

Wastewater treatment – a cornerstone of sustainability

Thanks to energy-efficient plant technology and digital support, the technology group ZF can run its wastewater treatment systems at its Saarbrücken site more sustainably.

Sustainability is an integral element of ZF's corporate strategy. The company aims to achieve climate neutrality by 2040 – both in its own production facilities and in terms of the emissions along the entire value chain. To this end, ZF is leaning into sustainably generated energy for its own sites, making its processes more energy-efficient, electrifying many of its products and using recycled materials.

Continuously identifying potential for improvement

An analysis of the production processes at the site in Saarbrücken, Germany, revealed room for improvement when it came to the wastewater treatment processes. Up to 65 m³ of wastewater of a highly heterogeneous composition was generated during production every day. In partnership with EnviroChemie, the company evaluated all processes in their entirety to identify how they could be optimised as sustainably as possible. Using this as the basis, an innovative combination of processes was then developed with Envopur ultra-filtration at its core. This has now been in use since January 2023, replacing the evaporator system used until then.

Existing installations supplemented by innovative process technology

While modifying the existing plant, existing process stages were retained or supplemented with sensible retrofits to ensure maximum sustainability. Accordingly, the new concept uses existing tanks and containers as buffers and for pre-treatment during ultra-filtration, for example. In addition to being highly energy-efficient, the ultra-filtration process ensures an exceptional water discharge quality.

Because operating staff need highly specialist expertise to run an ultra-filtration plant, ZF tapped into the knowledge of EnviroChemie in this area too – for instance by having their operators trained at ZF's premises to fully integrate the plant's operation into the company's day-to-day processes. Moreover, EnviroChemie provided its digital service platform WaterExpert to offer additional operative support. A highly transparent, fast, reliable and sustainable solution was thus realised in collaboration with ZF.



The new, energy-efficient Envopur ultra-filtration plant at the heart of the new wastewater treatment plant ensure more sustainable and resource-efficient wastewater treatment at ZF's site in Saarbrücken.

Digital aids optimise operation

The digital service platform WaterExpert helps the company meet a range of challenges. The app's integrated InformationHUB collects the data, visualises the most important KPIs and provides the required documents in a straightforward interface. At the same time, the app assists operators in their day-to-day tasks: from sending alerts to their smartphones via push notifications and providing recommendations for action during maintenance work and inspection tours, all the way up to periodic reports. This saves time and cuts down on tedious documentation work whilst also providing transparent visualisations of trends and overviews. As a result, energy consumption was cut significantly as early as in the first six months of the new solution being put into operation.



The WaterExpert™ Dashboard gives plant operators a simple overview of the status of their water plants.

Jürgen Weiskircher, the responsible coordinator at ZF, sums up: “With WaterExpert, we have an overview of the wastewater system at all times and can be sure that it is running in the most energy and resource-efficient manner possible.”

Minimising the carbon footprint

Switching to a more sustainable and energy-efficient process technology and using WaterExpert have delivered an impressive result: the ultra-filtration plant has reduced the energy consumption for wash water treatment at Site 1 in Saarbrücken by an incredible 78% – corresponding to an annual CO₂ saving of 363 tonnes. The selected process technology can also be used as a preliminary stage for a potential water recycling process, enabling the site to conserve valuable drinking water. As such, the new, energy-efficient Envopur ultra-filtration plants at the heart of the new wastewater treatment plant mean more sustainable and resource-efficient wastewater treatment at ZF’s site in Saarbrücken.

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