MPMC GROUP OF COMPANIES

Generator Sets | Lighting Towerts | Hybrid Energy Solutions | BESS | Reefer Container Gensets

WWW.MPMC-GROUP.COM

MPMC USA | MPMC UK | MPMC ZA | MPMC UAE | MPMC CN

MPMC POWERTECH CORP.

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*All information in this documents is substantially correct at time of printing and may be altered subsequently.

MPMC
BEYOND ENERGY

MPMC HBD®

Battery Energy Storage System

MPMC POWERTECH CORP.

World-leading distributed hybrid energy solution provider

World-leading
Distributed Hybrid Energy Solution Provider

In order to provide better mobile hybrid energy solutions, MPMC POWERTECH CORP. designs, manufactures and markets a wide range of state-of-the-art LiFePO4 battery energy storage solutions by optimizing electrochemistry power and hybrid energy system integration. Our products help to realize self-sufficient energy supply in residential, commercial, industrial energy storage, etc.

MPMC POWERTECH CORP. (Security Code 832266) is an international high-tech enterprise established in the Year 2008. As a world-class mobile hybrid energy solution provider, MPMC specializes in providing intelligent generator sets, mobile lighting towers, distributed All-In-One hybrid micro-power stations and other smart cloud energy management solutions to worldwide.

Taking full advantages of its independent R&D, productive intellectual property, full-process manufacturing and global marketing & services,

MPMC has established holding subsidiaries and offices in the USA and China, and have representatives in UK, South Africa and UAE.Up to now, with products sold to more than 120 countries & regions, distributors of MPMC have covered a wide range of countries & regions in the Americas, Europe, Oceania, Africa, Middle East and Southeast Asia.

MPMC has also co-founded a joint laboratory of distributed smart hybrid energy technology with TONGJI University, one of the most prestigious universities in China. By utilizing the self-developed APP named "More Power Cloud", the laboratory is striving to conduct various technical researches on global hybrid intelligent life-cycle management.

To become a leader in mobile hybrid power solution, with more reliable, more intelligent and more attentive services, MPMC makes every endeavour to provide the most timely, customized and comprehensive solutions.
of smart hybrid energy to the global customers.

With more reliable, more intelligent and more considerate service, MPMC provides "More Power, More Confidence" to global customers.

120 Countries
Products are exported to 120 countries

70+ Types
4 categories of 70+ types of products

60+ Distrubutors
Over 60 global distrubutors

50 Specialists
50 experts focused on different applications

144 Patents
131 invention & utility model patents
5 appearance patents
and 8 software copyrights

Expert For Rental

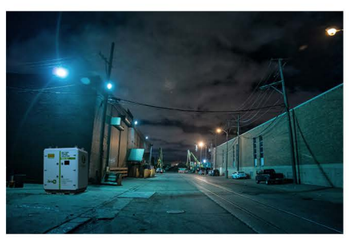
Micro Battery Energy Storage

Large Capacity

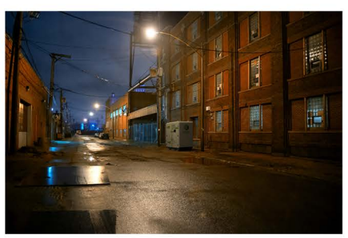
Containerized Battery Energy Storage

Power range: 50kW
Capacity: 100kWh
Application: Manufacturing

Power range: 100kW
Capacity: 200kWh
Application: Backup Power



Power range: 45kW
Capacity: 45kWh
Application: Load Shifting



Power range: 500kW
Capacity: 1000kWh
Application: Energy arbitrage

Power range: 250kW
Capacity: 1000kWh
Application: RV campground power

Power range: 250kW
Capacity: 1000kWh
Application: Humanitarian assistance

MPMC HBD® BESS Your Clean Energy Solutions

Expandable System Capacity: Small/Medium/Large power
Customized roof from MPMC cabinet to ALL-SIZE container

MPMC HBD® Series is a new range of secure integrated lithium-ion battery energy storage system. This compact, mobile and modular solution includes batteries, PCS, HVAC, fire protection and auxiliary components, External PV power and AC generator are available for option.

HBD® is mainly developed for no emission and low noise, reducing the dependence on grid, Improving power supply quality and ensuring the power consumption of emergency load.

According to various power demands, MPMC battery energy storage system is more compact, efficient and flexible. The system capacity of this HBD® battery energy storage system is up to 2500kWh. And we also design a specific silent canopy for the BESS with a capacity below 100kWh. It integrates up-market battery system, battery management system and operation monitoring system in this small unit, with excellent lithium-ion battery consistency ensures 6000 times @ 0.5C of life cycles for 10 years, meeting the most demanding applications.

~2.5 MWH

ZERO EMISSIONS

ZERO NOISE

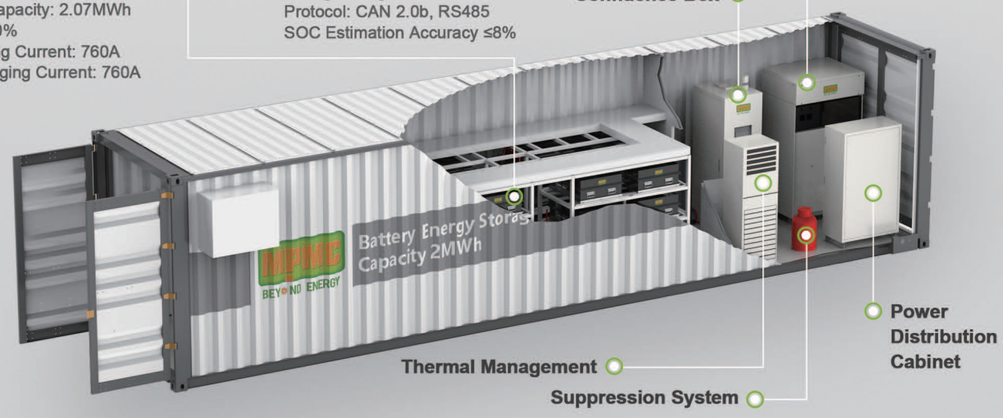
MOBILE

Battery Panels

Quantity: 11
Panel Voltage: 672V
Total Capacity: 2.07MWh
DOD 90%
Charging Current: 760A
Discharging Current: 760A

BMS

Power Supply: 24VDC
Voltage Range: 9V - 36V
Protocol: CAN 2.0b, RS485
SOC Estimation Accuracy ≤8%

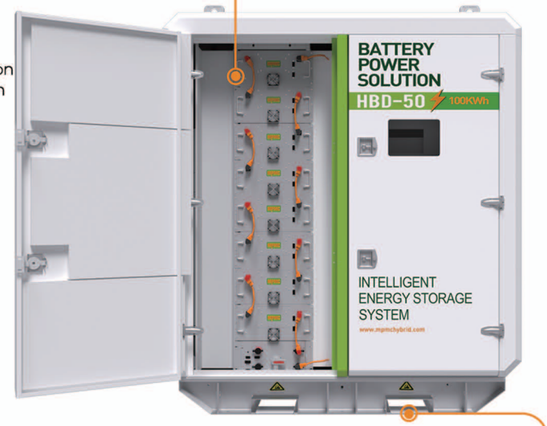


What would you expect in MPMC HBD® BESS

Our products comply with MPMC self-owned sheet metal surface pre-treatment and coating technology, adopting Akzo Nobel powder coating that ensures 3 years outdoor warranty.

LiFePO4 Batteries
Excellent battery consistency.
4000 times under charge / discharge
@1C once per day @ DOD 90%

MPMC BMS
Temperature Protection
Short Circuit Protection
Resistance Protection
Overload Protection
Overcharge Protection
Over-discharge Protection
Under-voltage Protection
Over-current Protection

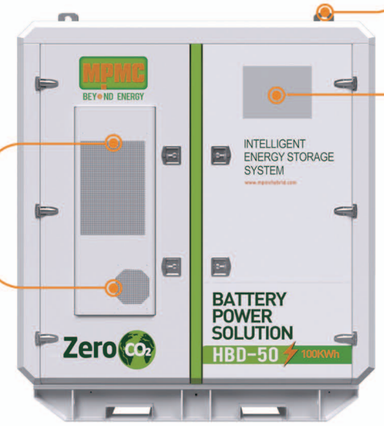


Plug & Play.

MPMC EMS
Visualization: LCD screen
& simple UI for monitoring.
Power Source:
PV/Wind/Diesel/Grid
One stop platform: Web & APP

4 forklift pockets
4 removable lifting holes

HVAC
Operation mode:
Refrigeration / Heating
Cryogen: R134a



Fire Protection
Gas purity: > 99.6%
Discharge time: < 10s
Backup power: Yes

Built-in EMS

Renewable Energy

<3HRS Fast Recharge

6000 Cycle Life@0.5C

High Power Density

Mobility oriented

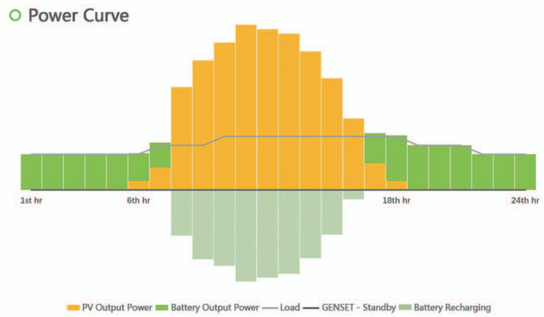
Modes of Use

Micro-grids

MPMC integrated EMS and PCS present a powerful and effective solution in helping the operators decide on power source priorities under different load demands, and functioning critical loads and other loads independently.

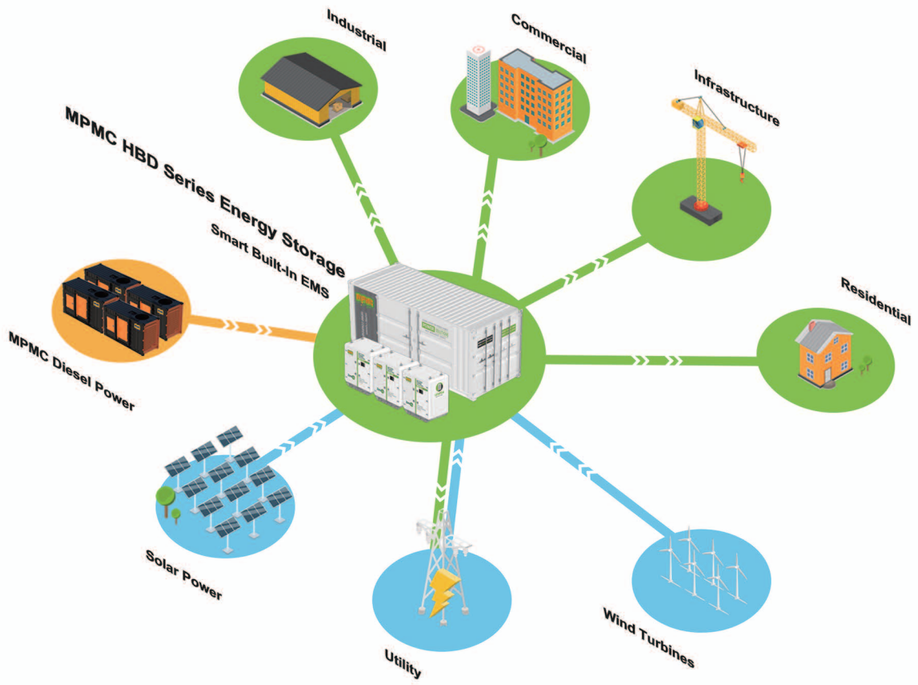
From generating and absorbing power, to regulating real and reactive power quality, MPMC HBD Series energy storage system serve a variety roles within a micro-grid as both prime power and backup power.

It is perfectly compatible with solar power, wind turbines, diesel generators and gas generators, on & off grid.



Benefits of adding MPMC HBD® BESS to Micro-grids solution

1. Efficient and flexible, suitable for any hybrid renewable energy generation systems
2. Realize self-supply power consumption to reduce dependence on utility grid
3. The energy storage system can realize the black start of the micro-grids
4. Reactive power compensation, APF improves power quality
5. Make up for the negative impact of distributed output randomness on grid security and economic operation, and can participate in auxiliary services such as peak regulation, frequency regulation and voltage regulation of power grids.



Modes of Use

Customer Self-supply

If you are a small / medium business owner, or a householder who's ready to go green, MPMC HBD Series Energy Storage System will be your best bud.

MPMC built-in EMS allows operators to run loads through PV or other hybrid energy systems and store the extra power in LiFePO4 battery storage system, which greatly reduces the dependence on grid utility and lowers the cost of electricity consumption with peak power shaving, load shifting and load sharing.

Case Study

Energy Arbitrage with HBD-500-1000
Location: SA, Australia
Solar Feed-in: 8 cents/kWh exported

Peak-Valley	Times	Price (AUD/kWh)
Off-Peak	1:00-5:59	0.155
Peak 1	6:00-9:59	0.320
Shoulder	10:00-14:59	0.195
Peak 2	15:00-1:00	0.320

* Only apply to workdays

Charge/Discharge HBD-500-1000 once per day

270MWH	$44,550	10 YEARS
Annual Discharge	Revenue Per Year	Payback Period

Charge/Discharge HBD-500-1000 twice per day

540MWH	$78,300	6 YEARS
Annual Discharge	Revenue Per Year	Payback Period

Go with PV 500kW

- Average Sunshine 1528h/year
- HBD-500-1000 Charge from Grid & PV Discharge Twice per day
- HBD-500-1000 Annual Revenue of energy arbitrage:
  Peak to Valley $60,480
  PV Self-supply $193,484
- Solar Feed-in: $45,863/year

4.0Y Payback period

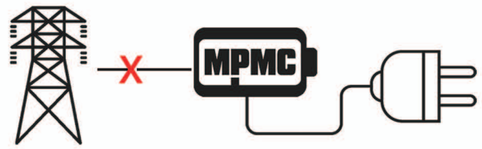
CO_2 487294kg CO_2 | 2430 Trees | 194918kg Coals

Modes of Use

Power More

Backup Power

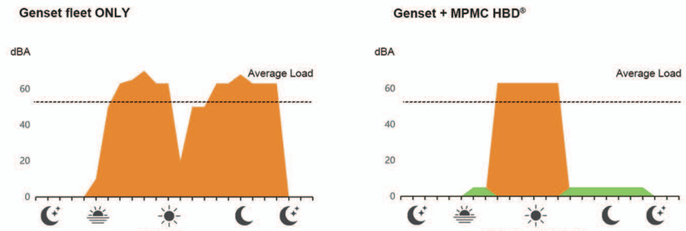
MPMC HBD® Series energy storage system has been a proven solution for grid stabilization functionalities such as Contingency Reserve, islanding and micro-grid ready capabilities, utility power emergencies etc. The response time can be lower than 20ms during power outages.



Quiet Power

MPMC HBD® Series make the best case of power generation solutions for public services.

They can be fully charged less than 3 hours either with diesel genset, utility grid or other power source, and discharge to generate stable electricity for 9 hours with ≤ 5 dBA noises and 0 emissions.



Impact Load

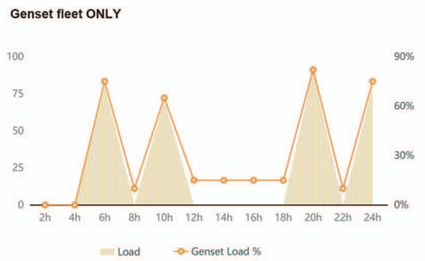
Applying diesel generators for power sectors like mobile cranes, urban electric vehicle charging stations could end up in shortening the service life of the generator sets for engine habits of impact load leads to carbonisation, high fuel consumption and possible fuel leakage as they serve at low load (0% - 30%) for most of the time.

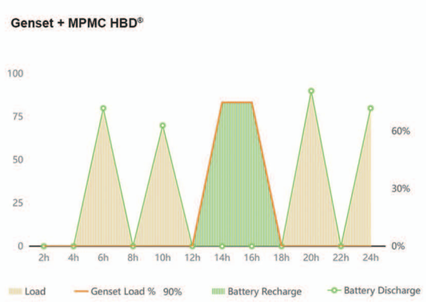
MPMC HBD® Series help to improve the lifespan of diesel generator sets and power generation efficiency, lower fuel consumption, reduce carbon emissions and provide stable reliable electricity.

HBD-100-200 potential saving *

133,875L FUEL/Y

374,163KG CO_2 /Y





Specification Data

Series -A

Model	HBD-30-60	HBD-50-100	HBD-100-200	HBD-250-400	HBD-500-1000
Rated Power(AC Output)	30KW	50kW	100kW	250kW	500kW
Rated Voltage/Phase	400Vac/3P	400Vac/3P	400Vac/3P	400Vac/3P	400Vac/3P
Frequency	50Hz	50Hz	50Hz	50Hz	50Hz
Battery Cluster Voltage	614.4VDC	358.4VDC	716.8VDC	716.8VDC	716.8VDC
Battery Cluster Voltage Range	537.6~691.2VDC	313.6~403.2VDC	627.2~806.4VDC	627.2~806.4VDC	627.2~806.4VDC
Energy Capacity@25℃	61.44kWh	100.3kWh	200.7kWh	401.4kWh	1003.5kWh
Battery Model	MF51100	MF51280	MF51280	MF51280	MF51280
Pack Capacity@25℃	5.12kWh	14.336kWh	14.336kWh	14.336kWh	14.336kWh
Pack Qty.	12pcs	7pcs	14pcs	28pcs	70pcs
Cycle Life@90%DOD	4000times	6000times	6000times	6000times	6000times
PCS Model	PWS2-30M-EX	PWS2-30M-EX	PWS1-100K-EX	PWS1-250KTL	PWS1-500KTL
PCS Rated Power	30KW	30KW	100kW	250kW	500kW
Battery Voltage Range	150~750VDC	150~750VDC	500~850VDC	500~850VDC	600~900VDC
PCS Qty.	1pcs	2pcs	1pcs	1pcs	1pcs
Transformer	Option,External independent cabinet				
STS	Option,Built-in				
Control System	Local EMS(Remote for option)				
Cooling System	HVAC				
Fire Fighting System	FM200 or NOVEC1230(Standard without certification , CE/UL for Option)				
Operating Temp.	-20~50℃				
Altitude	≤3000m				
Dimensions (L x W x H)	1950*1130*2250mm	2250*1130*2250mm	2250*2250*2250mm	2950*2250*2250mm	20'HC
The loading capacity	6units/20'GP 12units/40'GP	5units/20'GP 10units/40'GP	2units/20'GP 5units/40'GP	2units/20'GP 4units/40'GP	/
Weight	1.7t	2.1t	4.1t	6.8t	18t

Series -R

Model	HBD-200-100	HBD-400-200	HBD-600-300	HBD-60-60	HBD-120-120	HBD-150-150	HBD-230-230	HBD-360-360	HBD-500-500
Rated Power(AC Output)	200KW	400KW	600KW	60KW	120KW	150KW	230KW	360KW	500KW
Rated Voltage/Phase	400Vac/3P	400Vac/3P	400Vac/3P	400Vac/3P	400Vac/3P	400Vac/3P	400Vac/3P	400Vac/3P	400Vac/3P
Frequency	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz
Battery Cluster Voltage	768.0VDC	768.0VDC	768.0VDC	614.4VDC	614.4VDC	768.0VDC	768.0VDC	716.8VDC	716.8VDC
Battery Cluster Voltage Range	672~864VDC	672~864VDC	672~864VDC	537.6~691.2VDC	537.6~691.2VDC	672~864VDC	672~864VDC	627.2~806.4VDC	627.2~806.4VDC
Energy Capacity@25℃	99.84kWh	199.68KWh	299.52kWh	61.44kWh	122.88kWh	153.6kWh	230.4kWh	358.4kWh	501.76kWh
Battery Model	MF51130	MF51130	MF51130	MF51100	MF51100	MF51100	MF51100	MF51100	MF51100
Pack Capacity@25℃	6.65kWh	6.65kWh	6.65kWh	5.12kWh	5.12kWh	5.12kWh	5.12kWh	5.12kWh	5.12kWh
Pack Qty.	15pcs	30pcs	45pcs	12pcs	24pcs	30pcs	45pcs	60pcs	98pcs
Cycle Life@90%DOD	5000times	5000times	5000times	4000times	4000times	4000times	4000times	4000times	4000times
PCS Model	PWS1-250K-EX	PWS1-500KTL	PWS1-630KTL	PWS2-30M-EX	PWS2-30M-EX	PWS1-150K-EX	PWS1-250K-EX	PWS1-500KTL	PWS1-500KTL
PCS Rated Power	250kW	437.5kW	630kW	30kW	30kW	150kW	250kW	375.6kW	500kW
Battery Voltage Range	500~850VDC	600~900VDC	600~900VDC	150~750VDC	150~750VDC	500~850VDC	500~850VDC	600~900VDC	600~900VDC
PCS Qty.	1pcs	1pcs	1pcs	2pcs	4pcs	1pcs	1pcs	1pcs	1pcs
Transformer	Standard , Built-in								
STS	Standard , Built-in								
Control System	Local EMS(Remote for option)								
Cooling System	HVAC								
Fire Fighting System	FM200 or NOVEC1230(Standard without certification , CE/UL for Option)								
Operating Temp.	-20~50℃								
Altitude	≤3000m								
Dimensions (L x W x Hmm)	2250*2250*2250	2950*2250*2250	3950*2250*2250	1950*1130*2250	1950*1630*2250	2950*2250*2250	3950*2250*2250	20'HC	20'HC
The loading capacity	2units/20'GP 5units/40'GP	2units/20'GP 4units/40'GP	1units/20'GP 3units/40'GP	6units/20'GP 12units/40'GP	3units/20'GP 6units/40'GP	2units/20'GP 4units/40'GP	1units/20'GP 3units/40'GP	/	/
Weight	3.6t	5.8t	8.2t	1.7t	3.4t	6.8t	8.2t	18t	18t

CASE STUDY

K-loader
Rated power: 3 units*11kW
Starting current: 60kW
Operation: 10h/day, 25times*3mins/day

Construction / Rental

MPMC Diesel Genset
Rated Power 80kW

+

MPMC HBD® BESS
100kW - 80kWh

■ Diesel Only

10 hours/day with 75% of time running at low load, consuming 26,640L fuel per year.

3h/day running

GENSET + HBD® BESS

↓ **54.1%**
Genset + HBD® Combo
Fuel & CO_2 Reduction Ratio

65kW
Genset Average Output
Genset 80kW

81%
Genset Average Load

■ Diesel + BESS

Genset charges the BESS for 1 hour twice a day; BESS supply power for the K-loader. Fuel consumption is reduced to 12,240L per year.

Saving $16,105/Year
ROI in 3.3 Years

Annual Potential Saving

32,314kg/CO_2

12,240L

CASE STUDY

Tower crane
Rated power: 45kW
Starting current: 133kW
Operation: 10h/day with 2h @100% load,
1h @ 75% load, 2h @ 50% load,
3h @ 25%, 2h @ 0% load.

Construction / Rental

MPMC Diesel Genset
Rated Power 200kW

+

MPMC HBD® BESS
150kW - 400kWh

■ Diesel Only

10 hours/day with 65% of time running at low load, consuming 13,860L fuel per year.

4h/day running

GENSET + HBD® BESS

↓ **37.9%**
Genset + HBD® Combo
Fuel & CO_2 Reduction Ratio

158kW
Genset Average Output
Genset 200kW

79%
Genset Average Load

■ Diesel + BESS

Genset charges the BESS for 1.5 hour twice a day; BESS supply power for the welding machine with output @24kW. Fuel consumption is reduced to 7,776L per year.

Saving $6,805/Year
ROI in 4.3 Years

Annual Potential Saving

155,866kg/CO_2

59,040L

CASE STUDY

PV Panels
100kWp

+

BESS
250kW - 400kWh

Charging Gun DC Charging Pile
Rated power 60kW*10

Location: Australia
ONLY 2 hours to recharge

Valley: $0.109 USD/kWh
Peak: $0.224 USD/kWh
Shoulder: $0.137 USD/kWh

Saving $88,019 USD/year
Period of ROI 2.8 Years

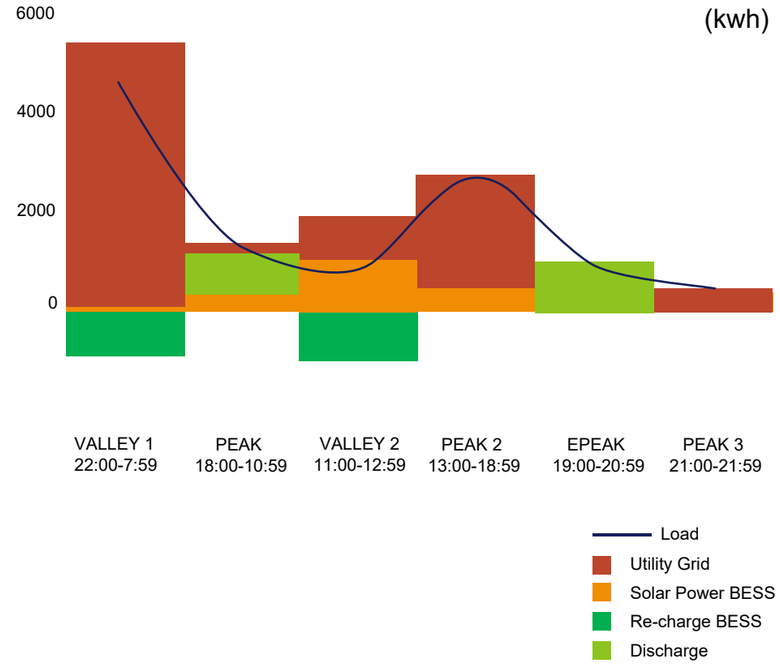
EV CHARGING

SOLAR + BESS

SELF-CONSUMPTION

ARBITRAGE SOLUTION

CASE STUDY



Location: South Australia

Valley: $0.056 USD/kWh
Peak: $0.1335 USD/kWh
EPeak: $0.1787 USD/kWh

Saving $164 USD/day,
$206,575 USD/year

Period of ROI 4.47 Years

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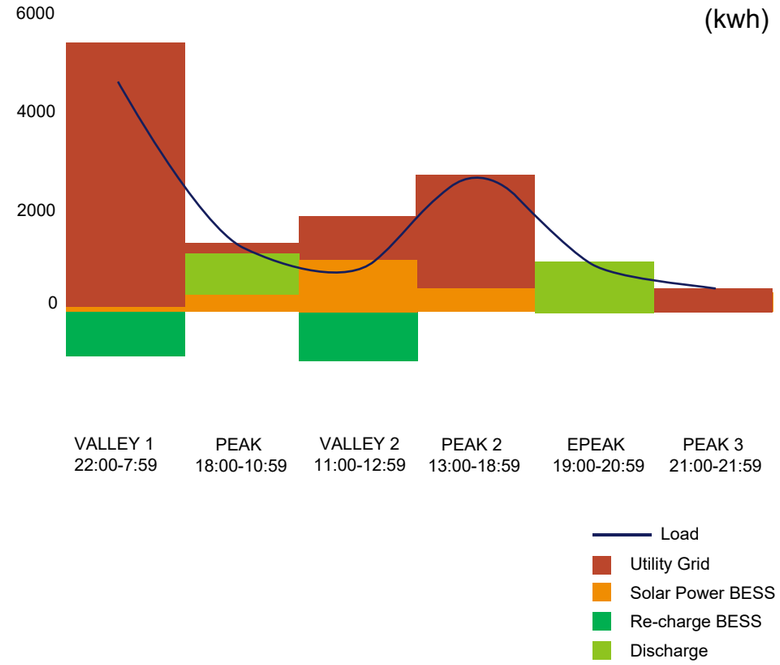

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