



# Case Study

## Mining the benefits: Upgrading solids-handling slurry pumps at silica proppant mining facility

### Overview

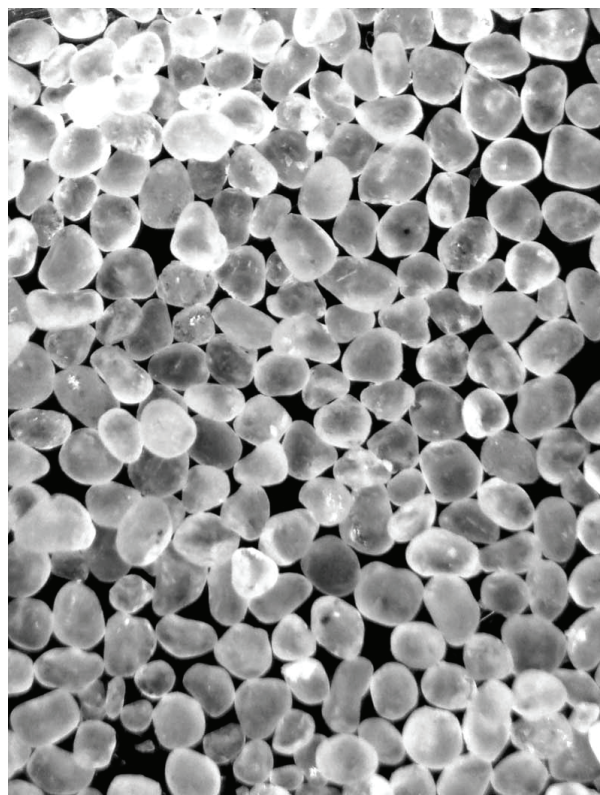
A proppant manufacturer in the Midwest operates a mining operation that produces silica proppants used in hydraulic fracking for oil and gas extraction. The facility manages its environmental footprint through sump pumps by operating with a closed-loop water system to reduce the facility's water consumption. This allows the wash plant to operate without discharging process water into dry runs, local wetlands, and nearby creeks. Instead, the plant collects water and sand in sumps and recirculates it through filters that press out moisture from the sand.

However, after only two years of operations, the facility needed to upgrade its submersible sump pumps. The frac sand reclamation process was starting to damage the pumps they originally installed, and the abrasive slurries were beginning to halt production when the old pumps clogged. They looked for new pumps that were resistant to abrasion, could operate reliably in thick slurry without clogging, and withstand 24/7 continuous production.

Fine sand can be highly abrasive to internal sump pump parts

### PROBLEM

- Need for abrasion resistance to handle fine sand
- Requires thick slurry transport without clogging
- Must maintain continuous 24/7 production



## Solution

The proppant manufacturer was familiar with the Industrial Flow Solutions™ BJM® KZN series pumps from a prior dewatering application. They reached out to confirm with their pump distributor that the KZN abrasion-resistant, solids-handling pumps were the right fit for their operations.

KZN pumps feature wet parts made of abrasive-resistant chrome iron for maximum wear. The 28% high chrome agitator is specifically designed for sand, sludge and slurry applications. It keeps sand from settling at the bottom and away from the eye of the impeller. The semi-open chrome impeller and replaceable wear plate handle high concentrations of abrasive solids like fine sand. Volute is cast from hardened ductile iron, which is twice as abrasion-resistant as standard ductile iron. Combined, these features reduce clogging and ensure maximum pump life.

The pumps feature double silicon carbide mechanical seals that separate the oil-filled seal chamber and a heavy-duty lip seal for additional mechanical seal protection. In addition, they can self-cool their motors with just a few inches of pumped liquid. This makes KZN pumps highly reliable for 24/7 proppant manufacturing operations.

The pumps were installed November 2015 and have been operating well.

---

“The KZN was perfect because that chrome iron impeller and wear plate really help when it comes to pumping abrasive slurries.” – BPH Pump & Equipment



## FEATURES

- Abrasion-resistant, solids-handling pump
- Heavy duty, high-chrome agitator (28%) for sand/sludge/slurry applications
- Semi-open chrome impeller and wear plate handles high concentration of abrasive solids
- Double silicon carbide mechanical seals in a separate oil-filled seal chamber
- Slim, top discharge design for easy installation and reliable operation

## APPLICATIONS

- Mining & Minerals
- Food & Beverage
- Oil & Gas

## RESULTS

- Agitator keeps fine sand slurry moving to reduce clogging
- Highly abrasion-resistant chrome iron construction
- Reliable, continuous 24/7 operation



**INDUSTRIAL  
FLOW  
SOLUTIONS**



104 John W. Murphy Drive  
New Haven, CT 06513



860-631-3618



[sales@flowsolutions.com](mailto:sales@flowsolutions.com)  
[flowsolutions.com](http://flowsolutions.com)

©2020 Industrial Flow Solutions Operations, LLC. All rights reserved. Unauthorized use of this document is strictly prohibited.