READY TO TRANSFORM YOUR ENERGY COSTS WITH ENERGY STORAGE?
WORLD LEADING + AWARD WINNING

Our award-winning British-designed energy storage systems and optimisation expertise are rapidly changing the way industrial and commercial energy users can realise financial benefits by providing load flexibility.

Following a £multi-million R&D programme, the E-STOR technology uses second-life electric vehicle (EV) batteries to deliver smart, affordable and flexible energy storage systems and projects.

We optimise E-STOR systems using our sophisticated operating software and load management services to maximise the potential for efficiencies and savings.

The benefits:

- **Modular**: Scalable systems meet your specific site needs
- **Integrated**: Integrated hardware and software provide everything you need in one box
- **Containerised**: Easy and low-cost to install (and relocate as required)
- **Resilient**: Autonomous operation provides resilience; operation continues even if site communications fail, or if part of the system requires maintenance
- **Flexible**: Capable of providing grid services, peak shaving, time-shifting, optimising on-site renewables or any combination of these
- **Low cost**: Integral second-life electric vehicle batteries offer a lower cost, more flexible and sustainable system
- **Extra safe**: Due to the use of OEM safety systems embedded in the batteries and battery management systems, as well as additional Connected Energy systems
- **Sustainable**: By using second-life EV batteries, we extend their life, making better use of their embedded carbon and energy; maximising the use of finite natural resources; improving the economics and sustainability of stationary energy storage systems as well as the original electric vehicles
- **Proven**: Systems operational in the UK, Belgium, Germany and the Netherlands have demonstrated consistent reliability since 2014

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Connected Energy Technical Centre
Unit 12 - Hethel Engineering Centre
Chapman Way, Hethel, Norfolk NR14 8FB
SOFTWARE + SERVICES

Our E-STOR energy storage systems use sophisticated control and operating software.

Together, our software and services enable you to maximise the value of the system and your return on investment.

The full value of energy storage can only be realised if your system is continuously configured to maximise efficiency, availability and responsiveness. We work with you to ensure our technology works in harmony with your site’s operating characteristics.

The benefits:

Cloud-based
Personalised access to our unique cloud-based back office enables you to monitor the performance of your system and adapts the operating parameters as either your energy tariffs, or site operations, change.

Comprehensive
Comprehensive data systems enable easy access to detailed real-time and historical operating information to support commercial, operational and maintenance decisions.

These data systems also enable our operations team to track and analyse system performance to optimise operation and pre-emptive maintenance.

Site-based control
Our systems can be configured to integrate with building management systems or respond to other metered assets such as pumps, Solar PV or EV chargers.

Responsive
A scheduler enables the creation of a hierarchy of operating rules that enable the system to respond to electricity tariff structures, on-site generation, grid constraints, peak loads etc in a predetermined order of priority.

Revenue maximised
Straight-forward integration with demand response aggregators and virtual power plants enables revenue streams to be maximised.

Personalised
Your involvement with the system can be as little or as much as you like. If required our operations team can take full control to maximise the value of your system.

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Energy storage could result in savings of around £2.4 billion per year in 2030 for the UK electricity system, according to the most recent House of Commons briefing paper, ‘Energy Storage in the UK’. Naturally this will also mean significant savings for businesses that invest in energy efficiency, energy saving and energy storage systems.

Our dedicated analysts are experts in modelling the relationships between system size, site conditions, mode of operation and the value streams. They provide clear feasibility analyses and are available to advise and guide you through your cost saving journey. Our team can also advise on any finance options that may be available for your project.

**The benefits:**

**Feasibility**
We provide an in-house Feasibility Assessment of the battery storage potential: from the behind the meter energy bill savings, to the grid service revenue streams

**Expert market intelligence**
Independent reviews of the market mechanisms and forward-view of market trends

**Independent validation**
We offer detailed savings and revenue forecasts based on independent, authoritative industry sources also used to validate forecasts provided by our aggregation partners

**Established relationships**
We have established relationships with demand response aggregators and other key players to ensure that your final project is straightforward to deliver and meets with your expectations

**Fully-financed systems**
A fully-financed Merchant Storage option is available for suitable projects. The Merchant Storage model requires no investment from the customer and is based on the returns being shared between the customer and Connected Energy. Eligibility is assessed on a project by project basis

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E-STOR ENERGY STORAGE SYSTEM

E-STOR energy storage systems are convenient containerised units designed to be installed behind the meter on industrial and commercial sites.

Assembled from a modular configuration of power electronics and batteries they can be supplied in units from 60kW upwards.

E-STOR units are provided as complete systems including site integration and operating software.

What is an E-STOR system?

E-STOR energy storage systems are designed to enable sites to maximise revenue streams and minimise costs.

They can be operated by virtual power plants or demand response aggregators, or they can be operated in conjunction with other site assets – or both.

E-STOR systems can be operated to peak shave, optimise on-site renewables, manage grid constraints, respond to electricity cost differentials or provide grid services.

How is an E-STOR system controlled?

E-STOR systems are provided with comprehensive operating software and a cloud based back office enabling operating conditions to be set remotely.

Data can also be collected in support of operation and maintenance, financial reporting and the optimisation of system performance and efficiency.

Connected Energy’s in-house team can provide guidance on how to best configure and operate a system for your site.

Why opt for an E-STOR system?

A higher degree of operating flexibility offered by E-STOR systems can result in greater financial returns than those offered by traditional energy storage systems.

E-STOR systems are robust and sustainable. Using multiple inverters, battery packs and autonomous control, they have inbuilt resilience. If there is a component failure or if the local grid or communications network fails, E-STOR systems continue to function according to pre-set conditions.

Utilising second life electric vehicle batteries, E-STOR systems make better use of embedded carbon, energy and finite resources involved in the manufacture of electric vehicle batteries.

Capitalising on the advanced safety systems inherent in the OEM batteries as well as additional in-house systems, E-STOR technology is exceptionally safe.
# EXAMPLE E-STOR CONFIGURATIONS

<table>
<thead>
<tr>
<th>E-STOR 60/90</th>
<th>E-STOR 150/90</th>
<th>E-STOR 150/180</th>
<th>E-STOR 300/360</th>
<th>E-STOR 450/540</th>
<th>E-STOR 600/720</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applications</strong></td>
<td>Site load management</td>
<td>On-site renewable optimisation</td>
<td>Site capacity reinforcement</td>
<td>Grid services</td>
<td>Grid services</td>
</tr>
<tr>
<td><strong>Active Power</strong></td>
<td>60 kW</td>
<td>150 kW</td>
<td>150 kW</td>
<td>300 kW</td>
<td>450 kW</td>
</tr>
<tr>
<td><strong>Apparent Power</strong></td>
<td>60kVA</td>
<td>150kVA</td>
<td>150kVA</td>
<td>300kVA</td>
<td>450kVA</td>
</tr>
<tr>
<td><strong>Energy</strong></td>
<td>90 kWh</td>
<td>90 kWh</td>
<td>180 kWh</td>
<td>360 kWh</td>
<td>540 kWh</td>
</tr>
<tr>
<td><strong>Rated AC Current at 400V</strong></td>
<td>87A</td>
<td>217A</td>
<td>217A</td>
<td>433A</td>
<td>650A</td>
</tr>
<tr>
<td><strong>Connection Voltage (3P)</strong></td>
<td>400VAC ±10%/-6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>50Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Minimum Battery Voltage</strong></td>
<td>310 VDC</td>
<td>620 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maximum Battery Voltage</strong></td>
<td>410 VDC</td>
<td>820 VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Harmonic Distortion</strong></td>
<td>&lt; 3% at rated power, (at short circuit power &gt; 40MVA)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Power Electronics Round Trip Efficiency</strong></td>
<td>≥ 95% at rated power (at optimum usage)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Enclosure Type</strong></td>
<td>Steel shipping container</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Enclosure Protection</strong></td>
<td>IP64/5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ambient Temperature</strong></td>
<td>-10 °C to +30 °C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Altitude</strong></td>
<td>&lt; 1000 m (power derating may be applied at greater altitudes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Key components</strong></td>
<td>Modular batteries &amp; integral battery management systems</td>
<td>Bi-directional battery charger(s)</td>
<td>Isolation transformer</td>
<td>Power control module</td>
<td>AC Protection</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>Customer &amp; Aggregator interface portal</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>EV Charging Interface (optional)</strong></td>
<td>Open Charge Point Protocol (OCP) via local area network to charge point</td>
<td></td>
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<tr>
<td><strong>Grid/LV Interface</strong></td>
<td>G59/3 compliant relay</td>
<td></td>
<td></td>
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<tr>
<td><strong>Supporting Management System</strong></td>
<td>Connected Energy Management Platform</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weight (inc batteries)</strong></td>
<td>4,659 kg</td>
<td>5,900 kg</td>
<td>9,715 kg</td>
<td>16,013 kg</td>
<td>2 x 12,864 kg</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>Length: 3,445 mm Width: 2,438 mm Height: 2,591 mm</td>
<td>Length: 3,445 mm Width: 2,438 mm Height: 2,591 mm</td>
<td>Length: 3,445 mm Width: 2,438 mm Height: 2,896 mm</td>
<td>Length: 6,512 mm Width: 2,438 mm Height: 2,896 mm</td>
<td>Length: 6,512 mm Width: 2,438 mm Height: 2,896 mm</td>
</tr>
</tbody>
</table>

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