Joint German-Polish sewage plant satisfied with Allweiler pumps after 12 years

An example of successful German-Polish collaboration

In May 2010 the Gubin sewage plant celebrated its twelf-year anniversary. This plant processes wastewater from the cities Guben and Gubin, located on opposite sides of the Neisse River. It is the only German-Polish project of this type to operate successfully for the long term. Major elements of the plant include 17 progressing cavity pumps and two macerators from Allweiler AG. The macerators break down solids and fibers as they enter the plant. The progressing cavity pumps are used in nearly every step of the process. Delivery capacities of these units vary greatly, from a few liters per hour when adding flocculant to more than 100 m³ per hour when pumping sludge.

Replacing centrifugal pumps with progressing cavity pumps

The joint plant was conceived in 1994, during a time when both the German and Polish sides of the city needed to renovate their sewage treatment plants. Both plants were technically obsolete and overworked. For this reason, the two sides decided to build a shared treatment plant that would use progressing cavity pumps instead of the centrifugal pumps used in the old plants. "In 1996 we decided to use the best pump technology available," according to Managing Director Dariusz Bocheński. Working together with the plant builder and planner, the communities decided to use Allweiler pumps, the "Mercedes of pumps" as the operator describes them today. Another factor in the decision was the pumps' highly compact design, which saves valuable space.

One part of the renovation involved retrofitting the pumps on the German side in order to pump wastewater to Gubin on the Polish side. Other changes included new pipes under the Neisse River and raising of the plant by 4.5 m to provide better flood protection.

Highly wear-resistant pumps

During the subsequent years of operation, it has become evident that the designers made the right choice. The pumps run continuously with no disturbances whatsoever. Wear is significantly lower than anticipated. In fact, the service lives of the rotors and stators have actually turned out to be much longer than the manufacturer indicated in the design documentation. This is even more impressive considering that the pumps were forced to undergo a major endurance test when the plant's primary sedimentation tank was sandblasted during cleaning a few years ago. Due to a mistake in the process, a large amount of sand entered the water. But the Allweiler pumps handled even this highly abrasive mixture without disturbance and without incurring any obvious signs of additional wear.

Economical maintenance

Plant personnel perform most pump maintenance themselves. When they need to perform unusual tasks, they turn to Allweiler AG's local partner Rodeike in Ludwigsfelde for rapid, on-site assistance. The workers in Gubin are even looking

forward to further training from the manufacturer so they can service and maintain Allweiler pumps at other plants and facilities. But there are other benefits as well: Rodeike ensures that the Gubin plant receives rapid, on-site service. Polish sales partner GAA Lobex delivers original parts at short notice. Since all pumps have a similar, modular design, only one installer is needed to maintain all of the units. When pumps in a plant come from a single manufacturer, service and spare parts costs will always be lower than if the pumps came from several different companies.

Original parts save money

The operator's experiences with the pumps have been so positive that it aims to expand the company to become a service and competence center for Allweiler pumps throughout Poland. According to Mr. Bocheński: “We are training our employees to maintain, disassemble, and assemble these pumps so we will have the capability to service them at other plants." Original manufacturer spare and wearing parts play an important role. Pumps operate more reliably, economically, and effectively when original parts are used. For this reason, the Gubin plant never uses third-party or imitation parts. All pumps in Gubin are equipped with frequency-based electronic speed adjustment for more effective operation. Although they initially cost more than variable gear drives, frequency converter systems pay for themselves in just a few years in the form of higher efficiency and lower energy consumption.

Normal wastewater quality

In addition to the city of Gubin in Poland, the joint sewage plant also serves the Guben watershed, including the city of Guben, on the German side of the river. The plant has a capacity of 90,000 population equivalents. Each year the plant processes approximately 4.3 million cubic meters of wastewater. The composition of the wastewater is normal. The only exception is when a German chemical-fiber plant releases glycol ethylene-contaminated wastewater directly into the digestion tower three times per week.

Requirements

Reliable movement of wastewater in every process step while maintaining long rotor and stator service life. Fast on-site service and rapid delivery of original spare parts. One plant employee must be able to maintain all pumps. Low Total Cost of Ownership (TCO) and high efficiency.

Solution

Replace all centrifugal pumps with compact Allweiler progressing cavity pumps during renovation of the plant. Speed control with frequency converters. Exclusive use of Allweiler original parts for maintenance and service. Collaboration with an on-site Allweiler partner and Polish sales partner.

Result

Disturbance-free continuous operation since installation 10 years ago. Durability of wearing parts exceeds manufacturer’s original specifications. Disturbance-free pumping of very abrasive liquids. One installer maintains all pumps in the system. Low TCO; higher initial investment costs amortized in just a few years.

Dariusz Bocheński, Managing Director of the plant: "We insisted on the best pump technology that was available in 1996. That was how we found Allweiler.”

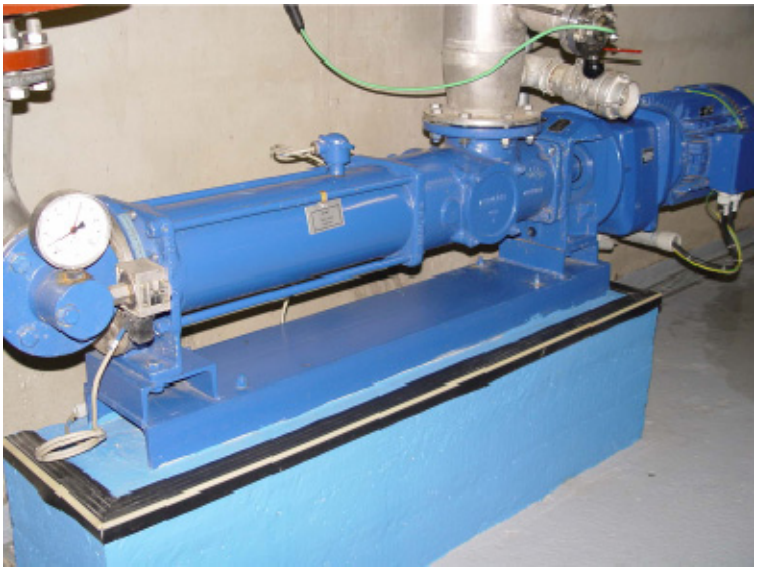
(from left to right) Wiesław Domagalski, Clarification Foreman at POŚ Gubin-Guben; Jürgen Rodeike, Managing Director of Rodeike Pumpen GmbH; Dariusz Bocheński, Managing Director of POŚ Gubin-Guben; Gerd Bachmann, Sales Engineer from Allweiler AG

Macerator for feeding the digestion tower; ABM80-S series, capacity up to 160 m^3/h.

Progressing cavity pumps of the SEDBP 200 series for pumping fresh sludge to the digestion tower and centrifuges. Capacity of 170 l/min (max. 800 l/min, max. pressure 12 bar, viscosity up to 150,000 mm^2/s).

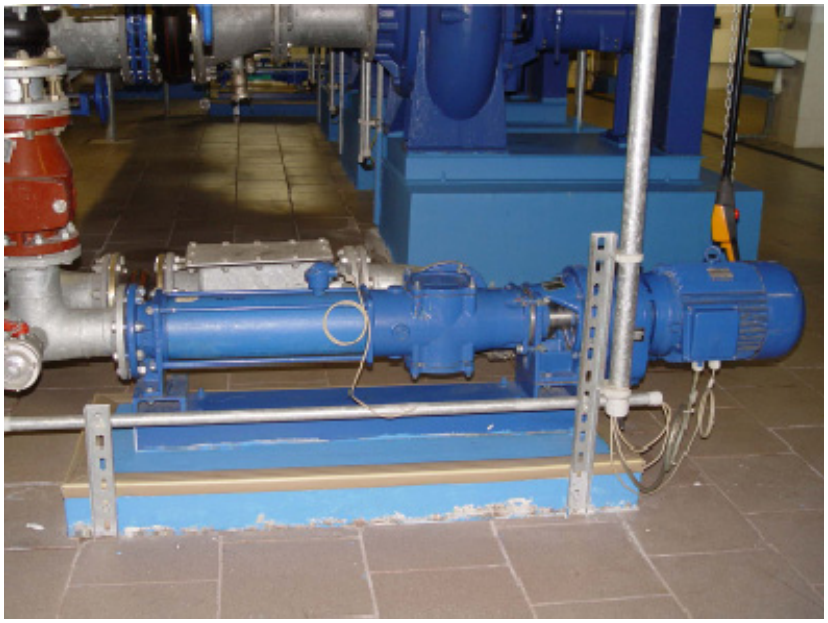
Allweiler progressing cavity pumps of the ANBP series used as flocculant pumps during drainage (max. 10 l/min at 12 bar and max. 20,000 mm^2/s).

Feed pump of Allweiler's SEDBP series in size 300. Pumps fat to digestion tower (85 l/min).



Pump SEBP 1000 for moving sludge to the primary sedimentation tank, capacity of 170 to 700 l/min.

Macerator of type ABM 80-S in the primary-sludge feed line before primary sedimentation tank.



Progressing cavity pump SEBP 550 for moving excess sludge to mechanical sedimentation; capacity of 130 to 260 l/min.

Guben-Gubin sewage plant shared by Germany and Poland.