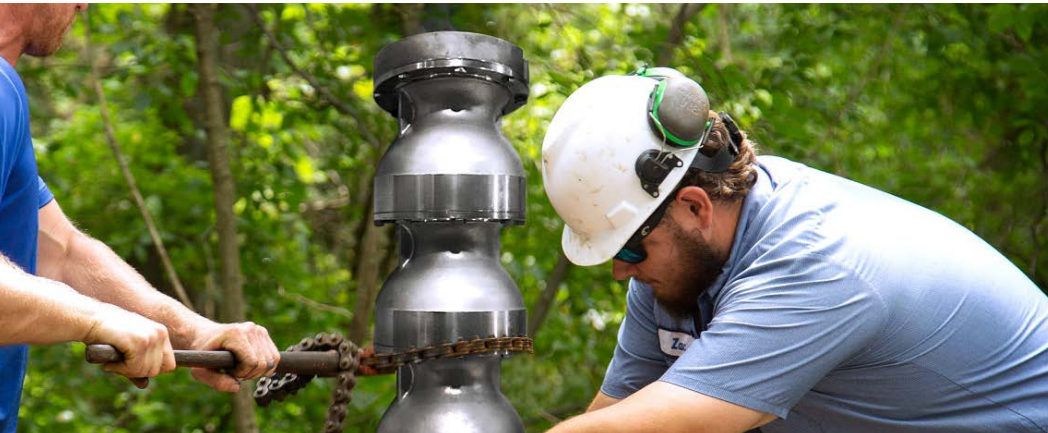


Premature Motor Failures Cause Pump Downtime & Raise Questions

MINE WATER RECLAMATION FACILITY IN PENNSYLVANIA



SUBMERSIBLE PUMPING SYSTEMS CASE STUDY



Franklin Electric worked with Infinity Drilling to help devise a more reliable pumping solution for several wells at a mine water reclamation facility in Cresson, PA.

CUSTOMER CHALLENGE

The Pennsylvania treatment plant handled about 4,400 gpm across four wells drilled into old coal mining shafts from 300 to 400 feet deep. The facility used submersible turbine pumps with 10-inch 250 and 200 HP competitive wet-wound motors. The pumps were also controlled by using variable frequency drives (VFDs), allowing the facility to vary flow from different wells. However, these motors had several failures – leaving pumps down for weeks at a time, and the plant at less-than-full capacity.

Franklin Electric targeted one well with multiple motor failures that had also created an excessive labor expense for each repair. Working with Infinity Drilling, the team determined that the motor failures were due to overheating in the windings. The wet-wound motors were not capable of running less than 55 Hz and were not optimized to be paired with the VFDs. As a result, the original pumps were over pumping and could not be controlled to vary the flows to the treatment plant as expected.

In short, the facility needed a pump and motor solution that could provide 500 to 1,500 gpm

from each well. While the existing pumps were designed to handle the max flow – the wet-wound motors were not capable of operating at lower hertz to reduce the flow enough.

THE SOLUTION

Franklin recommended pairing 11-inch FST Series submersible turbine pumps with 8-inch 175 and 200 HP encapsulated motors capable of operating between 30 and 60 Hz. The Franklin encapsulated motors would not only operate more efficiently – saving on energy costs – they would also perform more reliably over the long-haul. Overall, the 316SS pumping system allowed reclamation of slightly aggressive water as part of the conditions of the application.

The facility was also able to utilize the existing VFDs, saving on costs overall. As a value-added service, Franklin Electric provided additional VFD programming requirements and on-site support at each well retrofit start-up to ensure proper performance and customer satisfaction. In addition to installing the new Franklin motors, the systems also utilized a PT100 temperature sensor on the motor and installed a motor shroud for additional protection against the motors overheating.

6.3 MILLION GALLONS PER DAY OF TREATMENT CAPACITY

200+ DAYS OF CONTINUOUS OPERATION

12-20% MOTOR SIZE REDUCTION

SYSTEMS FEATURES

- Reliable system operation optimized for varying flows
- Various options in pump sizing, design and material construction can be specified to meet application needs

PERFORMANCE DETAILS

- Flows to 2,200 GPM (500 m³/hr)
- Heads to 2500+ Feet (762+ m)
- Temperatures to 100°F (38°C)
- Speed Range of 3600 RPM
- Bowl Size Range: 6" (152+mm) - 12" (305 mm)

RESULTS

- Decreased downtime
- Efficient operation
- Reduced energy consumption
- Long-term savings
- Increased life expectancy

THE RESULTS

The facility benefited from the new system immediately. The smaller motors not only delivered reduced energy consumption, but they also operated more efficiently – allowing the facility to vary flow from each well site to the treatment plant for long-term energy savings. The wells now operate for optimum performance, meaning greater reliability and no downtime to service the systems. Best of all, the life expectancy of the new system is greater than before – since the motors are VFD-compatible and properly protected by using the required VFD parameters.

YOUR FRANKLIN EXPERIENCE RUNS BEYOND THE PUMP

SIZE. CONFIGURE. QUOTE.

Start Now: FE Select [USA](#) & [Canada](#)



Application Inputs

Find Selection >

Flow: 1500 USgpm

Head: 409 ft

Apply load profile: None

Site Supply Frequency: 60 Hz

Pumps in parallel: 1

Search criteria: All suitable synchronous speeds

+ More

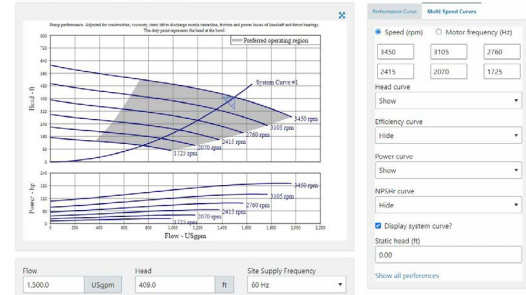
Online tools, such as FE Select, allow users to enter in application inputs and performance requirements that generate product matches and assist with the selection process.

Asking the right questions is the first step in selecting the right pump for your job and sizing a system that will work best for a client's needs. Whether you need to spec an entire system or replace a single part, there are online tools and resources that put convenience at your fingertips.

FE Select is Franklin Electric's industry-leading online tool that allows you to easily size, configure, price and quote systems, is one example. This digital tool allows you to input your performance requirements or specs, such as water flow and head requirements, input voltage and other electrical considerations, and generate a quote that includes downloadable assets including performance curves, dimensional drawings, and detailed specifications of components. The result is faster quoting and a more streamlined process for you and your customers.

FST-11FLC Enclosed Impeller

1,500.0 USgpm | 409.0 ft | 3450 rpm



Deliver reliable solutions that match variable frequency requirements using multi-speed curves feature within FE Select.

FST-11FLC Enclosed Impeller

1,500.0 USgpm | 409.0 ft | 3450 rpm

Select all

- Performance Datasheet
- Landscape Curve
- Multi-Speed Curves Landscape
- Additional Selector Data
- Internal Price Sheet
- Customer Price Sheet Details
- Customer Technical Offer

Generate PDF | Generate ZIP

Streamline the quoting process with downloadable product and pricing documents at your fingertips, including performance curves, dimensional drawings and detailed specifications of components.

