

Polarium

Energy Storage Solutions



- for a smart and sustainable world



POLARIUM

Energy Storage Solutions – For a Smart and Sustainable World

Lack of access to electricity, or “energy poverty”, is the ultimate economic hindrance preventing people from participating in the global economy. Almost one billion people worldwide do not have access to electricity. But lack of electricity is not only a problem in developing nations. Weather-related power outages are estimated to cost the US economy more than \$20 billion annually.

Energy storage can keep the lights on, and power the unpowered. It is also a key component in fighting climate change.

Energy storage allows you to capture energy and store it for use at a later time.

When more and more energy is produced by renewable, intermittent, sources, energy storage becomes the missing link in the renewable energy system.

Polarium's energy storage solutions consist of lithium batteries that store energy safely, efficiently, and conveniently. This enables our customers to reduce their energy costs and CO2 emissions.

Due to the embedded intelligence of lithium batteries, we turn uncertainty into predictability by always knowing the state of charge (available capacity in real time) and the state of health (available life for optimal planning and usage).

**We enable
endless energy
through great
energy storage
solutions.
Green, safe
and seamless.**



Polarium is active in the telecom, commercial, and industrial segments and our energy storage solutions can be applied in a variety of ways and in any type of climate or environment. For backup, hybrid, standalone storage, solar and storage, fleet electric vehicle charging or microgrid.

We strive to always be one step ahead to drive innovation in our field, so that our customers can rely on us to always deliver the best performing and safest energy storage solutions on the market. In this way, we enable our customers to move away from fossil fuels and switch to long-lasting, smart and recyclable lithium batteries.

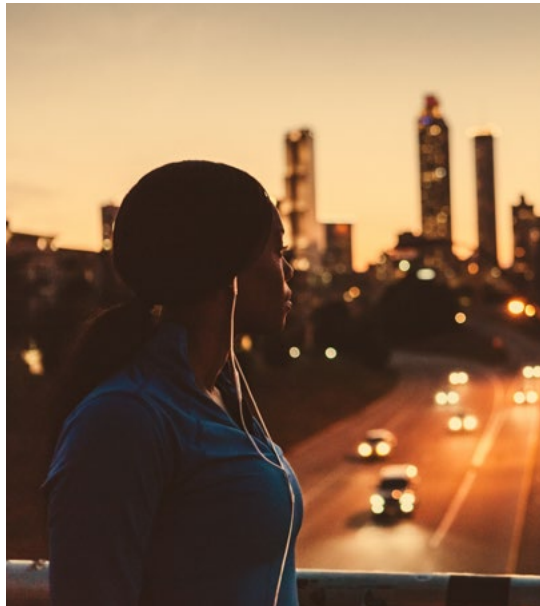
Our Solutions

Standalone Storage

Costly power interruptions and harmful fossil fuels belong in the past. There are substantial reductions in energy costs and carbon dioxide emissions to be made for commercial and industrial facilities. Our standalone storage provides valuable grid resiliency, by allowing you to store clean energy for when it's needed the most. Enabling you to manage, monitor and optimize your power flow.

Solar + Storage

In recent years, we have experienced a boom in renewable energy. The challenge is that renewable energy is not always produced when there is a peak in energy demand. Solar energy is produced when the sun is shining. That is where our Solar + Storage solutions come in. Combining energy storage with solar installations, allows you to store energy when it's produced and use it when it's needed. Enabling you to reduce energy costs as well as carbon dioxide emissions.





EV-Charging

With renewables and electric vehicles (EV) changing the way we live and move, our intelligent and highly customizable energy storage solutions improve grid reliability, facilitate the deployment of clean energy, and help power a new generation of electric transportation. The vehicle is not the most important part of the EV equation. In fact, it is only one part of an entire electrification ecosystem and infrastructure. Our comprehensive solutions encompass a broad range of large-scale EV-applications, from tailored commercial and industrial solutions, to projects for municipalities and cooperatives.

Microgrid

We believe that clean, reliable energy should be available to everyone – and our advanced microgrids help reduce energy costs and improve the quality of supply for communities and companies that need it most. Microgrids enable you to take control of your energy supply and benefit from greater energy independence, as well as significantly reduce fossil fuel reliance. Our turn-key solutions are customized to your needs. We combine renewable energy and conventional generation with advanced battery storage solutions based on lithium technology, intelligent microgrid controllers, and a management platform that optimizes energy consumption.

C&I Product Offering

Polarium's energy storage solutions can be applied in a variety of ways to support standalone storage, solar and storage, fleet electric vehicle charging, and microgrid.

We offer both low and high voltage solutions, ranging from 48 to 1,100 V and from 10's of kWh to MWh. All to fit your purpose best.



Low Voltage C&I

Polarium's telecom heritage and extensive range of energy storage solutions for the telecom market are ideal for our small-scale energy storage solutions for the C&I market.

Our low voltage solutions are based on 48V battery modules and are typically used for solutions with power requirements up to 100 kW.

The battery modules are built on either nickel-based or iron-based chemistry and range from 50 to 250 Ah, with discharge rates of 0.5 to 1 C.

Our battery modules are sold individually and can be integrated into your existing battery energy storage system (BESS). We are also engaged with several third-party partners to create full low voltage BESS solutions together.

OUR LOW VOLTAGE C&I PRODUCTS

Energy Storage Modules

Battery modules for integration into industry standard 48 V inverter solutions

- 50 to 250 Ah nickel-based battery modules
- 50 to 150 Ah iron-based battery modules
- 19" and 23" mounting options



Enabling endless energy

OUR LOW VOLTAGE C&I PRODUCTS

Energy Storage Rack

Cabinet solutions with integrated inverters and battery modules

- Up to 50 kW or 100 kWh in each cabinet
- Larger scale applications can be supported by AC coupling multiple cabinets





High Voltage C&I

Polarium's high voltage solutions are based on racks of batteries, configured with a battery management system (BMS) to support solutions of up to 1,100 VDC.

Our solutions are sold as configured racks containing the necessary number of battery modules to support your voltage requirements, with an overall BMS module for control and integration to third party equipment.

We offer two high voltage modules, which are currently available only in nickel-based chemistry. They are rated as follows

- 294 Ah - 43.6 V - 0.5 C
Suitable for high-energy ESS
- 60 Ah - 43.2 V - 4.0 C
Suitable for high-power ESS

In addition to rack sales, we are also engaged with several third-party partners to create full high voltage BESS solutions together.

OUR HIGH VOLTAGE C&I PRODUCTS

Energy Storage Racks

Indoor rack solutions up to 1,100 VDC for integration into third part ESS solutions.

Energy Storage Rack 19" 20

Available in:
51.8 kWh
256 kWh

Energy Storage Rack 19" 17

Available in:
218 kWh



Energy Storage Solutions

Outdoor cabinet and containerized solutions up to 1,100 VDC, with integrated control, heating, ventilation, and air conditioning (HVAC), and fire suppression systems.

Energy Storage Outdoor DC

Available in:

218 kWh

436 kWh

Energy Storage Outdoor AC

Available in:

218 kWh

436 kWh

Energy Storage Outdoor 20ft

Available in:

1,300 kWh



INSIGHT

Energy Storage The Missing Link in the Renewable Energy System

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Energy Storage – The Missing Link in the Renewable Energy System

The transition to a sustainable future has begun. Things that previously seemed to be out of reach – having endless energy, accomplishing the Paris agreement, and letting energy both be green and available to a low cost – are now possible.

In the past decade, we have seen a strong growth in the deployment of renewable energy technologies, with sharp cost reductions for solar and wind power as a driving force. Between 2019 and 2024, the capacity of renewable power is estimated to expand by 50 percent, where solar alone will account for 60 percent of the growth.

The challenge with renewable energy, however, is that it comes from intermittent sources. Solar power is harnessed when the sun is shining, and wind power when it is windy – not necessarily when there is a peak in energy demand.

The solution is to store energy, in a smart, sustainable, and cost-efficient way. Thereby empowering the shift from fossil fuels to clean renewable energy. Lithium-ion technology is leading the way for behind the meter energy storage applications, and the global demand for lithium-ion batteries alone is projected to increase by a factor of 22 by 2030.

But energy storage is not only good for the planet. It is also good for business. By storing energy when energy is abundant, and prices are low, costly demand charges can be avoided and grid energy consumption can be optimized. Basically, you can save money while making the world a better place.



Our Technology

Safe

Our top priority is – and always will be – safety. All our products are designed with your safety in mind - thoroughly verified and certified for safe operation. We have a completely redundant safety system in our BMS, including electronically controlled circuit breakers, and thorough control in the design and manufacturing of every system component. We also have advanced solutions for propagation prevention. The batteries are protected during transportation, installation, and use, even in the toughest conditions. Polarium is safe every step of the way.

Simple

In a few simple steps, you're good to go. Advanced technology made easy to use, giving you complete control. Easy installation and zero maintenance – just connect the cables and turn it on. Our products are plug-and-play compatible with existing power systems due to our patented charge control function. Configuration and testing are automatic. Polarium's solutions are designed to support a wide range of deployment configurations and integration partners, with low and high voltage battery systems.



Strong

We have installations in more than 50 countries, from the equator to the Arctic. Our products are strong, robust, and of superior quality with a guarantee to provide a long-lasting life. They just keep working, even in the most extreme conditions and environments. The robust design includes optional ingress protection of the electronics. A wide range of lithium cell chemistries targeting different site conditions make our offering stronger than any other alternative on the market.

Smart

Due to the embedded intelligence of our lithium batteries, you always know the state of charge (available capacity in real time) and the state of health (available life for optimal planning and usage). With its remote management system, our lithium-powered backup solution is maintenance-free and gives you full control. You can also manage your on-site climate control system based on the internal temperature of your lithium batteries or you can shut down non-prioritized loads. With the smart information already embedded in your lithium batteries, you can control, plan, reduce costs, and reduce environmental impact.



Secure

You can feel secure, knowing that your Polarium solution is protected. In many parts of the world, lead-acid batteries are stolen for scrap metal, private use, or re-sale. Polarium's lithium battery modules eliminate the first two reasons for theft. To make resale unattractive, we have developed multiple anti-theft features for our batteries, which prevent discharge of battery modules if removed from installations. In addition, our batteries are prepared for our optional GPS tracker and marking options for recovery in case of theft.



Anti-Theft Systems

Theft protection solutions

- Anti-theft features

Theft recovery solutions

- Tracker
- Branding
- Engraving

Sustainable

Polarium's lithium batteries are fully recyclable and meet all RoHS, WEEE and REACH requirements. Energy turn-around losses typically amount to only a few percent points, which is better than other lithium batteries (which normally record turn-around losses of up to 5%) and lead-acid batteries (normally up to 30%). All our solutions and products are designed to have exceptionally long lifetime. Our low-carbon manufacturing and installation, efficient operations, and the fact that our products are recyclable – all contributes to a circular business model.



www.polarium.com