



## Case Study

### Concrete Savings: Hard metal dewatering pump saves costs in sand fine reclamation process

#### Overview

Sand fines and granular sedimentary particulate, are important in determining the strength and long-term performance of high-grade concrete used in oil field applications. A sand and gravel wash plant required a more economical way to recover sand fines lost in the process of cleaning aggregate. In 2014 the plant operated approximately 6-7 months a year, 10 hours a day, five days a week. In the plant's original sand fine reclamation process setup, sand slurry fell to a self-priming centrifugal pump from the aggregate shaker and wash unit. The pump then transferred fine clay and sand slurry to another processing stage to recover sand fines.

The process inefficiencies exacerbated the highly abrasive slurry initially and caused the centrifugal pump to fail after only 245 hours of operation. Two additional replacement pumps failed over the next three months. Pump-related operation costs came in high at \$11.43 per hour. The wash plant reached out to pump industry specialists to source a more cost-effective option.

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This application demands a hard metal submersible dewatering pump to handle the abrasive nature of a sandy slurry.

#### PROBLEM

- Abrasion from sand slurry caused pump failures
- Ineffective production set up
- High failure rates caused increase in operating expenses





## Solution

The wash plant decided to re-organize the production process for higher efficiencies. They rerouted the sand slurry from the aggregate shaker and wash screen into a 300-gallon container. Next they placed a BJM Pumps® LWA® series lightweight, hard metal submersible pump inside the container to transfer the slurry to the sand-recovery unit.

LWA series dewatering pumps are specifically designed for sand, silt, coal fines, and abrasive light slurries. LWA pumps contain a hardened ductile chrome iron agitator and volute, ideal for stirring up fine sand particulates without abrasion. Chrome iron counters the effects of erosion, helping to maintain pump performance and improve overall pump life.

The motor (NEMA B design) utilizes double mechanical seals, where the upper seal is comprised of carbon/ceramic and the lower seal is comprised of silicon carbide/silicon carbide. The motor is protected with Class F motor insulation and includes an auto overload switch to shut the pump motor off to prevent overheating.

Once installed, the LWA pump delivered 120 GPM at 25 TDH. Even though abrasive applications destroy pumps over time, the chrome iron impeller and wear plate allowed it to run for 800 hours - over 225% longer than the original pump. With the new process using the LWA series pump for sand fines reclamation, profitability soared and the plant saved over 90% in pump-related per-hour operation costs.

**Pump-related operation costs of sand fine recovery went from \$11.43/hour [with the original pump] to \$1.06/hr with the LWA pump**



## Features

- Lightweight, hard metal dewatering pump
- Built-in agitator mixes settled solids with pump water to restore sump or basin volume
- Hardened ductile iron agitator and volute

## Applications

- Mining & Minerals
- Construction & Rental

## RESULTS

- Extended and more reliable pump life
- More efficient production
- \$10 per-hour operational cost savings

