



FMC Corporation: Integrating Shop-Floor and Business Systems with SAP® Solutions

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Partner



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FMC Corporation

Industry

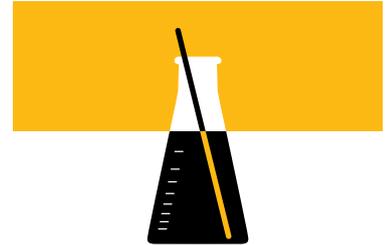
Chemicals

Products and Services

Specialty chemicals for global agricultural, industrial, and consumer markets

Web Sitewww.fmc.com**SAP® Solutions**

SAP® Manufacturing Integration and Intelligence rapid-deployment solution for batch manufacturing

PartnerTata Consultancy Services Ltd. (www.tcs.com)

FMC Corporation recently set out a mission for feeding the world, protecting health, and providing the conveniences of life through its chemistries. As the pace of business rose, so did the need for standardization and real-time information sharing, with the goal of better serving customers. Starting with a pilot in its Norway facility, FMC used SAP® software to **integrate global manufacturing and business systems** for better planning and communication between the shop floor and business leaders.

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Feeding the world, protecting health, and more

FMC Corporation is one of the world's foremost, diversified chemical companies with leading positions in agricultural, industrial, and consumer markets. From its inception in 1883, FMC has been providing products and solutions to a wide range of companies and their customers. It uses an array of advanced technologies in research and development to improve the delivery of medications; enhance foods and beverages; power batteries; and protect crop yields, structures, and lawns. FMC is also engaged in advancing the manufacture of glass, ceramics, plastics, pulp and paper, textiles, and other products.

FMC recently reported annual sales of approximately US\$3.4 billion. The company employs approximately 5,000 people throughout the world.



5,000 employees

Around the world



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Vision 2015: creating the right chemistry

FMC's Vision 2015 is a road map for a future in which FMC is a larger, stronger, and more global company than it is today. This vision is shared across all FMC businesses, with ambitious yet achievable goals and the desire to capitalize on the company's unique strengths and steadily expanding market opportunities. By sustaining a corporate culture of innovation, integrity, responsibility, and customer intimacy, FMC intends to foster the right chemistry in everything it does.

FMC expects – and is already experiencing – increasing demand for its unique chemistries in key consumer and industrial categories. It is actively investing in organic growth, expanding in rapidly

developing economies, and taking steps to centralize ownership and systems to realize greater efficiencies and deliver cost savings. It also continues to proactively manage its portfolio to ensure that all FMC businesses are positioned to deliver sustained, premium sales growth and return on assets.

With this vision in mind, FMC is developing an infrastructure designed to meet increasing demand and ensure that its products are readily available to customers throughout the world. To do this, FMC made the decision to deploy new SAP® software that would improve agility, flexibility, and operating efficiency by linking real-time shop-floor updates with key business planners and decision makers.

“FMC's IT systems are critical to running our businesses and supporting our growth strategies. I am excited about the role IT will play in reaching our Vision 2015 objectives, and the SAP implementation is a perfect example of how we can do that.”



Dave Kotch, CIO, FMC Corporation

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Closing the gap between the business and shop-floor systems

FMC has used software from SAP to power its business systems for years. Within its manufacturing facilities, though, FMC had implemented a range of manufacturing execution systems (MES) and distributed control systems (DCS) that were not directly connected to the SAP® software supporting the lines of business.

Due to lack of integrated systems, plant personnel entered – and sometimes entered twice – manufacturing data in isolated systems, spreadsheets, and databases. This data was available for only a few people, and consolidating data for analysis and reporting was time consuming and needed quality assurance and correction.

The FMC facility in Haugesund, Norway, had a lot of experience using an MES system connected to the DCS system. Over the years, the legacy system

became outdated and needed replacement. The vision was to consolidate the legacy MES system and several isolated systems and to replace inefficient usage of spreadsheets and manual processes, using a real-time solution connecting the shop floor to the enterprise system.

Inspired by SAP's "perfect plant" concept, in which manufacturing and business systems are integrated, FMC decided to start a consolidation project at its facility in Haugesund, Norway. "FMC is a strong advocate of standardization," says Per Magne Olsen, IT manager for the FMC plant in Haugesund and venture manager for the project. "We were already using business software from SAP as well as Microsoft software and plant historian software from OSIsoft. Using software from SAP played well into this system architecture, and using it to connect to the factory floor was the natural choice for us."



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TCS and SAP facilitate a cost-effective deployment

FMC decided to partner with Tata Consultancy Services Ltd. (TCS). With its history of implementing SAP solutions and its combination of on-site support and offshore development, TCS appeared to offer precisely the experience and expertise that FMC was seeking.

TCS and OSIsoft PI system personnel spent one week at the Haugesund site, working with the Haugesund project team to develop a preliminary set of development requirements. They then spent a week at FMC headquarters in Philadelphia, gathering and refining requirements associated with the business systems themselves. After several weeks, the project team,

including TCS and OSIsoft personnel, was ready to roll out a template-based manufacturing-floor connectivity solution built around the SAP Manufacturing Integration and Intelligence (SAP MII) rapid-deployment solution for batch manufacturing.

“TCS did a great job,” confirms Shaun Gordon, senior project manager at FMC. “We had a very good project lead from TCS. The TCS people worked very closely with SAP personnel, and the team helped us manage some of the complexities of this deployment. It would have been much tougher to execute without their knowledge and skills.”

“We succeeded in building the manufacturing shop-floor templates that we wanted. One manufacturing site can use and extend these templates, ensuring that other facilities can be updated rapidly and cost-effectively.”

Per Magne Olsen, IT Manager, FMC Corporation



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Formulating better connections

FMC has proven that SAP MII is a strong platform for connecting the SAP ERP application used on the business level to the manufacturing systems used to oversee product production. On the plant floor in Haugesund, where alginate products for food and pharmaceutical clients are manufactured from seaweed, SAP MII has been integrated with the OSIsoft PI system. Manufacturing data flows through the plant in real time and effectively connects the different manufacturing data sources with SAP ERP. At other FMC facilities the system architecture may differ, but the strong integration possibilities that reside in SAP MII will handle those differences.

Role-based dashboards enable different FMC employees to gain the insights they need too. Senior executives can use their dashboards to view manufacturing output and quality key performance indicators at a glance. Manufacturing-floor operators can use their dashboards to see process temperatures, material viscosities, and more. If an operator on the plant floor updates information about a process, that information is immediately available to others elsewhere in the Haugesund facility.

TCS has also integrated SAP MII into the Microsoft Active Directory system at FMC. With Active Directory audit trails enabled, system administrators can see exactly who performed what action. Should FMC in Haugesund ever need to audit a process, a complete transaction trail shows precisely who did what and when.

“The week we went live, the number of material documents created in our SAP ERP application system for Haugesund rose by 400%. This demonstrated that the data being captured was more concise, giving a real-time picture of how the plant was operating.”

Shaun Gordon, Senior Project Manager, FMC Corporation



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One source of manufacturing data for an integrated world

To evolve into the more global company that its executives envision, the Haugesund FMC plant needed to connect the manufacturing-floor systems to the broader real-time business infrastructure. That improves the flow of information throughout the plant, eliminates the need to enter the same information into different systems, and provides a robust error-checking mechanism. All these advantages enable the Haugesund facility to operate with a very lean team.

The real-time information flows that SAP MII has enabled make it possible for process engineers and business decision makers to pull up reports about the manufacturing environment that reflect real-time data. Previously that information might have been days or weeks old.

Because SAP MII has connected the plant-floor systems and passes information from all those systems to SAP ERP in real time, there is now a single data repository. When it comes to business reporting and decision making, there is a single, real-time source of information that enables better planning and process execution throughout the company.

“Looking back to the beginning of this project, we had some very bold dreams – and maybe we did not even know how bold they were at the time. But now we’ve delivered and we’re well positioned to meet the future.”

Per Magne Olsen, IT Manager, FMC Corporation



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A template-based expansion

In deploying SAP MII at Haugesund, TCS used the batch-manufacturing templates provided by SAP. These templates provide FMC with a blueprint it can use for deploying similar upgrades in other manufacturing plants around the world. "Each manufacturing facility differs in detail," says Gordon, "but the templates we developed with TCS for the facility in Norway will serve as an accelerator for future deployments in plants throughout the world."

Ultimately, as FMC integrates more of its manufacturing-plant floors with its broader corporate business systems, it can build on the infrastructure to operate more efficiently and with greater agility and responsiveness. It can become the larger global entity that it envisions itself to be while simultaneously becoming more capable of meeting the local needs of its clients throughout the world.



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