



ThyssenKrupp Electrical Steel GmbH

To run the PSI-BT material tracking systems that manage its production lines, ThyssenKrupp Electrical Steel wanted to replace its existing SORIX operating system, which was no longer supported. The company chose SUSE® Linux Enterprise Real Time, which prioritises material tracking processes to ensure microsecond-accurate measurements.

Overview

ThyssenKrupp Electrical Steel's high-tech PowerCore® electrical steels are important materials in the production of energy-efficient transformers and large, high-performance generators. It is used wherever motion is transformed into electrical energy or vice versa, and where electrical energy is transmitted across large distances. In the form of laminated, wound or punched sheets, it is the essential core material of distribution transformers, power transformers and small transformers.

From its plants in Gelsenkirchen (Germany), Isbergues (France) and Nashik (India), ThyssenKrupp Electrical Steel serves customers worldwide.

Challenge

ThyssenKrupp Electrical Steel places great emphasis on quality control. Its plants are certified to ISO 9001:2000 standards, and maintaining these certifications requires detailed monitoring of production line systems.

Machines on each production line at Gelsenkirchen are linked to servers running a material tracking application from PSI-BT.

"We need to measure 200 different values for every metre of steel that we produce, and some of our production lines move at a

rate of 18 metres per second," said Robert Gieselmann, Head of Shopfloor Systems in the IT department at ThyssenKrupp Electrical Steel. "This means we have a 50ms cycle time for all 200 measurements—so any delays can have a major impact on quality control."

The company's SORIX operating system was no longer supported, so ThyssenKrupp Electrical Steel needed a new solution—one that could support the high-accuracy measurements that the business required.

Solution

ThyssenKrupp Electrical Steel was keen to protect its investment in the existing material tracking application, which is developed by PSI-BT, a specialist IT service provider that focuses on solutions for the metals industry.

"The PSI-BT application is a good solution, so we wanted an operating system that would be able to support it," said Gieselmann.

"This meant a variant of UNIX* or Linux—but there were not many products on the market that could deliver the real-time, low-latency solution we needed."

Most operating systems occasionally need to interrupt applications in order to run essential system maintenance processes—a major problem for companies like ThyssenKrupp Electrical Steel, since accurate measurement depends on executing each process

ThyssenKrupp Electrical Steel at a glance:

Manufacturer of grain-oriented electrical steel

■ Industry:

Steel

■ Location:

Germany, France, India

■ Products and Services:

SUSE Linux Enterprise Real Time

■ Results:

- Enabled accurate, uninterrupted measurement of production processes within millisecond tolerances
- Increased speed of system response, enabling more measurements to be made within the same time period
- Avoided the need to build a real-time operating system from scratch or invest in new applications

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Robert Gieselmann

*Head of Shopfloor Systems
in the IT department
ThyssenKrupp Electrical Steel*

“SUSE Linux Enterprise Real Time on the HP ProLiant servers runs the PSI-BT application significantly faster than our previous solution, and we have no issues with reliability—the plant can run 24x7 without any problems.”

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ThyssenKrupp Electrical Steel*

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at precisely the right time. ThyssenKrupp Electrical Steel needed an operating system capable of prioritising its material tracking application and working reliably within millisecond tolerances.

“Novell is one of the few software vendors with a product that fully met our needs,” said Gieselmann. “SUSE Linux Enterprise Real Time has all the features required to run time-critical production line processes with a high degree of accuracy, reliability and security.”

SUSE Linux Enterprise Real Time is an extension to SUSE Linux Enterprise Server designed specifically to ensure performance in time-critical environments. The Linux* kernel allows system processes to be pre-empted, so that key applications are never interrupted at the wrong time. When run on a multi-processor server (like the dual-core HP* ProLiant* servers used by ThyssenKrupp Electrical Steel), individual CPU threads can be dedicated to specific high-priority processes to eliminate resource contention.

Moreover, SUSE Linux Enterprise Real Time is capable of timings with a resolution of two microseconds—much more precise than the 40 millisecond resolution offered by many standard operating systems. It also supports the Precision Time Protocol (PTP) standard, which enables accurate synchronisation between all the machines in a network—vital for organisations with numerous complex production lines like ThyssenKrupp Electrical Steel.

Results

Apart from the specific advantages provided by the real-time solution, ThyssenKrupp Electrical Steel is impressed with the

performance and reliability of SUSE Linux Enterprise Real Time.

“We have always been happy with the security and stability of UNIX-like operating systems, and Novell has shown that Linux can be a highly effective option for business IT,” said Gieselmann. “SUSE Linux Enterprise Real Time on the HP ProLiant servers runs the PSI-BT application significantly faster than our previous solution, and we have no issues with reliability—the plant can run 24x7 without any problems.”

ThyssenKrupp Electrical Steel is now satisfied that it has implemented a trustworthy data collection system that can interface with its SAP* ERP applications to deliver a complete, integrated quality management solution. As a result of its success at the Gelsenkirchen plant, the company is considering rolling out SUSE Linux Enterprise Real Time to its French operation.

“Without the real-time operating system, we would be unable to ensure the same degree of accuracy in our production control processes,” said Gieselmann. “Quality management is crucial for us—in terms of both maintaining certification and ensuring that all our products meet the highest possible quality standards. SUSE Linux Enterprise Real Time has become a key element in the success of our business.”

ThyssenKrupp Electrical Steel is continuing to develop the material tracking infrastructure to increase automation and improve production efficiency. The low latency and high-precision timing capabilities of the Novell® solution will play an important part in the drive for continuous improvement of the company’s production processes.



For More Information:

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