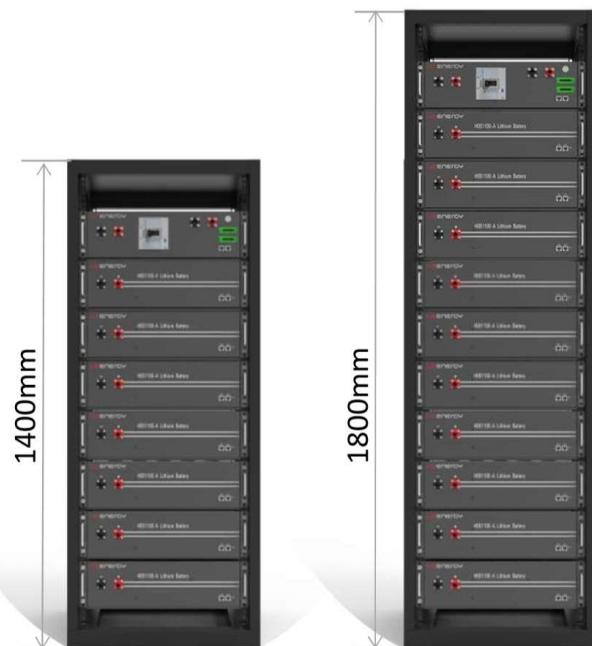




# EnSmartBuild HVB System





## **EnSmartBuild - High Voltage Battery (HVB) System**

### **Why Entrust Microgrid?**

EnSmartBuild HVB, from Entrust Microgrid, is a smart, innovative power system for buildings, with all the benefits of renewable energy and energy storage at maximum power efficiency, cutting energy bills, saving money and providing truly scalable low carbon energy solutions.

Our world leading patented technology can be adapted to suit multiple applications including: local government, education and healthcare organisations, private sector businesses, warehousing and distribution centres, factories, supermarkets, waste management & recycling facilities, EV charging hubs and more.

### **The Problem:**

Commercial consumers are increasingly concerned about rising energy costs as well as their overall impact on the environment. Many businesses are responding to these challenges by installing solar PV systems to generate lower cost, renewable and sustainable electricity as added energy security.

However, the current practice of generating solar PV power and exporting it to the grid for a low tariff income, circa 5.5p/kWh, provides very limited benefits and delivers only marginal rates of return of between 12 and 20 years.

### **Our Solution:**

EnSmartBuild HVB uses smart technology to supply solar PV power at the highest possible power efficiency, for both direct use at source, and indirectly through storage in either lead-carbon or lithium ion batteries, of between 30kWh and 1MWh, for use later on.

This enables power supply to match demand, providing access to a clean, reliable source of renewable electricity, that

- lowers use of grid electricity, particularly at peak hours,
- lowers energy costs, and
- lowers business carbon emissions

With these advantages our EnSmartBuild HVB system boosts return on investment – typically within just 7 years!

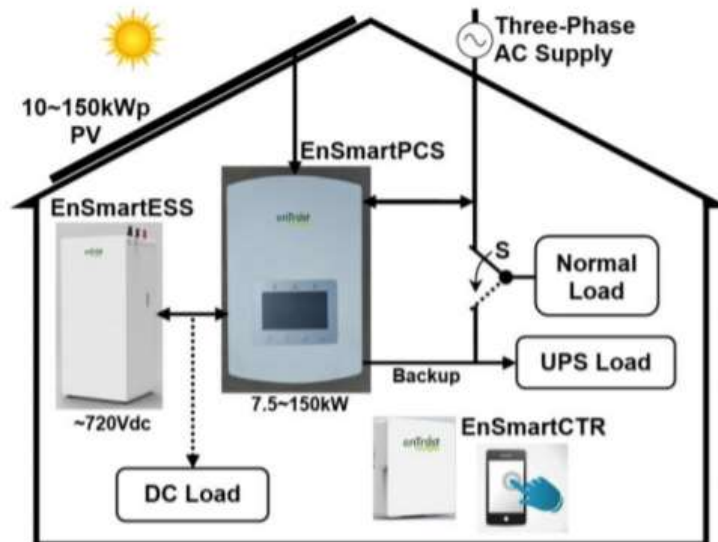
As such, EnSmartBuild HVB is one of the most efficient, cost-effective power systems providing low cost, renewable electricity for commercial use for customers who want to cut energy costs and their carbon footprint.

### **Product Description**

As illustrated in the EnSmartBuild HVB System schematic, the EnSmartPCS (smart power conversion system) imports power from an on-site solar PV array, to charge and discharge a set of high voltage batteries (EnSmartESS), and is connected to the mains



grid, supplying seamless power for uninterrupted power supply (UPS) loads, such as lighting and security systems, and electrical equipment, through a backup power output.



*EnSmartBuild HVB System Schematic*

The batteries (EnSmartESS) can be also charged from mains power (grid) through the EnSmartPCS, taking advantage of cheap rate off-peak electricity at night. Power for normal loads, such as lighting, can be provided directly by either the mains grid or solar PV power through EnSmartPCS.

EnSmartBuild HVB also supports high voltage DC loads, such as hot water and space heating, heat pump for air conditioning or refrigeration, EV charging, and more, which can be connected to the battery terminals through specific DC/DC converters.

The EnSmartPCS can also export excess power to the mains grid when surplus solar PV power is available after meeting the power demand for charging the batteries and supplying the loads (UPS, DC and normal loads).

If mains power is cut off, solar PV power (if available) supplemented with power from the batteries can sustain commercial loads for a few hours or longer depending on the lifestyle of the user.

EnSmartBuild HVB is managed by a smart controller, EnSmartCTR, which can be accessed remotely through PC or mobile phone (smart phone app).

### **System Benefits**

EnSmartBuild HVB has numerous benefits for cost conscious commercial customers looking to cut their energy bills.

- ✓ 24/7 power supply for your business, even when mains power is cut off
- ✓ Smart energy management to reduce reliance on mains grid and maximise your benefits
- ✓ Significantly reduced grid connection costs
- ✓ Maximises self-consumption of lower cost solar PV energy



- ✓ Charge batteries from off-peak electricity and solar PV electricity
- ✓ Smart control & monitoring through your PC or smart phone with remote access
- ✓ Modular system with choice of different batteries (Pb-C or Li-Ion) and outputs
- ✓ Supports DC loads including commercial / public EV charging
- ✓ Competitive pricing and product warranties
- ✓ Return on investment within 7 years!

### **Market drivers**

Why invest in an EnSmartBuild HVB system? To address energy security, affordability and sustainability.

- Increasing cost of mains electricity (grid)
- Energy security (security of supply)
- To enable up to 100% self-consumption of solar PV power at low grid connection capacity
- Use of low carbon, renewable energy generation (sustainable solution)

### **Key users**

EnSmartBuild HVB supports electricity consumers that want to cut their buildings energy costs and operate more sustainably.

- Public sector: such as schools, colleges, universities, hospitals and local authority government buildings
- Private sector: such as businesses, shops, supermarkets, warehousing and distribution centres, factories, waste management & recycling centres
- EV charging: such as public EV charging hubs operated by charge point operators

EnSmartBuild HVB is available as a complete solution (system) or we can provide our products to allow customers to 'retrofit' our solution into existing systems, with or without solar PV for example.

### **Summary**

EnSmartBuild HVB is a highly innovative, world leading solution for buildings, enabling customers to maximise use of solar PV generation, either for immediate consumption or in storage for use later on, benefitting from low cost renewable, around the clock electricity, to meet their demands.

A fully sustainable solution, EnSmartBuild HVB is the smart choice for customers looking to make significant cost savings, reduce carbon emissions and achieve long lasting returns on their investment – typically within 7 years!

**Entrust... Technology you can trust!**



## System Specifications

We offer a broad range of system specifications. If the specification you need is not covered below, please contact us. We offer a consultancy service for larger or turn-key projects and would be happy to provide a system design to suit your expectations.

General System Specifications (three-phase HV system)

EnSmartBuild Medium HVB System		Parameters				
Battery	Type	LiFePO <sub>4</sub> or Pb-C				
	Voltage Range (Vdc)	352~600				
	Max Dis/Charging Power (kW)	30	50	100	120	150
	Max Dis/Charging Current (A)	85	142	285	340	425
	Recommended Capacity (kWh)	90	150	300	360	450
Grid Side	Rated Power (kW) (Three-Phase)	30	50	100	120	150
	Voltage (Vac) / Frequency (Hz)	400 / 50				
	Voltage/Frequency Range (Vac/Hz)	360~440 / 47~51.5				
Backup Output	Rated Power (kW)	30	50	100	120	150
	Overload Capacity	110%@10 min 120%@1 min				
	Transfer Time (ms)	Less than 20				
PV Input	Recommended Power (kWp)	30	50	100	120	150
	Voltage Range (Vdc)	480~800				
	MPPT Number	Central PV controller				

### Note:

- EnSmartBuild Large HVB System is available on request
- 2 or more EnSmartPCS can be installed in parallel so that large capacity batteries may be installed and charged quickly.
- Feasibility study and system design are generally required for large system project development.
- When the main grid power is cut off, the total AC power loads (UPS loads + normal loads) must be within the power capacity of the backup output, and you may want to switch off some less important normal loads so that the batteries can sustain the UPS loads for a longer time.

## Contact Us!

To find out more about the EnSmartBuild HVB system, please contact us.

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