

NEW DRIVING FORCE FOR SCREW PUMP DRIVES

Friesenheim sewage treatment plant opts for a gear unit retrofit on its inlet structure

In Germany, there are around 10 000 sewage treatment plants and some 4 000 qualified plant foremen ensuring processes run smoothly. Their wide-ranging skills make them true all-rounders. Although technical failures cannot always be avoided, they can be reduced by thinking ahead. In the worst-case scenario, such failures can cause stop-pages that cost treatment plant operators a great deal of time and money. Reliable drive technology is vital to minimize this risk.





Inlet structure

The Friesenheim sewage treatment plant near Lahr, on the western fringes of the Black Forest in Germany, removes solids, fecal matter and biological impurities from rainwater and waste water 24/7. Acting as the waste water intake facility for the surrounding communities of Friesenheim, Meissenheim and Neuried since 1975, it has a capacity of just under 24 000 population equivalents (see infobox).

Five screw pumps form an integral part of the inlet structure, conveying the inflowing water to the level of the primary clarifier several meters higher up. The pumps have a redundant design and are rarely all operating at the same time. This is only necessary in the case of peak water loads – after heavy rain, for example. Recently, however, there was an incident at the plant.

One of the two large pumping systems was no longer operational as a result of several teeth on a gear unit gear wheel of a third-party drive unit being damaged. Had the sewage treatment plant been required to cope with a high load, the necessary conveying capacity would no longer have been available.

It goes without saying that sudden heavy rainfall is not an infrequent occurrence. It was therefore vital to quickly find an efficient drive solution, because substantial fines can sometimes be imposed if a sewage treatment plant is unable to cope with the defined populations equivalents.

High-performance industrial gear units solved the problem

Fortunately, a team from SEW-EURODRIVE was at the plant carrying out other work at the time, so we could immediately start planning the imminent modernization. Thanks to an adjustment made using a steel frame, we were able to offer a solution that required no further reconstruction work. The existing drive – a gearmotor designed as a belt drive – was replaced with an X series industrial gear unit from SEW-EURODRIVE. This independent industrial gear unit platform includes both helical and bevel-helical gear units. The wide range of predefined accessories and options, and the possibility of customization are perfect for meeting all water and wastewater management requirements.

The new drive concept required no belt drive. A motor adapter with integrated claw coupling was used to connect the motor and gear unit.



The pollution load of industrial waste water is indicated in population equivalents (PE). One population equivalent corresponds to the volume of organic compounds each member of the population discharges into the sewage system each day (source: www.wasser-wissen.de).



New screw pump drive

The directly coupled motor benefits from lower transmission losses than the belt variant, and dispensing with the belt drive also eliminates a maintenance-intensive wear part.

The installed gear unit has a nominal output torque of 12 800 Nm and is powered by a 30 kW IE3 AC motor. To counter the reverse torsional forces generated by the weight of the water in the screw pump's transport chambers, this motor was equipped with a backstop.

The X series has a lower shaft height than most competitors' gear units, which means it can be adapted to the existing connection geometry using a base plate. This also eliminates the need for time-consuming work on the gear unit foundations, as was the case with the retrofit in Friesenheim.

SEW-EURODRIVE's Graben-Neudorf Service Center provided the steel frame. A claw coupling was then used for the connection to the feed pump's shaft.



New drive with steel frame

The drive unit installed for the sewage treatment plant operator – Abwasser-verband Friesenheim – is a highly standardized industrial gear unit that will work reliably for years to come. In addition to preventing interface problems, supplying all the necessary drive components from a single source also reduced the amount of assembly work required at the plant. What's more, SEW-EURODRIVE's tightly knit service network and its Technical Office in Lahr ensure comprehensive support, even after startup.

This will hopefully avoid any plant failure and the associated hassle, meaning that plant foreman Mr. Reith will be able to sleep even more easily in the future.

He was completely satisfied with the support provided during the service operation, the quality of the products used, and the smooth, speedy replacement process, so he will have no hesitation in contacting SEW-EURODRIVE again in the future if its services are required.

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