

Use an enterprise asset management (EAM) system to improve performance

A cement plant expanded the scope and functionality of its CMMS system to reduce inventory and improve maintenance efficiency.

Inventory has been reduced \$2 million, equipment utilization is up, and preventive procedures for emission controls have been validated, which provides proof of emission control abatement and avoids significant fines.

Cement producers are in the enviable position of rarely being able to make as much product as they can sell. While this may seem like a business utopia, leveraging this opportunity in a highly cost-competitive market requires a continuous innovation.

“We must continually find new and better ways to balance both availability and utilization of our production assets,” said Mike Ralls, plant systems administrator for Ash Grove Cement Company. This challenge is compounded by having to develop a solution that works for each of the company’s 9 production facilities.



Having prospered in the competitive cement business for more than 120 years, Ash Grove is adept at adopting change. In 1998 they implemented a Beta installation of Avantis.PRO enterprise asset management (EAM) system from Invensys, to improve their return on assets (ROA) and reduce cost by automating data collection on maintenance activities. Ash Grove began rolling the Avantis solution out to the remaining facilities the next year.

Ash Grove’s Durkee, Oregon facility was first on the EAM rollout roster. “Our original need was maintenance functionality and some cost tracking information, but when we saw that Avantis could also help us sort and interpret this data, we were pretty excited,” said Bernard Sherin, maintenance manager at the Durkee plant at the time. Ash Grove then set out to improve equipment reliability and cost savings further by tapping EAM functionality for enterprise planning and scheduling, document management, regulatory compliance and inventory management.

Planning and scheduling

“Following safety, our top priority is minimizing downtime of revenue-producing equipment,” said Sharon McGuire, planner/scheduler at the Durkee facility. One such piece of equipment is the kiln. If this system goes down unexpectedly, Ash Grove is looking at the possibility of losing as much as

\$ 3,000 per hour. “Planned outages give us more control over the situation and drive our maintenance schedules. Proper planning requires facility-wide coordination, and that is one area where the Avantis software has proven to be particularly helpful.”

The Avantis system enables Ash Grove management to share maintenance data from diverse, geographically separated operations, covering several square miles of quarries and the cement production plant. This detailed history of equipment information enables supervisors to analyze failure histories, track failure causes and proactively take action. Maintenance parts inventories can be better managed, workflow can be better planned, and purchasing and procurement functions can be tied directly into planned outage maintenance programs.



To enhance the scheduling and planning efficiency, Ash Grove added Avantis VIP Advanced Scheduling software, which helps ensure that all people, tools, assets, parts and other resources needed for a project are available to the technician.

Ash Grove uses Avantis VIP in conjunction with handheld PDAs. Planners download work orders to PDAs, which are given to technicians at the beginning of each day. The work orders can include information on labor, materials, tools, drawings, and any special instructions for the job. When the PDAs are docked at the end of the day, the planner can see what work was accomplished, what work is outstanding, and what emergency work came in during the day.

Electronic documentation

“One of our most important assets is the people that make things happen at Ash Grove. Our asset management program is based on having the right person, with the right knowledge, doing the right thing, at the right time,” said McGuire.

As the core of this “righteous” approach, Avantis supports technicians becoming more involved with inputting maintenance activities and notes. “Their input can improve work efficiency. The next time a tech goes out to do the same job he will have more job details, know what parts he will need and how long it will take to do the job. It also helps planners put together a more complete work order package faster,” said McGuire.

Improved regulatory compliance is yet another benefit of the EAM system at Ash Grove. A Federal Environmental Protection Agency (EPA) regulation requires all cement plants to be fully compliant. Durkee plant management uses the Avantis system to collect and process all data to support compliance with this particular program.

“One of the critical issues of this program is having preventive maintenance schedules set up and documented, including standard operating procedures that demonstrate we’ve followed these

procedures,” said Ryan Farr, corporate reliability manager. “We rely on Avantis to maintain our history of all operations to meet these requirements.”

This is particularly critical for visible emissions that can generate complaints, resulting in a visit from DEQ inspectors. “Avantis provides this documentation to validate our actions. In the past Ash Grove has paid significant fines because a plant may have abated an emission within the appropriate time frame, but had no substantial way to prove it,” said Farr.

Inventory Management

The procurement functionality in Avantis is instrumental in Ash Grove’s ability to manage their supplier base as well. Critical vendor information such as pricing, lead times and manufacturers’ cross-references are easily stored and retrieved. This information is used to automate the replenishment and tracking of inventory items. “The Avantis solution has significantly improved our ability to manage inventory, which is no small task when you consider that we maintain between \$2 million to \$12 million in inventory with as many as 8,000 items at each plant,” said Ralls.

Continued integration

Ash Grove has recently upgraded to Avantis.PRO 4.1, which provides the Oracle 9i support necessary for integration with the ERP system. They are also working on integration with an enterprise-wide network that will enable management of all Avantis clients from the Overland Park headquarters.

“We have converted three sites to a Citrix environment, which eliminates the need for remote monitoring by consolidating the Avantis database and application servers at headquarters. This is a monumental move when you consider that upgrading or modifying EAM clients would otherwise require traveling to each facility and spending 3 days with 4 people to get the job done. With Avantis running in the Citrix environment, however, we make upgrades from the office next door. We can also trouble shoot and remedy issues from headquarters” said Ralls.

Results

Expanding the scope and functionality of the enterprise asset management system has contributed to gains in inventory management, kiln uptime, and overall maintenance costs savings.

Inventory management gains are in reduced inventory size. “By closely monitoring and managing what we use, reorder activities, and parts and materials pricing, we have reduced inventory by at least \$ 2 million in the last few years,” said Ralls. “This is a significant contribution to keeping our prices competitive in the marketplace.

By increasing kiln usage, Ash Grove minimizes the potential loss of \$3,000 per hour for every hour the kiln is down. Because most maintenance must be done during planned outages, it is critical that all required parts be available for that outage. With the Avantis planning and scheduling functionality, the system now predicts what parts will be needed at the time of the outage, and automates ordering so that it is there when needed.

“We have tens of thousands of items to track throughout our enterprise and without Avantis you invariably will have mix-ups. With the Avantis system, however, it is nearly impossible to make these mistakes that can end up costing hundreds of thousands of dollars,” said Ralls.