

Wastewater pump evolution

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Sulzer introduces next generation XFP ContraBlock Evo hydraulics including high-head variants

Wastewater pumps operate in very challenging environments and Sulzer is constantly striving to improve the performance and reliability of its products. Submersible pumps in the sewage pumping station network, for example, are at the front line, forced to deal with increasing volumes of wipes and fibrous materials that can cause blockages. To help combat this, Sulzer's XFP range is now fitted with the ContraBlock Evo hydraulics, including impellers that can be retrofitted to legacy pumps. The portfolio has also been extended with two-pole, high-head variants for more challenging applications.

Pump design is a process of continuous evolution and Sulzer has been at the forefront of this market for decades. The XFP range is ideally suited to the wastewater sector, especially sewage pumping stations and Sulzer's latest additions help to reduce operating costs by improving efficiency and reliability.

Reducing maintenance costs

Modern wastewater systems are facing a flood of issues caused by wipes and debris that require technicians to be called out to blocked pumps. Increasing maintenance costs coupled with higher energy prices are driving utilities to look for improvements that can be easily installed and help to reduce operating costs. Sulzer's XFP already heads the market in terms of energy efficiency and the new ContraBlock Evo impeller offers industry-leading features to minimize maintenance costs.

The unique impeller vane geometry has a variable slope leading edge that forces solids towards the high velocity regions and prevents the accumulation of solids. In addition, the trailing edge is optimized for the exit angle of the wastewater to reduce pulsations and vane load, which supports a longer service life. At the same time, the hub cone geometry eliminates any low velocity zone, ensuring solids do not have a place to accumulate.

Fibrous debris can become entangled behind an impeller, quickly increasing the load on the motor and damaging seals. Sulzer's spiral flow diffuser creates an outward movement of water which ejects any solids from behind the impeller. Coupled with the high torque cutter rings, which shear any long or stringy materials into small particles, the design of the ContraBlock Evo impeller also protects the sealing system.

Optimizing performance

The running costs of a pump depend on several factors, but motor efficiency and hydraulic efficiency have a major impact. The latter relies on an optimized impeller design and ensures the gap between the impeller and the wear plate is kept to a minimum. On the XFP range, this process can be achieved on-site using basic tools and a simple adjustment process. The optimized gap, which can be set using adjustment screws on the outside of the pump, ensures the hydraulic efficiency of the asset is maintained.

The wear plate also includes arced slots that create a pulse of water as the impeller vanes travel across them. The asymmetric slot design creates a micro-shearing action and pulses of water that prevent solids from travelling along the impeller vane. This innovative design prevents materials from collecting between the impeller and the wear plate.

All of these design upgrades are incorporated in the latest generation of ContraBlock Evo impellers. In addition, operators of legacy equipment can still benefit from many of the advantages of the most recent evolution because many models can be retrofitted with the new impeller while others already use parts of the Evo design.

On a wider scale, the XFP range of pumps has been bolstered with additional models with high head capabilities. For the more challenging applications, Sulzer has included new pumps that use Premium Efficiency IE3, 2-pole motors.

All the new models are listed on ABSEL, the water and wastewater pump selection tool, to ensure customers are able to choose the most effective solution for their application.



Image captions:



Image 1: The new ContraBlock Evo impeller offers industry-leading features to minimize maintenance costs.

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Sulzer has been headquartered in Winterthur, Switzerland, since 1834. In 2023, our 13'130 employees delivered revenues of CHF 3.3 billion. Our shares are traded on the SIX Swiss Exchange (SIX: SUN). www.sulzer.com

The Flow Equipment division specializes in pumping solutions specifically engineered for the processes of our customers. We provide pumps, agitators, compressors, grinders, screens and filters developed through intensive research and development in fluid dynamics and advanced materials. We are a market leader in pumping solutions for water, oil and gas, power, chemicals and most industrial segments. www.sulzer.com

Through a network of over 100 service sites around the world, Sulzer provides cutting-edge parts as well as maintenance and repair solutions for pumps, turbines, compressors, motors and generators. We service our own original equipment, but also all associated third-party rotating equipment run by our customers, maximizing its sustainability and life cycle cost-effectiveness. Our technology-based solutions, fast execution and expertise in complex maintenance projects are available at our customers' doorsteps. www.sulzer.com

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