

Lead providing uninterrupted power



Fair Isle's lead battery microgrid harnesses renewable energy from wind and solar sources.

Modern societies are built on infrastructure, physical components and systems that allow economies to function and citizens to go about their daily lives. Some of these assets are so essential that precautionary measures need to be taken to ensure they function as intended and without disruption.

A key part of this is the constant provision of power. In hospitals, for example, a wide range of medical equipment relies on a clean and consistent power supply. Should this fail, devices like dialysis machines and life support systems would cease to function, risking patient health and even loss of life.

In the world of business, uninterrupted power is required to ensure computers, telecommunications equipment and data centres function as normal. Even a short outage has the potential to result in significant disruption and the risk of huge financial losses. European businesses collectively suffer from [almost 1 million hours of IT downtime](#) each year. In some cases, one hour of downtime has cost firms in the range of [€900,000 to over €3 million](#).

Uninterruptible Power Supply (UPS) batteries are often employed to address this issue, ensuring the supply of electricity should the input power source or mains power fail. Electrical energy storage using lead batteries is now well established, with improvements to the underlying technology ensuring long cycle and calendar life, and the ability to almost completely recycle them after use. These qualities have seen these batteries become widely used for applications like utility energy storage.

Conventional lead batteries and more advanced carbon-enhanced lead alternatives represent the predominant solutions being used today. While non-lead based alternatives exist, they fail to provide the same levels of performance, reliability or cost effectiveness.

No other battery type can compete with lead batteries when it comes to sustainability - an established collection scheme and state-of-the-art recycling

process means [more than 100 million lead batteries are kept out of Europe's waste stream](#) and are used to provide raw materials to make new batteries.

Strict risk management processes are observed when working with lead batteries – manufacturing employees are protected by a framework of existing legislation and industry best practice. Moreover, strict handling procedures are observed when using lead batteries to ensure proper function and minimise the risk of leaks or failure.

The increased use of lead batteries is powering the shift to more renewable energy sources. Due to the intermittent nature of renewables like solar and wind, there is a greater need for energy storage across the electricity networks to maintain power quality and consistency during downtimes.

Isolated Scottish island Fair Isle provides an excellent example of this in action. Historic reliance on a diesel generator and some wind power meant islanders had to put up with a night-time blackout period from 11.30pm till 7.30am. [Today, a solar photovoltaic \(PV\) system, new wind turbines and a lead battery microgrid means they benefit from continuous power for the first time.](#)

More than 90% of the global UPS market uses lead batteries. As a result of these trends, market growth for lead batteries is forecast at 2% CAGR by 2030 – equivalent of \$3 billion.



Fact file

- European organisations above [50 employees are collectively losing more than 37 million man hours each year](#) through IT downtime and data recovery. On average, each company loses 552 man hours per year
- European businesses collectively suffer from [almost 1 million hours of IT downtime each year](#) - an average of 14 hours per company per year
- Lead batteries have seen relatively wide deployment due to their [low cost and relatively long service life](#), upwards of 15 years
- More than 90% of the global UPS market uses lead batteries
- [75% of lead in European lead batteries is now produced from recycled sources](#)

Developed in collaboration with the Consortium for Battery Innovation, this case study highlights just one of the many essential uses of lead that provide societal benefits and boost the EU's economy

For Europe's future, lead matters.

