



Watt4Ever Circular Battery Energy Storage System Model C system

General description

Battery energy storage system using second life batteries.

Sustainable, powerful, and smart, the Watt4Ever system is designed to optimise the way businesses use energy. Through peak shaving, self-consumption of generated renewable energy, or as a simple means of backup power, the Watt4Ever system offers energy autonomy in a sustainable way.

Applications for our customers

The Watt4Ever battery system can:

- ✓ Reduce consumption peaks, generating savings on energy bills and postponing investments in new transformers, grid extensions, etc.
- ✓ Enable the integration of more EV chargers and photovoltaic generation. By reducing peak consumption and production, buildings can accept more production and loads without replacing equipment.
- ✓ Generate savings on energy bills by storing excess PV consumption.
- ✓ Ensure an uninterrupted power supply, avoiding diesel generators and conventional inverters built with lead-acid batteries.

The battery

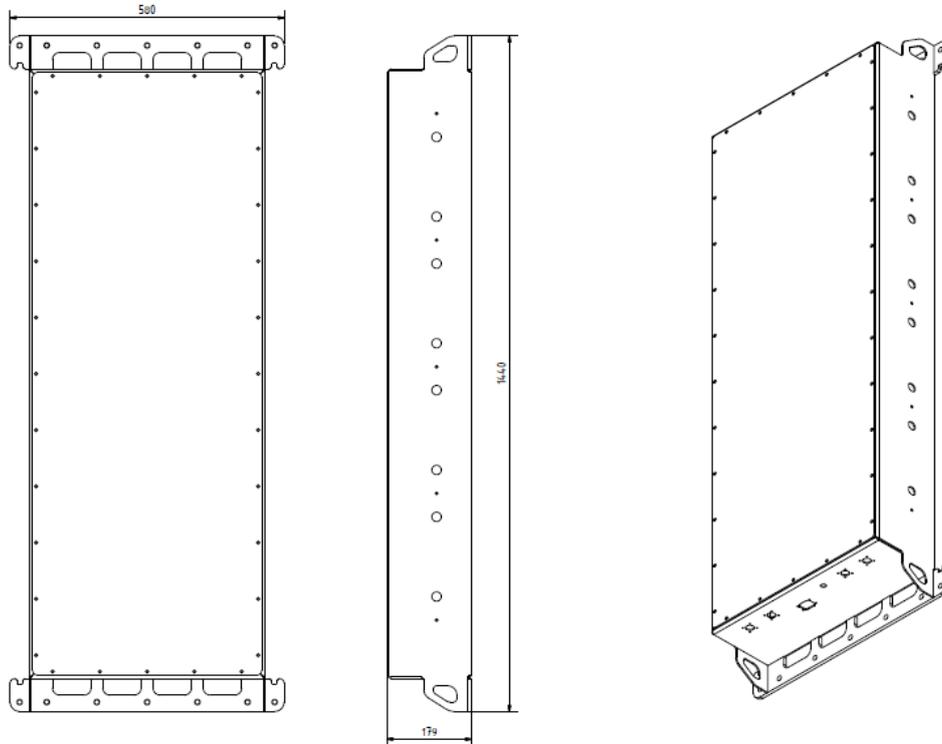


Image 1: Battery system dimensions

The system uses CATL's Nickel-Manganese-Cobalt (NMC) modules, recovered from electric vehicle applications, designed and built for optimum performance and endurance.

Watt4Ever uses battery modules from electro-mobility, which have been used little or not at all ("zero life"). As a result, Watt4Ever batteries have a superior performance and life span.

- ✓ The 18kWh batteries can deliver enough power to run energy-intensive applications for several hours
- ✓ Systems designed with cabinet for outdoor placement, or without, for placement in technical rooms

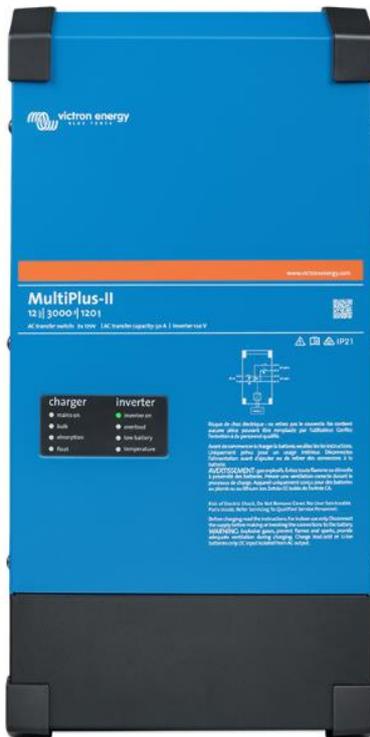


Image 2: Victron Multiplus II bi-directional inverter

- ✓ Cell balancing
- ✓ Overvoltage control
- ✓ Overcurrent control
- ✓ Overheating control

The system is globally managed by the Victron Energy Management System (EMS), which integrates all the necessary functions for power control, monitoring and system security.

Monitoring and management services

Included in the standard Watt4Ever package is Victron's monitoring service, Victron Remote Management (VRM)¹. The customer has access to a web interface displaying the main functional parameters, such as

- ✓ Power
- ✓ Voltage
- ✓ State of charge
- ✓ Temperature
- ✓ Alarms

Power conversion system

For its systems Watt4Ever offers Victron branded systems, tested for their performance, durability and versatility.

The power conversion systems are sized to meet the customer's power and voltage requirements. Standard output voltage is 230V single or three phase.

The system can be connected in parallel, to optimize energy consumption, or in series to provide uninterrupted power to critical equipment.

The control system

With years of experience in second life batteries, Watt4Ever has created its own control systems specifically for second life batteries used in industrial applications.

The batteries are managed by **Watt4Ever's Battery Management System (BMS)**, which includes the following functions:

¹ Demonstrated online here: <https://www.victronenergy.fr/panel-systems-remote-monitoring/vrm>

- ✓ Status buttons (bypass, emergency stop, safety stop)

The tracking system also allows historical data to be extracted from the battery usage.

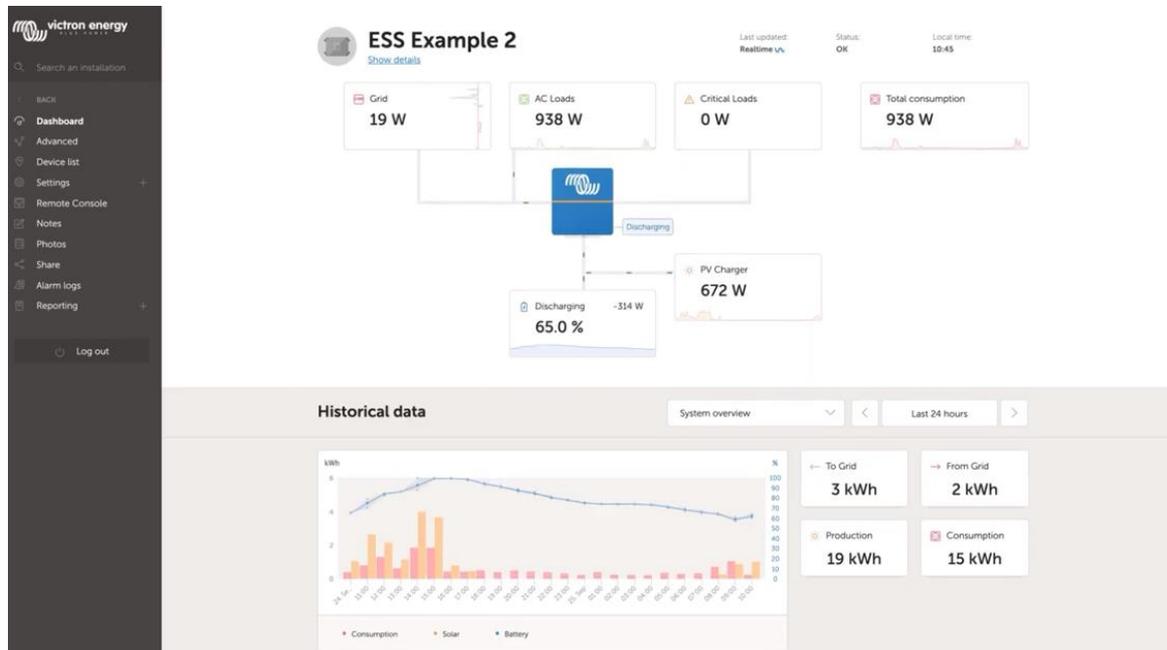


Image 3: User interface of the Victron Remote Monitoring platform

As an option, Watt4Ever also offers a service in which Watt4Ever actively manages the BESS on behalf of the customer, providing expertise for applications such as peak shaving and system monitoring.

In addition to this option, the customer has access to OptiSchedule, ReVolta's forecasting and optimisation software module, which enables the prediction and implementation of an optimal battery management programme in real time.

Guarantees and maintenance

Watt4Ever provides:

- ✓ A minimum of 70% SoH guaranteed for 10 years or 4,500 cycles, and
- ✓ A 5-year warranty against defects for the entire system.

For more information on warranties, see the attached terms and conditions

Technical data sheet

Watt4Ever Model C battery pack	
Technical Data Sheet	
Battery	
Cell chemistry	NMC
Modularity	Extensible to 252Wh (option)
Temperature range	-5°C/+40°C
Battery losses	1-2%
Performance characteristics	
Nominal capacity	18kWh
Depth of Discharge	80%
DC Voltage	48V
Max C-rate	0.5C without additional cooling, 1C with added cooling
Round-trip pack efficiency	Approx. 98%
AC/DC Inverter	
Brand	Victron Quattro or Victron Multiplus II
Backup capacity	Yes
Power	3 - 45kVA
Output AC voltage	230V (N+L) / 400V (L1 + L2 + L3 + N)
Inverter losses	2-3%
Control system	
Battery Management System	Daisy-chained system with multiple Cell Management Units
BMS communication protocol	CANBus
Energy Management System	ReVolta EMS on request
EMS communication protocol	Modbus TCP
Connectivity	Wifi or ETH or 4G (optional)
Housing	
Casing	Custom-made metal cabinet
Placement	In machine rooms with sufficient fire protection or outdoors in special cabinet
Dimensions	1440x580x179
Openings	Front cabinet
Colour	RAL-9010 (Pure White)
IP rate	IP54
Weight (approx.)	110kg
Safety features	
Safety standards	EU LV Directive, Electric safety approved under Belgian electric safety regulations (RGIE)
Fire suppression system	Inert gas generator system Salgro HEX
 <p>WATT4EVER BATTERIES FOR LIFE</p>	

Safety at the heart of our concerns

Based on its experience with second-life batteries, Watt4Ever puts safety at the heart of its system design.

Re-used battery modules undergo a strict quality control procedure.

Fire safety is ensured by the design of the system, which includes:

- 1) Active supervision of the batteries via the BMS
- 2) A fire extinguishing system with a specialized aerosol agent for battery fires

Why choose Watt4Ever's circular BESS?

- ✓ Watt4Ever is a 100% Belgian startup, developing a unique know-how on batteries in Belgium.
- ✓ Watt4Ever's circular BESS are made from circular batteries, with a reduced environmental footprint. For every 100kWh of battery capacity reused rather than manufactured, Watt4Ever batteries avoid:
 - 11t of grey CO2 emissions
 - 1t of hazardous waste
 - 555 kg of cobalt
 - The impact on water reserves of lithium extraction
- ✓ Watt4Ever systems are manufactured with high quality components, which guarantees their reliability and adaptability.
- ✓ Watt4Ever systems are designed and built in Belgium, and Watt4Ever's engineers and technicians accompany the customer for all troubleshooting and maintenance needs.



Want to know more? Visit our website www.watt4ever.be or contact us at info@watt4ever.be or +32 478 963 312!

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