduction.

System Composition



Battery module

Battery management system

DC/AC charging and discharging system

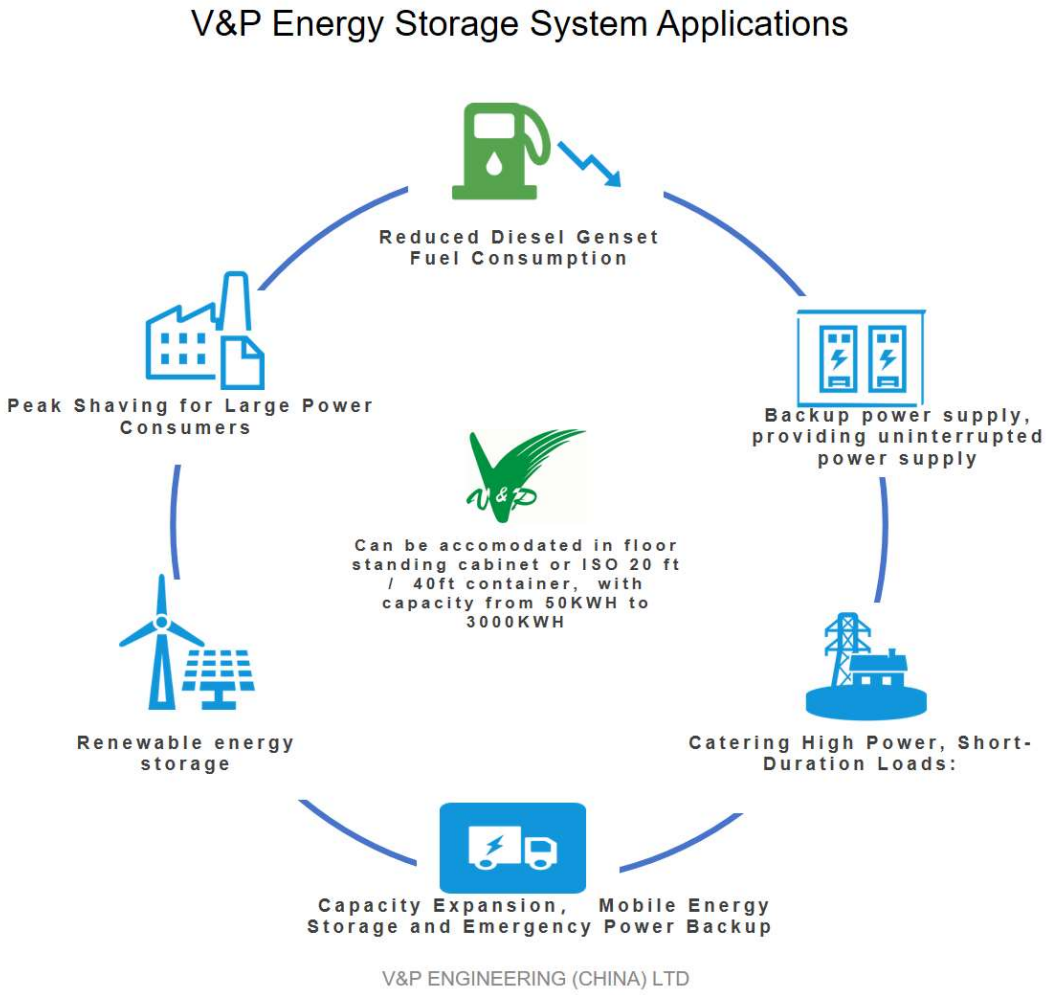
Energy storage control system

Fire alarm and extinguishing system

Battery temperature control system (such as battery air conditioning)

Monitoring system

Outer Cabinet Container for putting all components inside in order to reduce on-site wiring and connections



Renewable Energy Storage:

Renewable energy sources such as wind and solar have limitations in terms of generation periods. ESS can store the electricity generated but not immediately utilized, allowing it to be used when needed.

Commercial and Industrial Microgrids:

ESS can combine renewable resources and diesel gensets to create a reliable, stable, and fuel-efficient microgrid.

Peak Shaving for Large Power Consumers:

In many industrial regions, there are different electricity tariffs for peak and off-peak periods. In some cases, the price difference between peak and off-peak can be significant. By charging the ESS during off-peak hours and discharging during peak hours, overall electricity costs can be reduced. Additionally, this approach provides the benefit of having a backup power source.

Dynamic Capacity Expansion:

Some electricity consumers may have occasional peak demand that exceeds the capacity of transformers or generator units. By using ESS, this peak demand can be met without the need of enlarging the transformer or addition of extra genset.

Mobile Energy Storage and Emergency Power Backup:

Mobile ESS can be used for emergency power supply and redundancy backup.

Reduced Diesel Genset Fuel Consumption:

By using ESS in conjunction with diesel generator units, fuel consumption can be reduced, and the overhaul period for diesel engines can be extended. Additionally, energy storage cabinets can serve as uninterruptible power supplies, ensuring that critical loads such as computers and elevators do not suffer power loss in the event of genset failure.

Catering High Power, Short-Duration Loads:

Many industrial equipments have sudden big surge load for short durations. By installing ESS in front of such equipment, such surge power can be met without the need for additional utility line or larger transformers/generator units, saving cost and time.

Backup Power Supply:

Provides uninterrupted power supply in case of sudden power outages.

Technical Parameters

Model	VPESS-215-100	VPESS-430-100	VPESS-630-630
	DC side input		
Maximum input power (kW)	100	100	630
Maximum input current (A)	190	190	1200
Operating voltage range (V)	DC600V ~ 900V		
Number of DC input routes	1	2	4
	Battery module parameters		
Battery core type	lithium iron phosphate 280A	lithium iron phosphate 280A	lithium iron phosphate 206A
Single battery cabinet power (kWh)	215	215	158
Number of battery cabinets	1	2	4
Compound mode	24S*10*1	24S*10*2	24S*10*3
Rated voltage (V)	768		
Rated capacity (kWh)	215	430	630
Rated charge and discharge rate	0.5C	0.25C	1C
Cycle life	Capacity≥80%. at 5,000 cycles or after 5 years		
	Output (grid connected)		
Mode of connection	3+N+PE	3+N+PE	3/PE
Output rating (kW)	100	100	630
Overload capacity	1.1 times for 10min, 1.2 times for 1min		
Rated output voltage (V)	230/400	230/400	400
Rated power grid frequency (Hz)	50/60		
Power grid voltage range	400V(-20%~+15%)		
Power grid frequency range (Hz)	50/60±2.5Hz		
Maximum output current	145A	145A	1000

(A)			
Power factor	-0.99～+0.99		
Maximum total current harmonic distortion rate	≤5%（Rated power）	≤5%（Rated power）	≤2%（Rated power）
Isolation method	Isolation transformer (optional)	Isolation transformer (optional)	Isolation transformer
	Output (off-grid)		
Output rating (kW)	100	100	630
Maximum vision in power (VA)	110	110	693
Rated output voltage (V)	230/400	230/400	400
Rated frequency	50/60		
	Conventional Parameters		
Features & Protection	Grid overvoltage protection and undervoltage protection. High frequency and low frequency protection; DC over / undervoltage protection. DC overprotection. DC polarity reverse protection. AC overcurrent protection. Overtemperature protection. Lack of phase protection. Anti-islanding protection. AC incoming line phase sequence error protection. Communication fault protection. IGBT protection. Emergency stop protection function. BMS battery fault protection.		
Operating temperature range	-20℃～+50℃（> 45℃Need to reduce power）		
Operating humidity range	0%RH-95%RH，No condensation		
Maximum working altitude (m)	4000（>2000m Need to reduce power）		
Cooling-down method	Industrial grade air conditioning (battery compartment) / intelligent air cooling (control compartment)		
Display	EMS		
Communication	CAN/RS485/Ethernet		
Weight (kg)	2980	5200	16000
Size W*D*H(mm)	1250*1350*2280	2500*1350*2280	6058*2438*2591
Levels of protection	IP54		