

Modern, superior quality manufacturing

Leading tinplate producer moves production control into the Java™ world



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Rasselstein

Ein Unternehmen von ThyssenKrupp Steel



Objective

Ensure superlative quality of tinplate products by using continuously available HP Integrity NonStop system for production control and quality management

Approach:

Integrate HP Integrity NonStop system seamlessly with mainframe, UNIX® system-based SAP business applications, Linux, and Windows® servers in other parts of the operation to meet customer-mandated quality requirements in a 24x7 production environment

Business technology improvements

- HP Integrity NonStop system is the heart of the manufacturing execution and quality management system
- Highly flexible, messaging-based SOA implemented with catalog of business services for the company on HP Integrity NonStop system
- Direct connection to all production process stations for just-in-time information logistics
- Underlying SOA infrastructure facilitates application modernization using Java-based middleware from CommitWork GmbH

Business outcomes

- Highest availability to support continuous production at maximum plant capacity
- Improved plant efficiency with computer-integrated manufacturing execution and logistics
- Proactive quality management system for forward-looking quality assurance
- Lower cost at superior product quality level through improved sampling process
- Improved user satisfaction through single front end user interface

HP customer case study: leading tinplate manufacturer runs critical manufacturing execution system (MES) applications on HP Integrity NonStop platform and is modernizing its applications using Java middleware and SOA infrastructure

Industry: manufacturing



Hochverfügbarkeitsanwendungen. That says it all. High availability applications—three English words for a single German one—are the main reason Rasselstein GmbH has entrusted its critical production control applications to the HP NonStop platform for the past three decades.

Rasselstein, a subsidiary of steel-producing giant ThyssenKrupp AG, is a world leader in tinplate production. Tinplate is used for food and beverage cans, bottle caps, aerosol containers, and the like. The production line runs at full capacity, all day, every day. Starting with basic hot rolled strip, diverse “aggregate” processes—cold rolling, pickling in acid, degreasing, annealing, temper rolling, tinning, coating, lacquering, and cutting, to name just a few—and multiple quality checks are performed before the final product is delivered to the warehouse.

“Two main features of the HP Integrity NonStop platform are very important for us. First, the system delivers the highest availability to support our continuous production environment. Second, because of its excellent connectivity to other IT systems and intelligent production devices, it is well suited to be the central platform for our highly automated production environment.”

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Because superlative quality is the primary differentiator for Rasselstein, the computing system that manages all these processes must be completely reliable. Rasselstein’s Integrity NonStop server runs the manufacturing execution and quality assurance applications, so all work orders meet customer-mandated quality requirements and are completed on time. The system also ensures that the factory runs 24x7 with no production interruptions caused by lack of goods, missing information, or delayed equipment maintenance.

Rasselstein took delivery of its first NonStop server in 1978—a TNS1 machine, number #466 from Tandem Computers—and has migrated its applications through various generations of the platform. The current manufacturing execution system (MES) is deployed on two Intel® Itanium® processor-based Integrity NonStop servers using NonStop Remote Database Facility (NonStop RDF) software. The backup server is also used for development. The Integrity NonStop system integrates seamlessly with the rest of Rasselstein’s computing environment, including mainframe, UNIX system-based SAP business applications, and many Linux and Windows servers located at various points in the production process.

Johann Pausch, Head of Application Development Manufacturing Execution and Logistics at Rasselstein, is justifiably proud of his company’s sophisticated and highly effective IT infrastructure. “Two main features of the HP Integrity NonStop platform are very important for us,” he said. “First, the system delivers the highest availability to support our

continuous production environment. Second, because of its excellent connectivity to other IT systems and intelligent production devices, it is well suited to be the central platform for our highly automated production environment. Our plants rely directly on the availability of applications powered by the Integrity NonStop server.”

Most production at Rasselstein is controlled digitally. Customer orders are entered into SAP, translated into work orders with all related technical requirements, and then passed to the Integrity NonStop system. From that moment on, there is no further manual intervention. The Integrity NonStop server is directly connected to all production process stations, providing just-in-time control and measurement in accordance with specially tuned manufacturing parameters.

Modernizing NonStop applications

The current MES system is based largely on bespoke TAL and COBOL software. The system provides all functions for managing released work orders, related material warehousing, and logistics, including the management of driverless transport vehicles. Additionally, the application is integrated with the level 2 (SCADA) systems, providing them with all production parameters and acquiring the production data.

Customer solution at a glance

Modernization of legacy production control application on HP Integrity NonStop platform

Primary applications

- Manufacturing execution system (MES) applications, including Quality Assurance Center (QAC)

Primary hardware

- HP Integrity NonStop system

Primary software

- Pathway
- NonStop SQL
- NonStop Remote Database Facility (NonStop RDF)
- CommitWork OmnivoBase middleware
- Oracle/BEA WebLogic Server

Services from HP

- Close collaboration in consulting and system implementation

Because the pool of developers familiar with TAL and COBOL is shrinking, Pausch and his team embarked on an ambitious program to modernize the company's legacy NonStop applications. "Our system consists of many different application modules for specific tasks," Pausch explained. "We are modernizing these modules one by one by moving into the Java world, thereby ensuring the necessary reliability for our continuous production process."

The first step in the modernization program focused on streamlining and enhancing Rasselstein's Quality Assurance Center (QAC). "We had four different systems operating in the QAC, each with its own application software," said Pausch. "The operators had to enter information on multiple screens—a complicated and time-consuming process that increased the possibility of error. We wanted to ensure that we were applying 21st-century technology to achieving the highest possible quality. The new Java and service-oriented architecture (SOA) application provides a highly effective approach that meets our stringent quality requirements." The successful project, which was an important part of Rasselstein's "zero fault" strategy, provides users with a single, integrated front end user interface for all quality-related business transactions.

At the beginning of the QAC modernization project, Rasselstein's Java experience was limited. The company therefore partnered with CommitWork GmbH, a local software vendor whose OmnivoBase product delivered a ready-made Java framework. "This framework has enabled us to develop Java applications much more efficiently," said Pausch. "In fact, using OmnivoBase—along with the considerable knowledge and expertise that CommitWork brought to the table—we were able to implement the first prototype of the quality application in just 28 days. We have now reduced the number of screens and greatly increased the usability of the legacy application. The framework also gives us complete middleware independence, protecting Rasselstein's investment in our business logic."



The new process is completely integrated into all participating systems. The quality test plan is set in SAP based on customer specifications, and the intervals for collecting test samples are generated according to a set of rules in the mainframe. The full quality test and assurance program is then automatically transferred to the Integrity NonStop system. When a sample must be cut during the production process, a bar code label is printed; the bar code is read at one of the inspection stations; and the associated test plan is immediately identified. Test robots use the bar code information to obtain the specific test parameters from the Integrity NonStop system via Rasselstein's SOA interface.

Integration of legacy applications

The need to interconnect diverse systems has always existed in Rasselstein's heterogeneous computing environment; in 1992, the company developed a software architecture that provided this interconnection via services. "Since the term 'SOA' did not yet exist, we called it 'TA-Serv,'" said Pausch. "Our SOA landscape allows all systems to communicate through services. For example, SAP users have transparent access to work-in-process product data on the Integrity NonStop server. More than 600 services are available on our internal network. The Integrity NonStop server plays a special role, because it hosts the catalog of all these services."

The fact that Rasselstein's infrastructure was already built on SOA principles makes it easy to migrate legacy applications into the Java world. "We do not need to change the architecture of the overall application," explained Pausch. "We simply need to integrate the new technologies and standards into our existing environment." Rasselstein is a leader in the manufacturing industry in adopting such modern technology on the Integrity NonStop platform.

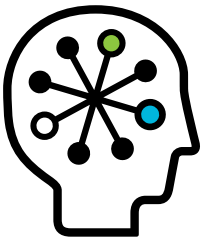
The inspection staff at Rasselstein was fully engaged in the modernization project, and their wishes and suggestions were directly incorporated as the new system evolved. "The feedback so far has been very positive," noted Pausch. "The inspectors now have an application that is designed to optimize their workflow, and this will lead naturally to higher productivity. We also expect significant savings in materials, since only the required samples will be cut."

Rasselstein's QAC modernization initiative was guided by a comprehensive set of requirements: The company needed a closed-loop quality management environment to assure consistent product quality, and to provide basic data for statistical process control. The environment had to include continuous observation and documentation of all quality-related factors and measures in the production process, as well as the production efficiency of the aggregate systems. It had to ensure that preemptive tasks and controls were performed completely and on time, and to document these checks. Proactive information on mandatory quality assurance tasks and quality factor

trends was critical. The MES and quality systems had to be integrated. Finally, the quality verification laboratory required support for more than 100 different product tests. The new system is designed to meet all of these requirements.

"The Integrity NonStop server plays a pivotal role in helping Rasselstein maintain our position as the global premium provider of tinplate products," said Pausch. "We are especially proud of our new proactive quality assurance system, powered by the Integrity NonStop server, which enables us to address potential production problems before they emerge. The use of Java and WebLogic Server also protects the investment in our bespoke software development by providing hardware independence."

The applications on the Integrity NonStop system support Rasselstein's continuous improvement process in the areas of quality and productivity, but that's not all. "The Integrity NonStop system also improves our business agility, by facilitating rapid response to individual customer requirements in the production process," Pausch concluded. "The seamless integration of hardware and system software, coupled with the fault tolerance of the Integrity NonStop server, results in an extremely efficient production control and logistics environment. We use the Integrity NonStop system to manage production for high throughput, and also to ensure the superior quality of our products. HP is clearly our preferred partner for fault tolerant applications."



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