



COMMERCIAL SOLUTIONS

64KWH TO UTILITY SCALE MWh

GivEnergy®

www.givenergy.co.uk

GivEnergy Commercial Energy Storage Solutions

GivEnergy are a leading provider of Energy Storage Solutions to the UK and Europe. Our British owned company manufactures both domestic and commercial systems, from 2.6kWh all the way to grid scale multi MWh.

We have in house software engineers to provide class leading control, operation, and monitoring.

Our established solutions have already been provided to Local Authorities, the NHS, and the hospitality industry among others, offering grid services and resilience thereby reducing demand on the grid across the UK and Europe.

BENEFITS OF OUR COMMERCIAL ENERGY STORAGE SYSTEMS

- LiFePO₄ cell chemistry
- Modular construction
- Flexible installation options
- In-house firmware engineers
- Fully vertically integrated manufacturing
- In-house field service engineers

Battery technology has advanced significantly in recent years and our technology is a industry leading, resulting in both high safety, reliability, and control.

GivEnergy®





ABOUT

We are an established energy management and battery storage manufacturer with our head office located in the Midlands at Stoke-on-Trent.

We are committed to Environmental, Social and Corporate Governance. Our materials are ethically sourced and our technology is reusable at the end of first use and completely recyclable at end of life.

GIVENERGY AND THE ENVIRONMENT

We are the largest British owned manufacturer of residential and commercial battery storage systems. Our systems are deployed throughout the world for both blue chip organisations and Governments and are playing an important part in addressing climate change. Our products are helping customers achieve net zero.

We are the only vertically integrated and cobalt free Battery Energy Storage System (BESS)

company in the UK. The entire battery system is manufactured from end to end including the energy cells, the battery management systems (BMS), inverters and ancillary equipment. This results in technology which provides unparalleled performance capability.

A complete in-house and UK based R&D team ensures the technology will continue to lead the field, in addition to providing unique bespoke solutions for customers.

LiFePO₄ - NO COBALT

Cobalt is a precious metal and its mining is extremely damaging to the environment. Furthermore, it is sourced in countries, many of which have concerning production practices which include the use of child slavery. This raises serious ethical issues regarding the use of Cobalt.

In addition, the chemical composition of Cobalt batteries results in oxidising during thermal runaway which increases fire risk, our batteries are different.

Our chemistry is Cobalt free and uses Lithium Iron Phosphate cathode technology (LiFePO₄) which results in our cells being inert and eliminating oxidation fire risk.



What Can Our Energy Storage Solutions Do For You?



Grid Services

Often the supply and demand of electricity in the Grid do not match, with the result that balancing services are required. Our battery technology can address these challenges, our response times allows our systems to be used for fast frequency response Grid services - those which can earn the largest revenue streams.



Resilience

Diesel or Gas powered generators that are typically used for resilience are unable to fully mitigate impacts of brownouts and blackouts for critical infrastructure facilities. This is primarily due to the response time needed for these backup systems to take the electrical load. The industry leading response time of our technology allows the battery to provide complete resilience for a facility, where previously not possible, whilst at the same time providing an emissions free solution.



Power Factor Correction

Power factor correction (PFC) improves power quality. It can reduce the load on the electrical distribution system, increases energy efficiency and reduces electricity costs. It also decreases the likelihood of instability and failure of equipment. Installed systems are currently delivering this capability for blue chip data centre customers and the healthcare industry.



Power Shifting

Renewable power generators and industrial power users can financially benefit from the variance between peak and off-peak rates of electricity. Our intelligent battery technology can maximise the financial benefits to users with this leading technology.



Maximising Self-Consumption from Renewable Sources

Whether it is Solar PV, Wind or Hydro generation renewable energy is not produced at a consistent level throughout the day. Storing any excess generation in a battery allows for use later on when the generation is not available.



PCS

Power Conversion System

Our bi-directional PCS is what is used to convert electric between the AC supply and the DC battery packs. The PCS synchronises with the grid when available and can also black start to provide backup power.

The built in display offers a simple visual display of the operation of each PCS, if only basic control is required the whole system can be operated by this screen alone.

Features

- Hybrid design, on-grid, off-grid and energy storage function combined
- Autonomous energy management and operation with or without EMS
- Intelligent charging function with shorter battery charging path
- Multi source hybrid function, enable to on-grid paralleling with diesel generator
- Black start-up function
- Enable operation with up to 100% unbalanced load for 3 phases
- Online seamless handover between on-grid and off-grid modes
- Support various loads type independently or mixed
- Comprehensive and high precision operation, fault monitoring, and recording
- Active and reactive power control (instantly)

Available Sizes

- 30kW
- 50kW
- 100kW
- 150kW
- 250kW
- 500kW

All of our systems have the ability to combine multiple units for larger capacities.



Battery Pack

Our battery packs are modular allowing us to create a system sized to your requirements. To ensure the DC bus voltages are within the operating voltages of the PCS a system will generally comprise of racks of 16 - 20 individual battery packs



The size, voltage and capacity of each battery pack will depend on the purpose the solution is being designed for. Each system is assessed to assure the most efficient operation.

All systems are designed with a maximum rating of 0.8c* to protect the longevity of the cells.



LiFePO₄ Cell Technology

Safe, sustainable chemistry containing no cobalt. Engineered for 20 years+ lifespan.



Cell Level Monitoring

Cell voltage and multi point temperature monitoring allows for full control and maintenance of individual cells.



Added Safety

Alongside LiFePO₄ cell technology and multipoint monitoring, the advanced BMS and BMA offers multiple levels of safety protection.



Flexible Sizes

The modular design gives flexibility to allow a system size to suit your requirements, in terms of storage capacity and physical size.

All Features

- Manufactured for 20 year lifespan
- Modular
- LiFePO₄ cell technology
- Built in BMS
- Built in cooling fan
- No active maintenance required
- Easy and reliable click in power and data connections

Key Specifications

- 38 - 51 nominal voltage
- 230 - 300Ah capacity
- -10°C – 50°C operating range

**A 'c' rating refers to how quickly the system can charge or discharge. For example a system with a 1c rating would take 1 hour to charge from 0-100%, 0.5c would take 2 hours.*

Flexible Installation Options

Due to their modular design our systems can be installed in a wide variety of locations and be designed to fit in new or existing spaces.

Internally

Whether in a purpose built plant room or an existing area we can design our system to maximise available space.

Custom built shipping container

If an internal space is not an option then one of our UK custom built shipping containers may meet your needs.

Containerised solutions range from 30 – 500kW power and 200 – 2800kWh capacity in 10 to 45ft containers, for larger systems multiple containers can be combined.

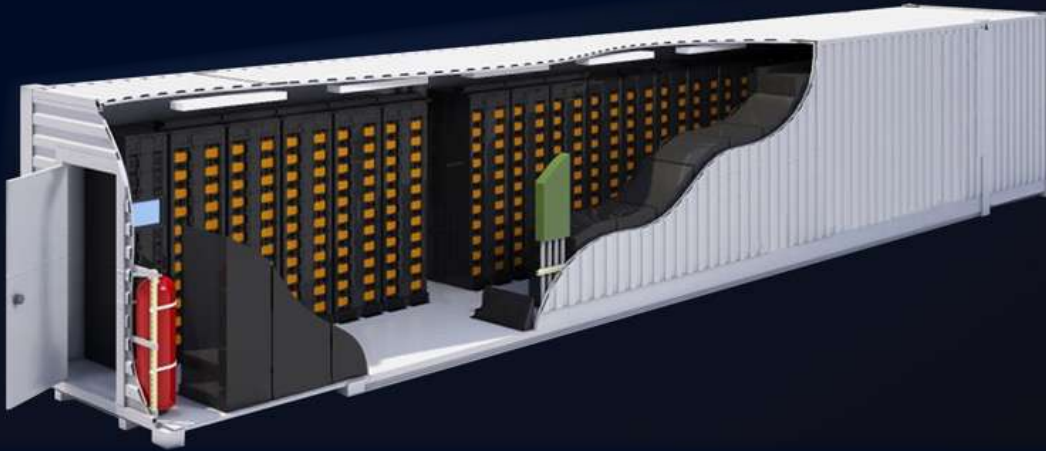
Installing into a Building

To install in a new or existing building we can work with you to design the system to fit the available space. All systems are customisable to ensure the flexibility to fit in different layouts of room. A GivEnergy representative will work with you to agree a design as part of the sales process to ensure that regulations, cooling requirements, and access are considered. Bespoke racking solutions allow varying heights of battery racking to maximise floor space.

It is important that the battery system is in a secure location with restricted access this can be in a plant room or a sectioned area of a larger space.

Depending on the ambient temperature forced cooling may not be required, our batteries are most efficient at 25°C.





Customised Shipping Containers

All containers are delivered in GivEnergy White, are fully insulated and lined to ensure the most efficient operation and depending on the siting location containers can be supplied complete or the battery modules can be shipped separately, reducing shipping weight.

Optional extras for containers can include:

- Internal/external lighting
- HVAC
- External/Internal doors
- Fire detection
- Fire suppression
- Alternative exterior colours
- Exterior cladding

Custom built solution

Our partners can also build a completely custom solution, for example a two story unit to maximise the use of a smaller footprint.



Custom Built Shipping Container

All containers will be delivered fully insulated with an easy to wipe clean, white surface, that is Class 0 fire rated. External access doors can be added as required and a wide range of internal and external optional extras are available. Containerised solutions can be delivered fully functioning or without battery packs installed (to reduce weight).

HVAC

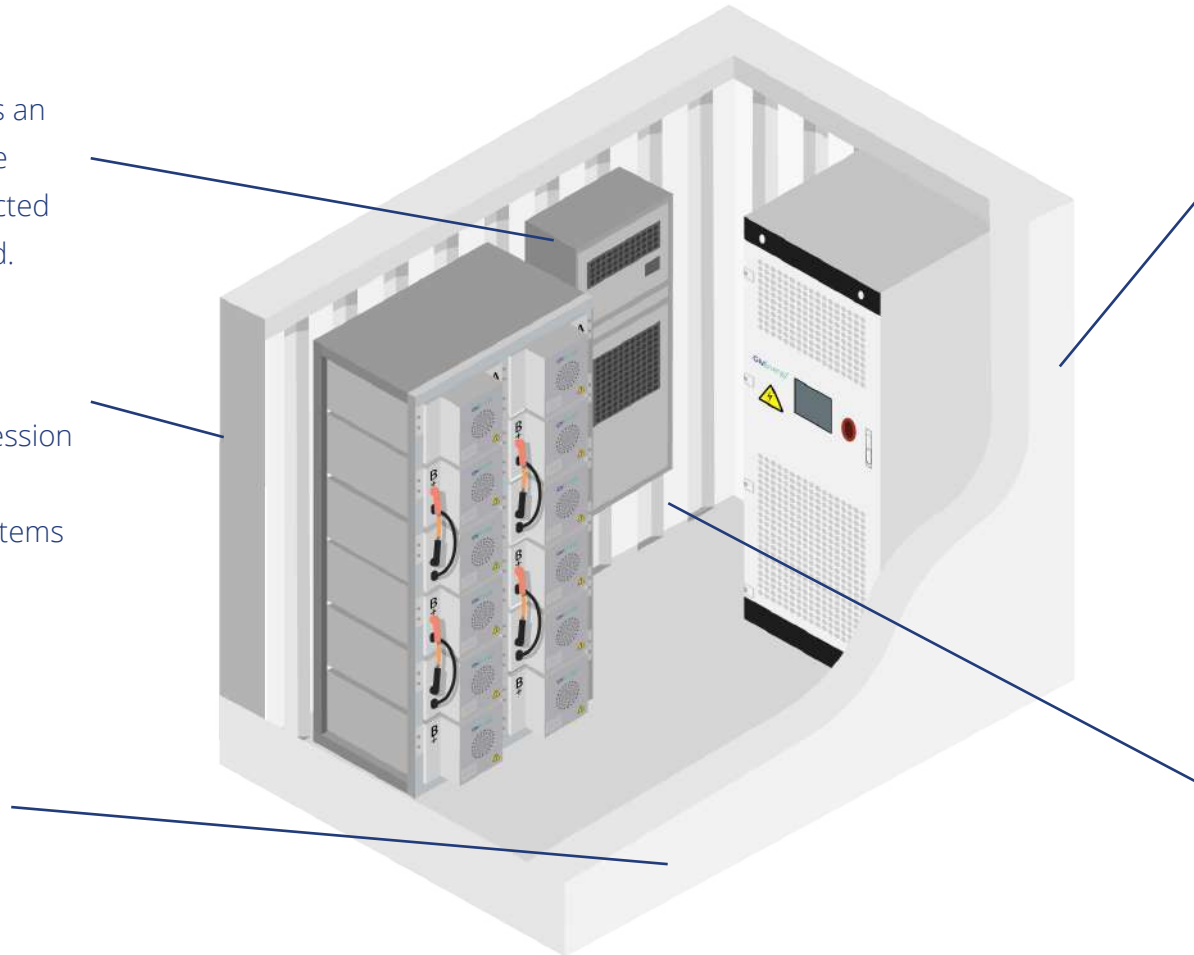
HVAC can be pre-installed as an optional extra or existing site infrastructure can be connected once the container is located.

Fire Detection System

Fire detection and/or suppression can be pre-installed into the container or existing site systems can be extended once the container is located.

External Optional Extras

- External lighting
- Different colour options
- External cladding



White Exterior Paint

By default all containers will be shipped in GivEnergy White (RAL9016).

Internal Features

All containers by default will be shipped with LED lighting backed up by the internal power supply, and 1 double socket. Additional outlets are also available for Fire Detection System and HVAC which can be pre-installed as optional extras.

Metering and Power Management

Control

All systems come with our proprietary Energy Management System (EMS) this is used to communicate with metering at the point of import/export and any on site generation, this enables us to control charge/discharge based on site requirements. External signalling is also available for features such as grid services, these can be over TCP/IP, Modbus, Backnet among many others. A full list of registers is available for Building Management Solutions to monitor the activity and status of our system.



Metering

Automated control is achieved by metering the supply point, solid or split core CT's are provided at the size to suit the rating of incoming supply.

On-site Commissioning

Whether your system is containerised or in a new/existing building it is important that its is installed, tested and commissioned correctly.

Your GivEnergy quote includes a commissioning visit free of charge* for every system.

Our commissioning process includes but is not limited to;

- Confirmation of each battery pack polarity and voltage
- Connection of DC Power and data cables
- Initial turn on
- Confirmation of established metering/control communications
- Low and full power testing of the system

**One day of commissioning is provided per MWh of installed capacity*

Battery Racking

Fully customised racking built to meet the requirements of the available space.

Our Battery Racks are customisable to ensure efficient use of available space.

Utilising lithium iron phosphate chemistry, our batteries are extremely safe and can be installed in a wide range of locations. Due to the racking's light weight design, it is ideal for manoeuvring around site.

2 or 3 column designs are available allowing taller or wider design dependant on available floor space.

Each battery rack comes with its own high voltage control box including BMS. This offers an additional level of control and safety.



DC Cabinet

Where multiple battery racks are required DC Cabinet(s) will be installed, these have a visual display of individual pack and cell status on their screen and offer an additional level of control and safety.

Monitoring and Control

Online Monitoring

All data from the battery packs, PCS, and metering, including cell voltages, pack temperatures, power and energy values, are reported regularly to the GivEnergy cloud. Mode selection and timed control are available via the web app, enabling a full remote monitoring platform.

All information is also available via API, to allow full integration into your building management system.

For more information or to get a quote,
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