HIGH PERFORMANCE
BATTERY ENERGY STORAGE SYSTEMS
We are Hyperdrive

As a trusted electrification partner to original equipment manufacturers around the world, our battery technology is present in a diverse range of applications, providing our customers with the RIGHT energy at the RIGHT time.

DESIGN
We partner with you from initial concept stage and outline key characteristics and technical requirements.

DEVELOP
We can support your product development, testing duty cycles and working alongside your engineering team from prototype through validation.

MANUFACTURE
HYVE is the UK’s largest independent battery pack manufacturing facility and our 9,000 square foot factory is well equipped to meet your volume requirements.

Our Industries

- Off-Highway
- Material Handling
- Stationary Energy Storage
- Portable Energy Storage
Battery Energy Storage

Combining a high-performance lithium-ion NMC battery pack with a built in Battery Management System (BMS) our intelligent battery systems are designed for rapid deployment and volume manufacture, supplying you with class leading energy density and performance.

- FAST AND EFFICIENT CHARGING
- HIGH VOLTAGE
- EASY FITTING AND INSTALLATION

- Integrated Charger Controls
- UN38.3 Certified Approved for global shipping
- Access to World-class Battery Cell Technology Proven automotive quality and global high volume supply
- Versatile Scale up capacity without additional controllers
- High Voltage Connect modular packs in series for systems up to 630V
- Environmental Protection IP55

FAST AND EFFICIENT CHARGING
HIGH VOLTAGE
EASY FITTING AND INSTALLATION
The HY Energy Product Range

With a standardised design, our modular product range provides a flexible and scalable battery energy storage solution.

<table>
<thead>
<tr>
<th>Product</th>
<th>Voltage</th>
<th>kWh</th>
<th>Ah</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STANDARD</td>
<td>44.4V</td>
<td>5.0</td>
<td>111</td>
<td>32kg</td>
</tr>
<tr>
<td>PLUS</td>
<td>51.8V</td>
<td>5.75</td>
<td>111</td>
<td>35kg</td>
</tr>
<tr>
<td>FAN</td>
<td>44.4V</td>
<td>5.0</td>
<td>111</td>
<td>35kg</td>
</tr>
</tbody>
</table>

Max Voltage: 49.8V
Min Voltage: 37.2V
Dimensions: 243 x 352 x 265

Cell Chemistry: Lithium-ion nickel manganese cobalt (NMC)
Power Terminal Type: Amphenol SurLok Plus: 2 x positive, 2 x negative
BMS: CAN enabled (1939 compatible option available)
Charging: BMS Controlled (132 A maximum)
Continuous Discharge: 130 A
Enclosure: Fully plastic case (IP55)
Operating Temperature: -25 to +60 degrees Celsius
Compatible chargers as standard: Bassi, Victron, Delta-Q, Zivan, TC
Compatible motor controllers as standard: Curtis and others on request

The Complete System
To accelerate customer prototypes and trial fleets we offer customers a full systems integration service, inclusive of battery pack, battery charger, electric motor and motor controller. This service includes sourcing of components from proven, trusted UK supply chain partners.
Pioneering Battery Technology

Our industry leading battery systems are powered by lithium-ion nickel manganese cobalt (NMC). As our chemistry of choice, Li-Ion NMC has unrivalled advantages over other battery types:

• High energy density enabling more power in less space
• Zero maintenance with no scheduled cycling required to prolong battery life
• Wide operating temperatures from -25 to +60 degrees Celsius

Data taken from BatteryUniversity.com

History of Innovation

Research and development is core to our success. We’ve been innovating since our establishment in 2012 and hold key Intellectual Property.

Our Patents include:
• Battery Pack design
• Battery Management System (BMS)
• Assembly methodology

<table>
<thead>
<tr>
<th>Battery Type</th>
<th>Energy Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Acid</td>
<td>35Wh/kg</td>
</tr>
<tr>
<td>Lithium-ion Phosphate</td>
<td>102Wh/kg</td>
</tr>
<tr>
<td>Lithium-ion NMC</td>
<td>164Wh/kg</td>
</tr>
</tbody>
</table>

Our Cells
Stacked with a positive electrode and a negative electrode and laminated together, our cells have a compact yet large capacity. Heat dissipation is good, due to the laminate structure with a large surface area.

Our Modules
Containing 8 cells connected and housed in a metal case, the cells are protected from vibrations and boast automotive quality approved, tested and supplied by Envision AESC.

Our BMS
Each Hyperdrive battery pack comes with a built in Battery Management System (BMS). By providing real time Voltage, Temperature, Current and State of Charge (SOC) measurements it protects the battery pack by monitoring vital functionalities.
Case study
JCB’s first electric excavator

The Problem
JCB is one of the world’s largest construction machinery brands. In response to changing legislation and customer demands for a zero emissions machine which could work indoors, underground and close to people in urban areas, they needed a fully electric mini excavator.

The Challenge
Working within a short time scale, Hyperdrive was tasked with building a proof of concept demonstrator, replacing the diesel engine with an electric motor and fitting it with our lithium-ion battery packs.

The Solution
We provided three Hyperdrive lithium-ion battery packs delivering a total energy capacity of 15kWh to power JCB’s first ever electric digger. Fully zero-emissions, the 19C-1 E-Tec is the quietest in the range allowing contractors to work after normal hours in urban streets, around hospitals and close to schools without disturbing people.

HY Energy STANDARD
48V Pack Arrangement: 4P
Voltage: 40.6-58.1V
Capacity: 14kWh
Peak Current: 200A
Peak Power: 9KW
Case study
Snorkel’s first lithium-ion powered Sigma Lift

The Problem
Founded in 1959, Snorkel is a global manufacturer of aerial lifts. In response to customer demand for more reliable and efficient power, a lithium-ion powered SL26SL was needed to replace the existing lead acid model.

The Challenge
Working within an extremely challenging timeframe, we were tasked with defining the system needs, and designing and building the SL26E prototype concept.

The Solution
The zero-emissions SL26E concept vehicle was successfully delivered on time encompassing three Hyperdrive lithium-ion battery packs. Providing Snorkel customers with a lower maintained, quieter and more cost-efficient product, it was displayed at bauma 2019, the world’s largest construction machinery trade fair.

<table>
<thead>
<tr>
<th>HY Energy PLUS</th>
<th>48V Pack Arrangement: 3P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage:</td>
<td>43.4 – 58.1V</td>
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<tr>
<td>Capacity:</td>
<td>17.2 kWh</td>
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<tr>
<td>Peak Current:</td>
<td>600A</td>
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<tr>
<td>Peak Power:</td>
<td>34kW</td>
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Welcome to HYVE

As the UK’s largest independent battery pack manufacturing facility, we build both our standard HY Energy range and bespoke pack designs for customers. Following automotive processes, each battery is cycled and tested before being dispatched to our international customers.

9,000 SQUARE FOOT FACILITY
30,000 BUILD CAPACITY
173 MWH OUTPUT

Semi-automated production lines
Cycle stations
Quality control cells
Quality assurance
Specialist team