

Turnkey Thickener Retrofit Accomplished Within Three Weeks

Precise Planning and Exacting Design Overcome Tight Shutdown Window

Case Study

Location

Western United States

Problem

Our mining customer wanted to increase its thickener's throughput by 1,000 tons (907 tonnes) per day using the existing tank. Simultaneously, the mine was facing substantial challenges with the thickener's performance, overall operation, and maintenance. These shortcomings were hampering the mine's ability to recycle clarified water of sufficient quality to make it suitable for reuse in its operation. While the company knew the root cause of these problems was aging equipment, it also knew that shutting down its operation to replace the equipment could cost millions of dollars per day. To mitigate this potential loss, the company decided on a retrofit with a timeline that ran two weeks from shutdown to startup.

The company reached out to WesTech. Because of our responsiveness and ability to work within the customer's shutdown window, the mine awarded a contract making us the sole-source solution provider for the project.

Solution

Our process team included WesTech's EvenFlo® feedwell in the thickener's retrofit design to provide increased throughput without upsizing the tank. This selection allowed us to confidently proceed knowing the mine would be increasing the thickener's throughput by roughly 1,000 tons per day (907 tonnes per day).

The project's success required a rigorous planning and engineering process. On the engineering side, the team honed a solution design that would maximize performance in the company's 200-foot-diameter (61-meter-diameter) thickener tank. Everything from the EvenFlo feedwell to the rakes was selected to help address the company's issues.

With the project's time constraints, and to minimize plant downtime, the team preassembled components for the replacement thickener before the scheduled shutdown began. Everything would matter – from the weather on site to what the team might find when the thickener was drained to how the old equipment might best be removed.

Careful planning enabled us to effectively overcome the inevitable surprises that arise with all projects. For example, the team expected to dig out 2 to 3 feet (0.6 to 0.9 meters) of fill dirt to reach the existing center column's base on the irregularly shaped thickener floor. The dirt around the column proved to be much deeper.

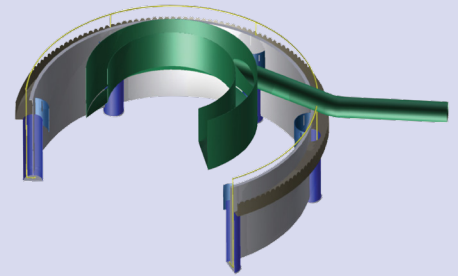
As the team continued to dig, it unexpectedly exposed several damaged underflow pipes – the second surprise that the team's expert contingency planning was able to accommodate.

A crane capable of picking up the dismantled equipment and “walking” it to a pad that lay about 100 feet (30.5 meters) away left the limited area near the tank free to hold the preassembled thickener components. These were staged in precise order. Each time the team needed the next piece of equipment, the piece was ready to be lifted into the tank and bolted in place. Careful engineering ensured a perfect fit.

Results

Our flexibility to take on additional scope and our ability to collaborate effectively with our customer enabled us to return the thickener to service within three weeks. It took the team just eight days to completely remove the existing feedwell and entire rake mechanism and install the new solution, with only a few additional days to fine tune it to our customer’s satisfaction.

The team stayed on site to run a few tests. During this time, we observed no short-circuiting, torque spikes, or flocculation concerns. The tests indicated the new solution achieved the customer’s primary goal, increasing the thickener’s throughput from 2755 tons per day to 3858 tons per day (2500 tonnes per day to 3,500 tonnes per day). The customer’s positive response confirmed that the new solution was delivering the performance the company was hoping for.



The EvenFlo’s two-stage design provides higher throughput.



The dirt around the center column proved to be deeper than expected.