Manufacturing

Developing next-generation energy storage

China Energy Storage Materials (Dalian) Co., Ltd.

CESM performs near-real-time analysis of its manufacturing processes to detect faults sooner and ensure high-quality end products, supported by Lenovo ThinkSystem solutions.

Lenovo

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Who is
China Energy Storage Materials (Dalian) Co., Ltd.?

As global energy consumption continues to rise, innovative solutions are needed to meet demand and ensure a reliable supply of power to businesses and communities. China Energy Storage Materials (Dalian) Co., Ltd. (CESM) is a leading provider of cutting-edge energy storage solutions, specializing in the development, manufacture, and sale of nickel alloys for use in battery systems.

CESM operates a 225,800m^2 facility in the Dalian Hi-Tech Zone (DHZ) in northeast China. A key center for technological innovation, the DHZ is home to the world's largest vanadium flow battery, capable of meeting the daily energy needs of 200,000 people.

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The
Challenge

To manufacture energy storage materials on an industrial scale, CESM operates two rotary kiln electric furnace (RKEF) production lines. The company uses many advanced digital applications to manage production, including manufacturing execution systems (MES), enterprise resource planning (ERP) software, and specialist solutions for controlling its fleet of automated guided vehicles (AGVs).

In addition, CESM uses sensors on the production lines to collect data on product quality. Previously, the company sent this data to central servers for processing and analysis, but the volume of information often overloaded the network, leading to delays in completing quality checks and tackling issues. Using manual methods to identify surface defects was also labor-intensive and inefficient.

Could CESM find a way to process sensor data faster, enable more accurate, near-real-time analysis of the manufacturing process, and ultimately, deliver higher quality products to customers?

"We aim to provide world-class, innovative energy storage solutions. To achieve this goal, we looked to optimize our fault detection processes, and to accelerate our digital transformation."

Li Qian
Manager of Network Information Center,
China Energy Storage Materials (Dalian) Co., Ltd.

Adopting a more *agile* approach

To solve these challenges, CESM looked for a new IT infrastructure to support more efficient processing of RKEF production line data. The key technical requirements were low latency and high availability and resilience, and the company found the ideal solution in Lenovo ThinkSystem.

Deploying Lenovo ThinkSystem SR660 V2 servers as edge servers would enable CESM to analyze data closer to the source on the production lines, for faster insights. The approach would also remove the need to transfer data to the main data center, reducing pressure on the network and avoiding bandwidth issues.

Hardware
Lenovo ThinkSystem SR660 V2
Lenovo ThinkSystem SR860 V3

Software
Lenovo XClarity

Services
Lenovo Installation and Migration Services

Implementing powerful solutions at the edge

To turn the concept into reality, CESM worked with Lenovo to plan and implement the new infrastructure. To run the fault detection and AGV control systems, the company selected seven Lenovo ThinkSystem SR660 V2 servers, providing combined compute, storage, and virtualization resources, with Lenovo XClarity software for central management and orchestration of the edge environment.

CESM also decided to modernize the infrastructure supporting its MES and ERP systems, using high-end Lenovo ThinkSystem SR860 V3 solutions. After installing the hardware, the Lenovo Services team migrated the applications to the new server environment.

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"We needed a highly resilient solution for use on our production lines. Lenovo ThinkSystem has proved an excellent choice—we have had zero issues with stability or reliability."

Li Qian
Manager of Network Information Center,
China Energy Storage Materials (Dalian) Co., Ltd.

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Results

The new infrastructure from Lenovo has helped CESM to streamline production of its next-generation energy storage solutions. The company can now gain near-real-time insights into surface defects and other issues, and can respond fast to high ensure product quality. Furthermore, the Lenovo solutions deliver the high performance needed to automate many quality assessment checks, helping to improve accuracy and consistency of output. Overall, the company has tracked a 20-30% increase in production efficiency since deploying the Lenovo solutions—an excellent result.

- 20-30% increase in production efficiency
- Enables near-real-time insights into manufacturing defects
- Helps to improve the quality of end products

"The Lenovo ThinkSystem platform is helping us to optimize our manufacturing processes, and deliver higher-quality energy storage products to customers. We have formed an excellent partnership with Lenovo, and their ongoing support and after-sales services have been very valuable."

Li Qian
Manager of Network Information Center,
China Energy Storage Materials (Dalian) Co., Ltd.

Why Lenovo?

CESM considered multiple vendors alongside Lenovo, including lower-cost options. Ultimately, decision-makers had a high level of trust in Lenovo solutions, having used Lenovo PCs in the past. Furthermore, Lenovo offered an exceptional record working with other enterprises.

The service from Lenovo during the evaluation process was another plus-point. CESM noted Lenovo's presales and sales teams offered clear, open communications, and a firm commitment to the project. "Even though Lenovo was a more expensive option, we knew they would deliver the greatest value, with a comprehensive solution and responsive support team," confirms Li Qian, Manager of Network Information Center at CESM.

How can manufacturers ensure consistent product quality?

Working with Lenovo, CESM streamlines its manufacturing processes, with real-time insights into product quality and potential faults.

Explore Lenovo ThinkSystem Solutions

Lenovo