



LEAD BATTERIES: ENERGY STORAGE CASE STUDY



China Shoto **World's Highest Solar Farm**

Yangyi, Tibet, China

On a plain 4,700 metres above sea level in Tibet, a vast 20 MWh solar energy farm is soaking up the sun's rays to help feed China's ever-expanding demand for energy.

The technology behind this state-of-the-art renewable energy plant is a bank of lead-carbon batteries which store and supply electricity generated by the photovoltaic panels directly into the Chinese grid.

“The plant in Tibet is providing quality electricity in a controlled and stabilised environment, acting as a trailblazer for renewable energy storage systems elsewhere. This is clean energy, with reliable and long-lasting storage operating at high altitude.”

Lucie Yi, Deputy Chief Engineer, China Shoto Energy Storage

Technical Specification

With up to 14 hours of sunlight a day in summer months, the plant produces 30 MW of solar power, supported by 20 MWh of energy storage.

The system uses lead-carbon battery technology because of its robustness in harsh conditions and reliable operation at temperatures down to freezing point.

The installation uses 9,600 of Shoto's long life lead-carbon batteries, housed in 16 40 ft ESS containers. The LLC-1000 batteries can reach 4,000 cycles at 70% depth of discharge.

The batteries are capable of being fully recycled at end-of-life, making the process of generating, storing and distributing electricity at the plant completely sustainable.



About the Company

Shoto is a leading integration service provider of green energy storage in the era of big data, using cutting-edge energy technology with customers around the world.

Shoto provides a complete series of energy storage solutions and solid green energy security for the telecommunications industry.

For the power industry, Shoto is a core hub that creates future smart grid networks. Shoto also supplies new, clean and high-efficiency power energy for the transportation industry to facilitate green travel.

Shoto is active in the recycling industry for lead batteries, making energy recyclable and renewable whilst also reducing loss of resources.

“The use of carbon and other additives, new grid alloys and active materials have resulted in significant improved shallow cycling performance and energy density of advanced lead batteries. It has also demonstrated an increase in cycle life and calendar life, making it an excellent option in renewable and utility energy storage applications, including at high altitude.”

Dr Alistair Davidson, Director,
Consortium for Battery Innovation