



# Case Study

## Safer Sumps: Coal-fired power plant leverages explosion proof solids-handling pump

### Overview

A 1,900-megawatt coal-fired electric power plant in the Midwest was using a variety of submersible pumps to remove wastewater runoff from coal piles. The pumps remove runoff from the coal conveyor into the plant, where the coal is pulverized and then combusted to form steam that drives turbines and generates electric power.

The slurry from the coal piles and conveyor includes coal fines, dust and fragments up to 1" in diameter. The pumps could not agitate the solids and disperse them in the water, so they frequently clogged. In addition, abrasive and corrosive slurries quickly wore out pumps' internal components. This required frequent repairs and replacements about every six months.

The power plant needed a new pumping solution designed to prevent coal dust explosions and stand up to coal slurry. Because coal fines and dust can cause explosions, and coal dust itself is very abrasive and corrosive, plant management began sourcing a robust pump solution that could handle this environment.

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Coal and coal slurry pose wastewater removal challenges - coal fines can cause explosions, and coal dust is abrasive and corrosive

### PROBLEM

- Need for explosion-proof pump
- Abrasion from coal dust wore down pumps
- Frequent clogging



## Solution

Plant management identified a two-part solution. First, they would replace the facilities current pumps. Second, they would improve capture of runoff from the coal piles and conveyors. Plant managers chose the **Industrial Flow Solutions™ BJM Pumps® XP-KZN series** submersible pumps. XP-KZN pumps are explosion proof, abrasion-resistant and solids-handling pumps designed specifically for high slurry and explosive environments. They have an FM-approved explosion proof motor and meet NFPA (70), NEC, OSHA requirements for Class I, Division 1, Group C & D hazardous locations (temp. code T3C).

The XP-KZN series pumps feature semi-open impellers, hardened ductile iron volutes, and wear plates with agitators, all in high chrome. High chrome provides protection from abrasive solids and corrosion. The agitator keeps solids suspended in liquid, which allows slurry and wastewater to be pumped away without clogging the pump. This reduces wear, breakdowns and maintenance costs. In addition, a spark-free electric pump motor design eliminates a potential source of ignition, promoting facility safety.

Plant managers ordered two XP-KZN pumps and were pleased with their fast delivery, just in time for their two new 10-foot deep sumps which had been installed to collect runoff. Since installation, the power plant has been very satisfied with the performance of their XP-KZN pumps.

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“These pumps have lasted at least twice as long and continue to deliver reliable service with less frequent maintenance.” – power plant manager



## FEATURES

- Explosion-proof, abrasion-resistant solids-handling pump
- FM-approved explosion proof motor
- Meets NFPA (70), NEC, OSHA requirements for Class I, Division 1, Group C & D hazardous locations (temp. code T3C)
- Abrasion-resistant solids-handling pump

## APPLICATIONS

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

## RESULTS

- Explosion and abrasion proof
- No clogging
- Highly reliable
- Greatly reduced maintenance costs and downtime



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