

NEWS RELEASE

For Immediate Release

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World's Largest Mill Pump Achieves Unheard Of 4,000 Hours of Continuous Operation

When leaders of a massive Chilean copper mine wanted to reduce shutdowns, they turned to GIW to enhance the huge and already impressive MDX-750.

GROVETOWN, Ga. (September 22, 2016) — GIW Industries Inc., leader in the design and manufacture of heavy-duty centrifugal slurry equipment, pumps, and parts, helped a customer in Chile achieve what it thought impossible: developing a mill pump that can run at least 4,000 hours continuously without shutdown.

Not only did GIW experts meet the customer's need but their innovative improvements to material developments in the MDX-750 high wear wet end components will save this massive copper mine an estimated \$6 million USD per mill line.

Customer-focused engineering

Before GIW engineers were tasked with this industry-leading pump project, employees dedicated upfront time to familiarize themselves with the mine's operations while helping its owners overcome issues with cyclone-feed pumps in their concentrator plants.

In 2009, after years of dealing with poor performing mill pumps, requiring a costly mill outage every 800 hours, leaders of the copper mine began looking for an alternate supplier that could help them maintain a more reliable shutdown schedule, minimize expenses, and meet a high safety standard.

"GIW rapidly responded to the customer's appeal for help by custom-designing an improved suction liner and impeller to be installed inside the existing competitor pump, providing improved hydraulics and wear life," says Hernan Palavecino, GIW South American Regional Sales Manager. "During the initial run of the new GIW technology the customer was astonished to see an "almost new" suction liner after first inspection at 1300 continuous hours. Keep in mind that the customer was accustomed to failures at 800 hours with their old supplier."

After this vast improvement in performance, mine personnel noticed the presence of tramp balls in their process. Out of fear of a catastrophic failure which could severely impact worker safety, they again turned to GIW experts for a solution. As a result, GIW then designed and built a complete jacketed casing in just two months to resolve this potential safety issue. The customers were so impressed they decided to replace the entire competitor pump with a complete GIW MDX-750, the world's largest mill pump, which provided 2,000 hours of reliable wear life and reduced plant outages to just four per year.

A new target

Since that time, the professionals at GIW have successfully installed seven total MDX-750 pumps in the mine's concentrator plant. Once the lines were upgraded to GIW technology, the customer set yet another new target for success: To extend the operational cycle and reduce plant outages from four to two annually.

To accomplish this goal, they would need cyclone feed pumps that could run 4,000 hours between shutdowns with no operational interruptions.



Due to the size of the pumps and severity of the mining conditions, this was a huge undertaking — one that had never been accomplished in the industry. However, GIW experts put their knowledge of the customer's systems and their advanced metallurgy to good use to find a solution.

Industry-leading material development

As a company, GIW has worked diligently to improve its pumps used in cyclone feed applications. This focus has been on using better metallurgy and variable geometry for the wet end during operation. For instance, GIW can alter the geometry of the suction liner impeller interface while the pump is operating using its adjustable suction liner technology.

Ultimately, GIW engineers developed a brand-new material technology. The impressive and innovative material is called Endurasite, and it's capable of resisting the effects of abrasion for extended periods. When applied to the MDX-750 high wear wet end parts, this specially processed, ultra-wear-resistant white-iron alloy vastly improves pump wear life and, in turn, extends time between shutdowns.

Creating this solution from scratch was undoubtedly complex, and GIW employees and the customer were aware of the potential pitfalls of testing a new material in an active mine.

"This was not only difficult for the customer but a challenge for GIW as a supplier," says Hernan Palavecino, GIW South American Regional Sales Manager. "Because this was an unprecedented project in the market, every extra hour of operation was a discovery and the risk of unexpected failure or shutdown was present every step of the way."

Cutting costly shutdowns by 50%

The customer never had a need to be concerned, though; the GIW team remained present during all testing to perform maintenance and ensure optimal results. And as Palavecino points out, the results were *certainly* optimal.

"We set a target of 4,500 hours for the first test cycle, but during the campaign, we saw that it was possible to extend the cycle over 5,000 hours without operational risk," he says. For this test GIW was pitted directly against their competitor's cyclone feed pump. Due to the final testing results and GIW's on-site support, the customer has adopted GIW technology!

GIW experts not only achieved the customer's goal but they also managed to exceed it — cutting annual shutdowns in half and drastically improving the total cost of ownership with an estimated savings of \$6 million USD per mill line.

GIW's continual development mindset has taken the mine's pumps from 800 to 5,000 hours of continuous operation. It's an achievement — and long-term responsibility — that GIW doesn't take lightly.

"Reaching this target is the result of several years of continuous improvements and focusing on the customer," explains Palavecino. "It was achieved and exceeded because of the commitment and teamwork between the customer and supplier."

About KSB and GIW® Minerals

GIW Industries Inc. was established as a small, privately owned foundry and machine shop in 1891. By 1914, the company was supplying slurry pumps to the Florida phosphate industry. Over the years, GIW became known for its severe abrasive handling pumps and began a century of facility expansion and technology growth. In 1996, GIW became a full subsidiary of KSB and in 2014, the GIW® Minerals brand was established.

Through the GIW® Minerals product brand, KSB strives to be an innovative partner that provides you with the best and longest-wearing slurry solutions. We are your partner today and in the future.

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