

Dual-shafted grinder eliminates costly plant breakdowns at pumping stations

Municipal utility company Servicebetrieb ASK, of Kamp-Lintfort in Nordrhein-Westfalen, was experiencing frequent blockages and outages in one of its sewage pumping systems. The main cause was the proportion of solids in the wastewater, which is continuously increasing. Consequently, Sulzer recommended the upstream installation of a dual-shafted grinder, known as the Muffin Monster™ and since its installation, the sewage pumps have been operating perfectly. Thanks to the savings in maintenance costs, the grinder has paid for itself in less than eighteen months.



“As pump experts, Sulzer is fully aware of the capabilities of our submersible sewage pumps and provided us with the best possible advice in the design of our grinders. Since the installation, we have had uninterrupted operation, without unplanned maintenance and our investment has already paid off.”

Norbert Leurs, Servicebetrieb ASK Kamp-Lintfort

For around ten years, wastewater plants in metropolitan regions such as the Ruhr area have faced constantly growing challenges, including the many things that are thoughtlessly discharged into the sewers. “Wipes especially are a big problem. They form long chains in the sewer and then block the pumps”, explains Andreas Fockenberg from Sulzer. Weather extremes do the rest. “If a dry period is followed by a heavy downpour, with the flushing surge in the sewer, all the material arrives at the pumps at once. While these have become more robust, there are simply too many difficult-to-handle pieces of debris”, continues Andreas.

Protecting pumps from blockages

The customer’s pumps were clogging with increasing frequency because layers of scum were forming in the pump well and solidifying. “We were having to pump out these blockages once or twice per month with the suction tanker, which was very cost- and labour-intensive”, recounts Norbert Leurs of Servicebetrieb ASK Kamp-Lintfort.

Andreas Fockenberg knew that Sulzer’s Muffin Monster inline/open channel grinder could provide a very effective solution. He gave a presentation, which included a live demonstration, to the customer’s service personnel and decision-makers. For around an hour, the “Monster” was fed with wipes, pieces of wood and other dry items, all of which were handled with ease. Having seen first-hand the benefits of the Muffin Monster, an order was quickly placed.

In the case of ASK, a 30K series inline grinder was specified with a flow rate of 140 m³/hour. Instead of the standard 2.2 kW motor, for ASK, a 4 kW drive was specified, as this can cope with even the very largest and toughest solid materials that the customer frequently had to deal with. Since this application called for an inline grinder, the motor is designed with category IP68 protection, ensuring it can work in submerged conditions.



Sulzer’s Muffin Monster grinder works with two shafts, fitted with sharp cutting wheels which grab, tear and cut up the material allowing the pumps to effortlessly transfer it to the next pumping station.

Within half a day of being delivered, the grinder was installed with its customized frame in the pumping plant intake. Since then, there have been no further pump outages.

Two shafts for greater efficiency

Unlike macerators and pump crushers, the Muffin Monster grinder works with two shafts, fitted with sharp cutting wheels. These shafts run in opposite directions at different, very low speeds and correspondingly high torque. They grab, tear and cut up the material allowing the pumps to effortlessly transfer it to the next pumping station.

The automatic load detection and reverse control of the dual-shafted grinder protects the system and optimizes performance. If an object cannot be handled at the first attempt, it is put into reverse motion for a few seconds, before being grabbed again following repositioning. If this happens three times without success, for example with large metal parts, the unit shuts down for self-protection. While the reverse control is part of the regular operation and an important efficiency feature, there has yet to be a shutdown since the Muffin Monster was installed.

The grinder is automatically switched on and off by a radar level detection instrument, widely used in wastewater management in the region, and specifically requested by the customer. As standard fitment, the grinder is usually equipped with an ultrasound level detection device.

Pump know-how and customized configuration
Apart from its three sizes and two design variants, Sulzer offers a high level of configurability for its Muffin Monster to meet the requirements of each customer. Apart from the customized installation frame in stainless steel, the motorization and the fill level measurement, there are various cutting wheel options to choose from, including with Wipes Ready™ technology specifically aimed at one of the biggest challenges in the industry.

Muffin Monster
30K series
grinders



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Demand is correspondingly high: “We have had 20 new installations in the past two years in this sales region”, Andreas Fockenberg is pleased to add, “Our solution for the growing challenges posed by wipes and other waste products in the sewage system has proven to be not just reliable, but also extremely cost-effective.”

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