



## CASE STUDY: COEUR ROCHESTER SILVER MINE

### A Silver Lining for Mining

The mining industry is a prime candidate for substantial energy savings due to its high electric loads, large equipment and constant hours of operation. Coeur Rochester Silver Mine in northern Nevada, one of the largest in the world, installed a variable speed drive (VSD) on a 700-horsepower pump that operates almost continually to transport cyanide solution to the holding tank. This decision resulted in an energy-saving mine that earned a rebate from NV Energy and is projected to save more than one million kWh annually.

Coeur Rochester's mining operation includes crushing extracted ore and depositing it onto a leach pad. A secondary system sends what is known as a barren solution to the leach pad. It is distributed over the crushed ore through plastic piping similar to a drip system. The barren solution becomes a "pregnant solution" when it seeps through the leach pad to the plastic bottom, carrying silver and other particulates in the solution. The leach field is built on plastic to allow the pregnant solution to collect. It is then pumped to the processing area and clarified, which removes silver and other particulates via a chemical process. The 700-horsepower pump sends the clarified solution back to the site.

## LEARN MORE

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## More about this project...



### Project Summary

VSDs allow motor-driven devices such as fans and pumps to operate at varying speeds and still meet the equipment requirements. Before Coeur Rochester installed a VSD, it used a throttling system to slow the flow of fluid. However, this process did little to slow the speed of the pump. The mechanical properties of the new VSD pump slow its speed in such a way that horsepower and energy savings are cubed. Therefore, a small decrease in speed can result in huge savings, especially with a large horsepower motor.



### Energy-saving Equipment

In hydraulics and air flow, the affinity laws express the relationship between the variables involved in fan and pump performance and power. Basically, relatively small decreases in speed can result in hefty decreases in power consumption and hefty increases in energy cost savings. Affinity laws apply to pumps, fans and hydraulic turbines, and are for both centrifugal and axial flows. The installation of the VSD will save Coeur Rochester more than one million kWh annually.



### Project Results

**Building Type:** Mine

**Project Type:** Retrofit

**Measures:** VSD

**Incentive:** \$59,167

**Projected Annual kWh Savings:** 1,026,505