

Cement Plant Paves the Way to Increased Profitability with Improved Process Quality

RESULTS

- \$1,500,000 per year improvement in cement production
- 37,000 tons of increased clinker production per year



APPLICATION

Condition monitoring of gearboxes, motors, gears, pinions, compressors, pumps, electrical switch gears, Motor Control Centers, ultrasonic leak detections, and lubrication best practices.

CUSTOMER

St Marys Cement, Dixon, Ill, with 630,000 tons cement per year capacity.

CHALLENGE

This cement plant was built in the early 1900s and modernized in the 1950s. Four kilns rotate continuously an average of 330 days a year to produce clinker, the raw material for hydraulic cement in constant demand by a sold-out construction industry.

Careful maintenance procedures have kept the plant's equipment functioning without catastrophic failures during the past five years but with demand so high, management wanted to operate even closer to the plant's maximum potential. Each percentage of production short of 100% capacity cost this company \$250,000 per year in unrecoverable missed revenue.

SOLUTION

"Our objective in the plant— our focus— is not only to prevent failures from happening in the first place, but to increase equipment availability, performance, and process quality," says Reliability Engineer Wisly Saintelmy. "For instance, a clinker grinding mill is designed to produce 20 tons of cement per hour, and when it's only making 15 tons, that's a performance rating of 75%," which can effect the whole production run. "Bad product is costly. If a machine is handling the wrong type or amount of material, this can result in stress factors which could damage the equipment over the long run."

"The support we got from Emerson is great. We really like a company to give us good support when we make an investment."

"AMS Machinery Manager gives us all the power we need."

Wisly Saintelmy
Reliability Engineer

Recognizing the importance of keeping the process at its best, this plant had for years used a professional reliability services company for regular monitoring. Management realized a big improvement could be achieved by training one of its own staff on the Emerson's machinery health analyzer. "Just having the capability to do all this diagnostic in place is huge. Having one instrument that does vibration, alignment, balancing, mutable diagnostic testing, it opens a new world for us. It means a lot to have this information instantly for our use."

The St Marys monitoring program includes watching over small, critical electric motors. "We have the flux coils installed too. It has saved us a lot of 25 to 75 horsepower motors." An interruption to replace a failing motor can halt production for as much as six hours. With the flux coil mounted at the back of a motor, the analyzer reads the magnetic flux pattern and converts it into a value which can indicate rotor bar or sta-tor defects. "You can also take a current reading and look at the 3-phase reading to check current imbalance or voltage imbalance. If the flux reading shows a rotor bar defect, you take a 3-phase current reading to confirm it. It gives severity so you can plan for repair, and you can recon-firm severity with vibration readings as well."

Since implementing a complete in-house reliability program, the increased equipment availability and improvement in production quality has increased throughput of the plant to 96%. "To keep all four kilns running well, we need to keep up reliability on the whole plant. Our main driver is the availability of the equipment, and we've been able to increase the availability of the equipment," and therefore production by \$1,500,000 per year.

With the right tools and direction, this 100-year-old cement plant is paving a road to increasing profitability.

"We had training on site. It was very beneficial. We could do hands-on, in-field training where the environment is very industrial. It's a different ball game in the field. Having Emerson's training experts come to our plant was very valuable to us."

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Wisly Saintelmy
Reliability Engineer

Emerson
Reliability Solutions
835 Innovation Drive
Knoxville, TN 37932 USA
☎ +1 865 675 2400

🌐 www.emerson.com/ams

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