SMS Siemag: Setting New Standards in Large-Plant Construction with SAP® Product Lifecycle Management

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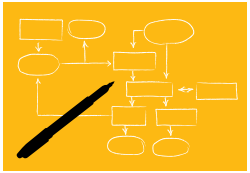

Company
SMS Siemag AG

Industry
Industrial machinery and components

Products and Services
Development and construction of large plants

Web Site
www.sms-siemag.com

SAP® Solutions
SAP® Product Lifecycle Management application

Partner
bdf consultants GmbH (www.bdf-consultants.de)

As a leading specialist in large-plant construction, SMS Siemag AG delivers custom-built smelting and roller mills to customers worldwide. To optimize its engineering processes in the area of electronics and automation, the company established an integrated construction platform for electronic components based on the SAP® Product Lifecycle Management (SAP PLM) application. This has enabled **efficiency increases of up to 30%** – even on highly customized projects.

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Several irons in the fire

Whether located in China, Brazil, Spain, South Korea, or even Lower Saxony in Germany, companies in the steel, aluminum, and copper processing industries around the world rely on tailored solutions from SMS Siemag. For over 140 years, this specialist in large-plant construction has been developing and modernizing smelting and roller mills, conveyor systems, and environmental technologies for its customers.

A company rich in tradition, its products range from deoxidization techniques, steel production, secondary metallurgy, and strand casting to the construction of modern, hot and cold roller mills and conveyor systems. "We work with our sister companies on planning, development, finance, construction, installation, automation, and training," says Martin Schneider, head of the plant engineering and hardware design department at SMS Siemag, summarizing SMS Group's integrated service portfolio. SMS Group also invests heavily in the future in areas such as technical innovation, modernization, and the expansion of global manufacturing capacities.

Because of this, SMS Group is now regarded as a renowned provider of solutions for smelting and roller technology, boasting solid growth rates and full order books. In 2011 the SMS Group posted revenues totaling over €3 billion.

28%

Growth in 2010

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Forging standardized success

According to VDMA (Verband Deutscher Maschinen- und Anlagenbau [German Engineering Federation]), almost three-quarters of all orders in large-plant construction came from outside Germany in 2011. Although orders from industrialized nations fell, especially in Western Europe, the Asian market grew. At the same time, competition from China and South Korea is turning up the heat in the international markets.

The technological leadership of German companies is not in question. According to estimates of the VDMA, however, this will not be enough to ensure global success in the long term. "Our members are not only pushing through measures that draw on the classic levers of price, quality, and lead time, but they are also taking steps to improve marketing and risk and project management," states Helmuth Knauthe, VDMA's spokesperson.

And this includes SMS Siemag, which is looking constantly for new ways to implement highly complex, customized plants more quickly, more cost-effectively, and with superior quality. But that's easier said than done. No two plants are the same. "There is a school of thought that suggests efficiency increases based on partially automated construction are impossible," says Schneider. Quite the opposite is true, however. With a standardized engineering platform, SMS Siemag bundles together different production areas and locations and, ultimately, benefits from the advantages of standardized construction.

"Standardization is definitely possible in specialized plant construction. Our SAP software–based Process Control Center is proof of this."

Martin Schneider, Head of Plant Engineering and Hardware Design, SMS Siemag AG

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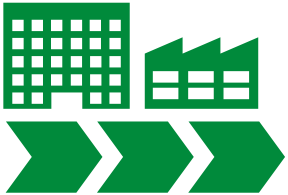
Single-mold solution

Each plant that SMS Siemag builds consists of thousands of different mechanical and electrical components. Before it deployed SAP software, SMS Siemag used a Microsoft Excel–based engines-and-components (E&C) list to maintain information about electrical equipment such as sensors and actuators. The drawback of this system was that decentralized data storage, redundant items, and manual input errors led to inconsistencies and quality defects in the product information, which delayed the construction process. "We decided to seamlessly bundle our electrical and mechanical engineering, improve engineering quality, and accelerate the entire workflow," says Schneider, describing the challenge.

The SAP Product Lifecycle Management application paved the way to more efficient engineering and cross-product, cross-discipline, and cross-location standardization at SMS Siemag. The software forms the basis of a construction platform that integrates SAP and electronic CAD (ECAD) systems – linking mechanical and electrical engineering processes with each other.

Thanks to the extensive functionality for managing product masters and structures in SAP PLM, the engineers in SMS Siemag's Process Control Center (PCC) can design functional plant structures extremely efficiently, map the field equipment level in detail, and link this data to other information.



30 months

From order entry to acceptance of a large plant

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Improving workflow with a single, centralized solution

With the PCC, SMS Siemag can now manage the master records and movement data of electrical components in the SAP software. The detailed electrical specifications of the individual field devices, in the form of "typicals," help ensure maximum transparency in the construction base. Electrical specifications, automation structures, defined hazard areas, and safety requirements are available at a glance.

This makes the entire engineering process more transparent and much easier. "Previously, engineers copied existing plans and adapted these to the new customer's requirements. Now, they first choose the required components and then generate the construction plans – custom-fit at the touch of a button," says Schneider.

With a standardized tree structure, engineers can create cross-product projects and plant structures for steel plants, hot and cold roller mills, strand casting, and conveyor belt systems. Together with the EPLAN Engineering Center (EEC), employees generate circuit diagrams in EPLAN P8, the ECAD system. Schneider is delighted: "We have achieved our goal of establishing a shared construction platform across the individual product areas and locations, making the previous Excel lists redundant and incorporating additional engineering steps." This has allowed SMS Siemag to reduce engineering times, improve construction quality, and reinforce its competitive position.

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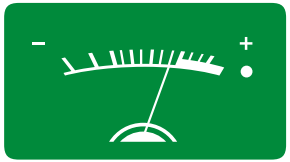
No need to reinvent the wheel

Since the end of 2010, the integrated, SAP PLM–based construction platform at SMS Siemag has enabled rapid, cost-effective, and high-quality construction of specialized plants. High reusability rates, combined with a fixed range of equipment, accelerate the construction process and ease cross-area and cross-location collaboration.

From his perspective as head of the department, Schneider sees further efficiency increases thanks to the cross-discipline standardization. "The more projects we manage using the new construction platform, the higher the savings potential," he says.

Ideally, electrical engineers will be able to copy the entire functional structures of a plant and use these as a project template. "Reusing standardized electrical devices is a key lever in saving time and money," concludes Schneider.



30%

Savings potential in the construction process

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Optimizing other business areas

Using the Process Control Center and EPLAN Engineering Center, SMS Siemag generates circuit diagrams for mechanical sensors and actuators (field level) as well as for control desks. “The PCC, with SAP PLM, and the EEC, with EPLAN P8, have already proven themselves in live use in the area of hot and cold roller mills. We are now gradually introducing these into other areas, including steel plants, strand casting, and conveyor belt systems,” says Schneider.

“Step-by-step, we hope to drive the standardization process forward, further optimize the entire engineering process, and continue to improve the quality of electrical documentation,” says Schneider as he looks into the future.

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