



DOW CORNING

Overview

Country or Region: Midland,
Michigan, U.S.A.

Industry: Chemical

Solution

With continued use of the PI System to optimize processes for cost savings and integrate production data into ERP, the company also wanted to adapt the PI System to changing business strategies and develop an e-business infrastructure with more electronic business methods.

Benefits

- Optimized operations: identify and correct process bottlenecks; investigate process monitoring and predictive maintenance; automate reporting
- Real-time production data integrated into ERP and the expanding electronic network of applications
- E-order entry, e-order tracking, e-invoicing, e-everything
- Improved e-business infrastructure, expense tracking, quality, service, profits

Dow Corning optimizes operations with the PI System and adapts the infrastructure to changing business strategies



“Using OSIsoft’s Platform has helped us increase profits while bringing about a higher level of quality, service, expense tracking, and a more solid e-business infrastructure.”

Barry MacGregor, Global Business Process Manager, Dow Corning Corporation

Since 1992, Dow Corning has used OSIsoft’s PI System to optimize operation processes, resulting in savings of millions of dollars per year. Even with such great success, the business needs and strategies of every company change, and Dow Corning was no exception. With electronic methods increasingly available, the company began an enterprise-wide e-business initiative. Fortunately for Dow Corning, the PI System made integrating with e-business systems easier, more seamless, and in fact, even helped the company define this new business direction.

Now, Dow Corning uses the PI System to integrate operational and business information. PI plays a key role in Dow Corning’s successful enterprise-wide e-business strategy, feeding accurate real-world information into SAP for e-order entry, e-tracking and e-invoicing that is based on actual plant activity. With instant access to information, Dow Corning has the ability to continuously control performance and hone improvements. The return on investment from PI has far exceeded expectations and Dow Corning continues to find new ways to benefit from their investment in OSIsoft. Dow Corning anticipates that the agility and flexibility of the PI System will continue to help their operations evolve as business demands and challenges shift throughout the next decade.

Dow Corning

Dow Corning is the world's leading producer of silicone monomers and other silicone products, operating 35 manufacturing plants around the globe. In 2002, the company employed 7,000 people internationally, and earned revenues exceeding US \$2.8 billion. Dow Corning's manufacturing operations range from low-volume, manually controlled, multi-product batch processes to high-volume, continuous process trains using complex distributed control systems.

Dow Corning's Global Business Process Manager, Barry MacGregor, is responsible for setting and implementing Supply Chain Data integration strategies at Dow Corning. Throughout his 20 years with Dow Corning, Barry has gained deep insight and understanding of the control industry. His experience at Dow Corning includes instrumentation and process control engineering, production team leadership, IT database architect, manufacturing system leadership, and most recently, business process leadership and direction setting.

Dow Corning's first PI System was implemented under Barry's guidance. One of the first steps was to directly record key parameters during the process rather than using the conventional means of lab testing product properties. The PI System enabled Dow Corning to meet these challenges head-on, with the result being improved operations and the ability to see key parameter data much quicker.

Optimizing operations

The PI System integrated seamlessly and easily with other applications in Dow Corning's system hierarchy, resulting in rapid implementation and a very short time-to-benefit. A typical system was up and running in less than one week, including installation, training and commissioning. After fully installing the PI System in 1992, the availability of accurate, real-time data, coupled with powerful analytical tools, led to significant improvements in process analysis, performance and optimization.

PI has helped Dow Corning optimize operations by giving people enterprise-wide access to operations information, identify and correct process bottlenecks, investigate process monitoring and predictive maintenance, and automate reporting.

Gain enterprise-wide access to operations information. Not all sites can afford process experts on staff for every technology. Before the PI System installation, a necessity for process expertise often demanded the generation and distribution of paper reports, plus expensive travel by process experts. With PI, process technologists and other personnel can easily access real-time data from any production site without leaving their offices. Relevant real-time data can also be displayed in management, finance or engineering meetings across the enterprise. These capabilities enable far more efficient use of limited technical resources.

Identify and correct process bottlenecks. Production personnel use PI to monitor processes upstream and downstream from their operations. This capability enables them to identify potential bottlenecks anywhere in the supply chain and make adjustments quickly to minimize negative impact.

Investigate process monitoring and predictive maintenance. Before PI, process operators had few real-time monitoring tools. The process control systems generated large volumes of data, but the limited resources available to store this data for long periods, quickly retrieve or analyze it hindered process improvement. With PI, operators can monitor processes in real-time to identify and correct operational, safety and maintenance problems before they become serious. Executing root-cause analysis is as simple as reviewing appropriate equipment data over the correct time period. Dow Corning estimates that maintenance costs have been reduced by \$3.2 million per year.



Automate reporting. Before PI, compiling the data required to prove compliance with environmental regulations required significant technical personnel resources. All too often, much of the data had to be estimated. With the PI System, data is provided with a minimum of manual effort, and more importantly, the capability to continuously provide actual emission data allows for plant operation at higher rates, producing higher output and higher profits, without the danger of exceeding permitted discharge limits.

Adapting the PI System to changing business strategies

For over a decade, the PI System has helped Dow Corning realize increased process efficiencies and performance across the enterprise. The company was able to achieve incremental improvements in areas such as raw material usage, batch times, supply-chain cycle time, energy usage, human productivity and process variability.

As ways of doing business have increasingly developed into more electronic methods, the company sought to establish more e-business infrastructure and operations. From the beginning, Dow Corning has continuously looked for new ways to leverage their investment in PI, and they were able to leverage the PI System Platform as a key component in their enterprise-wide e-business strategies.

Today, a major focus at Dow Corning is on “electronicizing” their entire business, and the company relies on the PI System to “feed” real-time operations data into the ever-growing electronic network of applications. “It’s e-everything throughout the company — e-order entry, e-order tracking and e-invoicing,” says MacGregor. “With the PI System, customers are able to check their order on their own and get an accurate status. We have quantified the benefits of PI in increased profits, higher quality, better service, expense tracking and operating from a solid e-business infrastructure.”

Getting real-world events into ERP

Dow Corning uses SAP as a conduit into the e-commerce environment, so directing accurate and timely information into SAP is vital. The quality of Dow Corning’s electronic business is dependent upon the accurate reflection of physical world events, such as those happening on the production floor and in the field.

As Barry MacGregor explains, “What happens in the physical world has an impact on our business every day. The PI System feeds these physical world events into our ERP systems in an extremely accurate and timely way. Not only can we see a more complete picture of our entire operation, but our customers can also check their orders and get the right answers. Without accurate, timely data, our e-commerce efforts would not be as successful for our customers or as profitable for us.”

Dow Corning has achieved full-scale implementation of its electronic business by seamlessly integrating production-level modules into the company’s Enterprise Resource Planning (ERP) system, SAP, with delivery and e-commerce modules. OSIsoft’s RLINK product captures events second-by-second in these production-level process modules and feeds the data into SAP. Without this data, employees and customers would see only the ERP side of the process, and not the physical reality of operations. Dow Corning has configured all systems to update employees and customers every four hours.

“What we’ve been able to do with the PI System and SAP is to not only tell ERP what is happening in the physical world, but also tell the physical world how we want it to operate,” says MacGregor. “That’s amazing control of performance on both sides. As we continuously hone in and improve the performance within our processes, the return from the IT investments that we’ve made increases.”

Integrating plant information into ERP enables Dow Corning to achieve:

e-Order Entry

e-Order Tracking

e-Invoicing

e-Everything

The return from plant and ERP integration is improved:

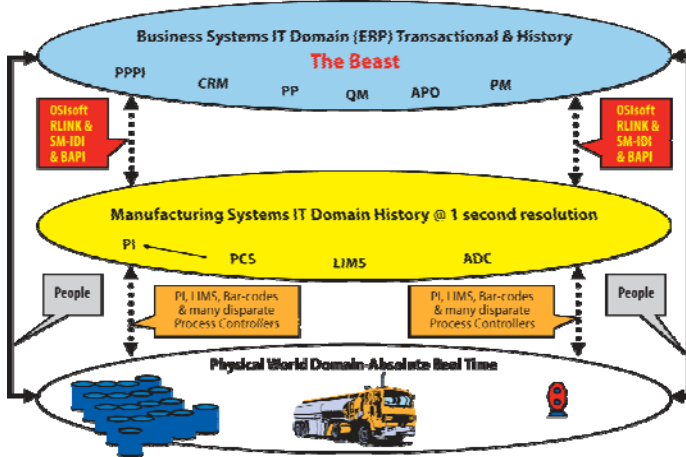
e-Business infrastructure

Expense tracking

Quality

Service

Profits



Capturing and integrating events from the physical world into ERP and other IT systems is an essential factor in Dow Corning's ability to derive full value from its data. Having a more complete display of information, from both operations and ERP, means better performance management and higher e-business success.

How Dow Corning captures and integrates the physical world into SAP

The PI System, gathers process data and delivers it in a timely way to enterprise systems using the following modules:

PI3.3 (the PI System) is the Microsoft Windows-based engine that captures, stores and distributes real-time process data. The first PI System at Dow Corning was the VMS based PI1.X. Through several operating system migrations and software upgrades, the system has been continuously and faithfully recording process data for eleven years and counting. Interfaces to legacy and control systems capture data from all manufacturing processes and store it in the PI System. Through the years, as Dow Corning has upgraded process systems and brought new systems online, OSIsoft interfaces have continued to accurately collect and deliver the data into the PI System.

RLINK is the OSIsoft interface to SAP's PP-PI, QM and PM modules. When Dow Corning wanted to integrate their process data into their SAP system, they chose OSIsoft's RLINK product, which includes certified links between the plant floor and PP-PI, PM and QM modules.

PI Batch and BatchView helps Dow Corning determine an ideal batch, and run more efficient and consistent batch operations with reduced cycle times and increased product consistency.

ProcessTemplates helps Dow Corning improve process consistency by measuring key performance indicators over repeatable time segments, and using this information to create templates of expected behavior.

PI System Client applications are easy-to-use desktop tools that give users instant access to data and the ability to assign context, analyze and share information throughout the enterprise. These clients include statistical process control clients, DataLink (OSIsoft's Excel-based spreadsheet reporting tool) and ProcessBook (OSIsoft's graphics and trending package).

PI System provides significant, long-term return on investment

The economic savings resulting from Dow Corning's PI System implementation are much higher than originally projected. Return on their investment is continuously achieved from increased sales via satisfied customers, lower maintenance costs (\$3.2 million per year), increased productivity, improved product quality, and lower reject rates.

Dow Corning anticipates that this return on investment will continue to grow and that usage of the PI System will evolve as business demands and challenges shift throughout the next decade. Acceptance and usage of the OSIsoft Platform within Dow Corning has grown almost exponentially. Many people who regularly use the system say they can't imagine how they ever functioned without it.