Accelerate your sustainability journey with Energy Storage Systems

Towards a greener tomorrow with Energy Storage Systems

The global energy market is changing with a move away from hydrocarbon energy sources to more sustainable solutions. Regulators are focusing on carbon and noise emissions, and more stringent requirements are regularly being enforced, such as Stage V and LEZ (Low Emission Zones). As a result, energy-intensive industries are exploring new methods to lower their energy demand and switch to renewable sources.

Energy Storage Systems (ESS) offer significant benefits for many high energy demand applications. The battery storage capacity allows companies from different segments to **reduce their dependence on diesel generators, saving them operating costs and reducing their emissions.**

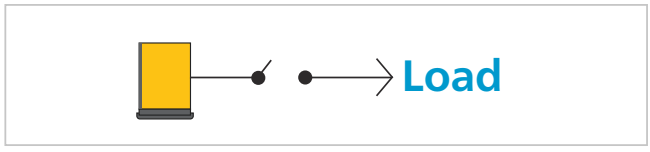
What is an Energy Storage System? How does it work?

Energy storage solutions feature efficient **Lithium-ion batteries** to store power for later use. The technology has developed rapidly over the last few years due to the growth in the electric vehicle market. But these developments also benefit other projects like **construction sites, events, solar and wind energy storage, utilities, commercial, residential, and other industrial applications.**

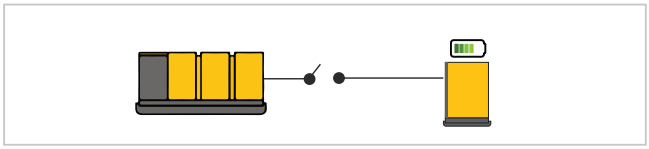
Atlas Copco Energy Storage Systems use Lithium-ion batteries in a modular structure. So, they can be extended to fit the power demands of any site. These models can operate in island mode as standalone solutions, or work with diesel generators in a hybrid solution. They provide over **12 hours of energy with a single charge, which takes only 1.5 hours.**

Atlas Copco energy storage solutions are also ideal to add power to the grid. In order to achieve constant and stable power when the installation shows limitations and there is an increase in the application's energy demand, operators can connect these battery-driven models to the grid. They **have a working life of over 40,000 hours, which equates to 1,600 days of continuous operation.** The units are compact and easy to transport, making them ideal for moving from one site to another.

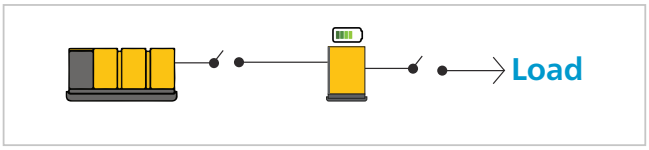
Operating modes



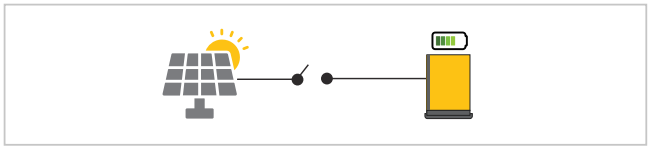
Island mode



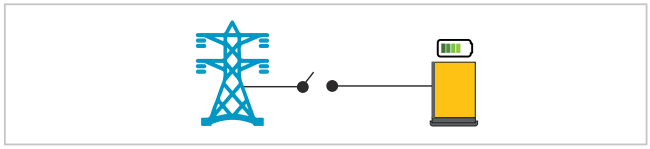
Genset mode



Hybrid mode



Solar panel mode



Parking mode

Advantages of Energy Storage Systems in construction operations

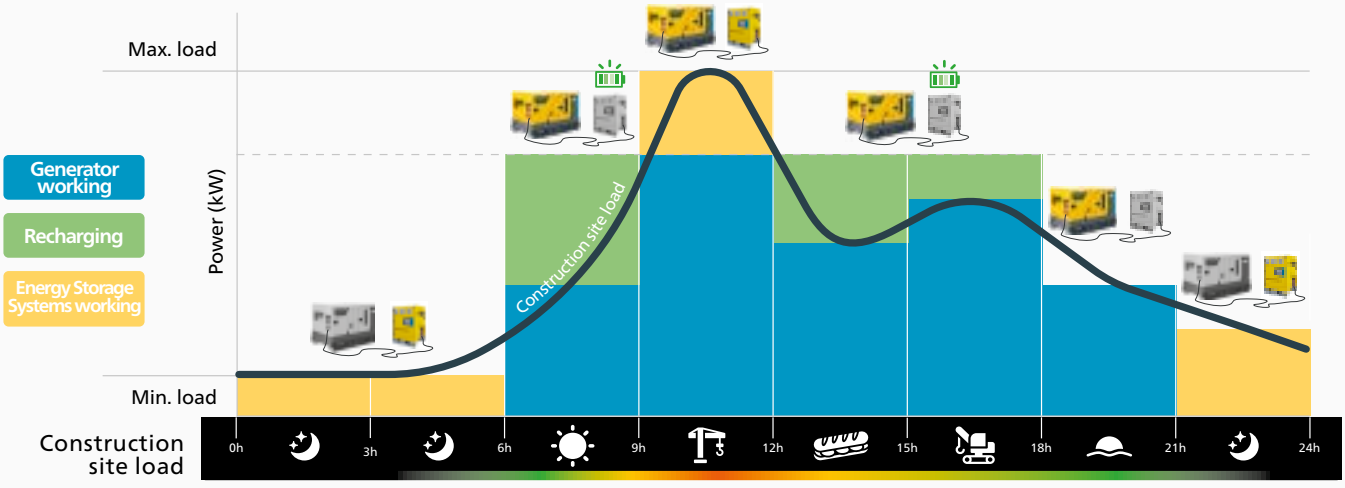
There are several benefits to including an Energy Storage System as part of the energy solution for a construction site, even if it does not replace fossil fuels.

Using an **Energy Storage System allows construction sites to reduce the peak generator demand** by supplementing its output with battery power during equipment start-up and other high usage events. An Energy Storage System often **allows the site to invest in smaller capacity generators,** making the benefit even more significant. A smaller generator has lower fuel usage in normal operating conditions, not only during peak demand. Therefore, emissions and costs are reduced at all times of construction activity.

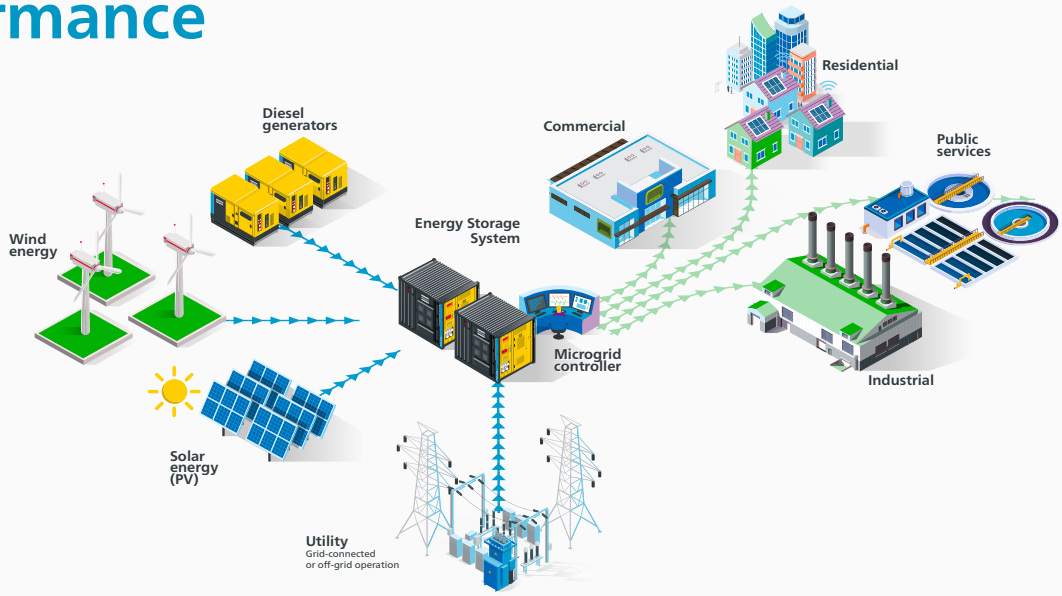
Without an energy storage solution, construction peak demand requires large generators that can provide the necessary power. These machines often operate at a very low load under normal operating conditions, and this point is far from their optimum and, therefore, very inefficient. However, a hybrid solution with an Energy Storage System will require smaller generators, which work closer to their optimum level, saving fuel and reducing maintenance costs.

An Energy Storage System itself **has almost no maintenance requirements.** This means that the uptime is very high compared to diesel power generators. Atlas Copco system is designed to operate in a wide range of **ambient conditions from -15C to 50C.** And they offer a low total cost of ownership, with projects paid back typically in less than two years.

Typical **24 HOURS** energy demand in a construction site



A hybrid energy solution that boosts performance



For the time being, most energy storage solutions operate together with diesel generators as a total energy solution. **Using smart load management the site can optimize its energy source at any time, limiting its costs and reducing its overall emissions.**

There are different ways to use an Energy Storage Systems in hybrid mode with diesel generators:

- The Energy Storage System can supply extra **power during peak demand.**
- The Energy Storage System can **provide low-load devices** like lighting and telecommunication at night while generators are offline.
- The Energy Storage System offers an alternate energy source to the grid enabling **smart load management.**

In hybrid mode, diesel generators often recharge the Energy Storage System after use because there is a much lower demand for the generators during normal operations than during the peak demand for equipment start-up. The spare capacity on the generator can be used to charge the battery-driven unit, which helps keep the generator closer to its optimum operating point.

Rental companies and end-users have the potential to save substantial operating costs by using Energy Storage Systems in hybrid mode. Implementing an Energy Storage System also allows operators to reduce the generator capacity on-site by up to 40%. It reduces fuel consumption even further. Besides, smaller units are cheaper and easier to move from site to site.

The most efficient hybrid alternative to using an oversized generator is the combination of Atlas Copco's ZBC 250-575 Energy Storage System and the company's latest QAS+ 325 generator. Compared with a QAS+ 660 working as a standalone solution, **the Energy Storage System and generator allow savings of approximately 200 tons of CO2 during their operating life***. This has a significant impact on productivity, with a 50% boost, and keeps the solutions' Total Cost of Ownership (TCO) to an absolute minimum.

*15.000 hours, which is equivalent to 625 days

A standalone application

While in many applications Energy Storage Systems work in conjunction with diesel generators, there are some circumstances where an Energy Storage System can operate as a standalone solution. **Known as island mode the Energy Storage System uses renewable sources like solar panels or wind turbines to recharge.** The sites using Energy Storage System in island mode are **free of fossil fuels and produce zero CO2 emissions.**

Island mode solutions are typically used for small **events in a city center to supply power to lighting and music devices.** The unit can be configured for single-phase or three-phase supplies. On construction sites, an Energy Storage System in island mode could supply power to the telecoms equipment on-site thus keeping the communications network on a separate grid to the construction equipment.

A standalone Energy Storage System is **100% green and a completely sustainable solution** for any application. Comparing CO2 production during the entire lifecycle of the Energy Storage System versus a generator for a 40kWh application shows that the energy storage solution emits five times less CO2 over its life. This includes CO2 produced during the extraction of raw materials for manufacturing and recycling.

Secondary benefits of energy storage technology

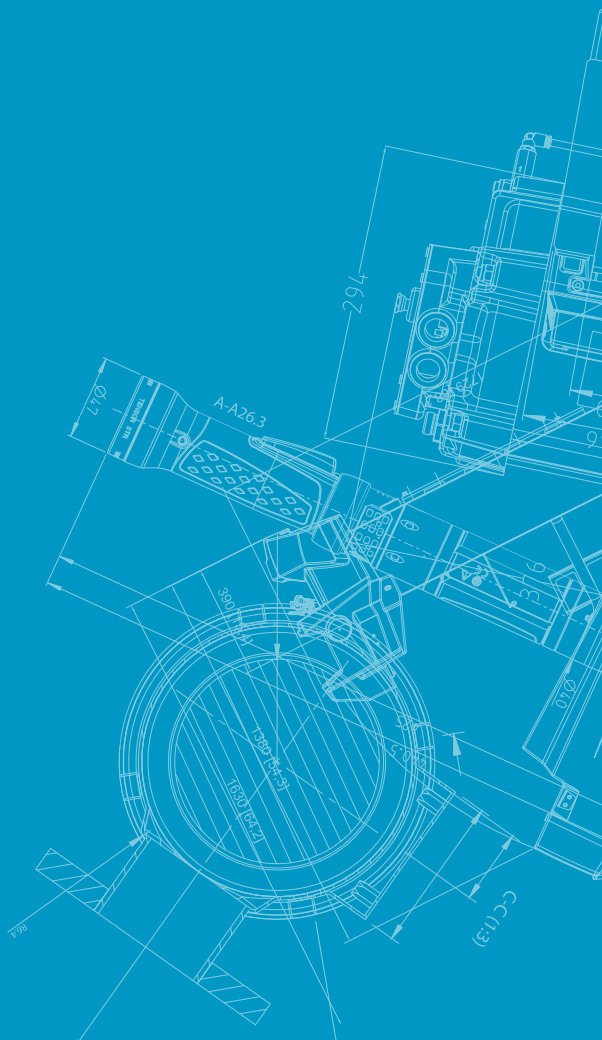
Energy storage solutions are not only helping with sustainability and efficiency. They also solve some other constraints that affect productivity.

Many urban centers have strict noise regulations to prevent disturbance to their residents. Generator noise contributes to the noise levels on-site and often exceeds the limits set by local authorities. The result is a curfew that prevents sites from operating at night. **Energy storage solutions are quiet; switching to an Energy Storage System for a night-time power supply can reduce the noise levels below the maximum limit.** This means that companies using Energy Storage Systems can double their productivity compared to others that can only work during the day.

In one application, Atlas Copco's **ZBC model enabled crane operators at a construction site in a big city to work 24/7** instead of being shut down at night due to noise constraints. The result was a **50% increase in productivity per year.**

With a hybrid solution, operators can improve sustainability, cut costs, and maximize performance. The battery system can also help extend the lifespan of the generator while optimizing its performance. And, **when Energy Storage Systems are used in island mode, CO2 savings can reach up to 100 percent if the unit is powered by renewable energy sources.**

SCAN THE CODE to find all information about Atlas Copco Energy Storage Systems.



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