



Open S-tube[®] impeller helps to resolve clogging issues, saving 200 work hours every year

When a water utility company continued to receive multiple call-outs every week due to clogging at a specific wastewater pumping station, they sought the help of Grundfos. After careful consideration, the Grundfos team recommended the Open S-tube[®] impeller to improve the management of solids. Along with several other measures, the new impellers helped to resolve issues that had arisen as a result of wastewater composition changes in recent years.

The situation

With no pre-treatment system or grid installed, the pumping station experienced continuous jamming issues caused by the presence of hygienic wipes, which had become increasingly common in the composition of local wastewater. These wipes had formed long entanglements that were jamming the pumps. While the water utility company had initially installed a grid to combat this, the wipes continued to cause issues at the pumping station.

The existing pumps use vortex impellers. In addition, a soft starter offers an integrated low load stop function as a protective measure. This low load setting is activated when pump suction is blocked due to sedimentation and when no water is detected, the pump stops

because of the low load. In the event of a failure, the pumping station's controller ensures that a text message is sent to the operator, who then can head to the pumping station to fix the issue.

Although clogging and jamming issues were frequent – up to twice a week – the discharge of wastewater into the surrounding environment was limited thanks to the pumping station's stand-by pump.

Along with a number of other measures, the new impellers helped to resolve issues that had arisen as a result of wastewater composition changes in recent years.



About the Open S-tube® impeller

Open S-tube® semi-open impellers with two or more channels are highly efficient and ideal for variable speed operation and wide operating areas. They are available in Grundfos SE/SL pumps, together with a range of other hydraulic designs, including Closed S-tube® impellers and SuperVortex free-flow impellers, offering reliable and efficient operation at the highest level of performance across all wastewater applications.

The solution

The initial approach to resolving this issue was to install a grid. Sand removal equipment was also installed to reduce the number of large and abrasive solids reaching the pumps, while Grundfos supplied two SL pumps fitted with new Open S-tube® impellers.

With day-to-day work being affected by jamming and clogging issues, this solution needed to increase reliability and reduce the hours and costs spent on maintenance.

The new SL pumps maintain the installed power and are meeting the duty point in the installation, and the expectation for the new Open S-tube® impellers was that they would ensure better management of the solids that have become common in the composition of our wastewater in recent years.

The outcome

The SL pumps fitted with Open S-tube® impellers proved to be an effective solution, completely eradicating clogging and jamming issues. Uncontrolled discharges due to equipment failure fell to zero, and, thanks to the sand removal equipment, the wear previously suffered by the rotating parts of the equipment was minimised.

With this new solution, the water utility can expect to save around 200 work hours every year. This calculation is based on previous workflow expenses in the event of jamming. When a fault or failure occurred, the responsible operator would head to the installation to solve the issue as soon as possible, while the stand-by pump continued operation. Since the installation had no lifting capabilities, removing the main pump from the pumping station required a truck to elevate the equipment, after which the pumps were dismantled, and the jams were cleared. This process took around two full work hours, and, on some occasions, it occurred twice a week.

Further financial implications included the need for a crane truck at each intervention. Now that such trucks are no longer necessary, costs are considerably reduced. As a result of the improved reliability at the wastewater pumping station, employees at the water utility have complete peace of mind. Greater reliability and a better management of solids has also boosted efficiency, significantly lowering the cost of m³ pumped, reducing the pumps' energy consumption and the station's overall CO₂ emissions.



The new SL pump with Open S-tube® impeller, ready for installation