SULZER

Pumps and pumping systems

Submersible sewage pumps **type ABS XFP**

Main industries and applications

Submersible sewage pump type ABS XFP is designed for municipal and industrial wastewater equipped with Premium Efficiency (IE3 level) motor for:

- Hazardous locations
  - Approval for ATEX (Ex II 2G Ex h db IIB T4 Gb), FM and CSA as standard (PE1 to PE3) *
  - Approval for ATEX (Ex II 2G Ex h db IIB T4 Gb), FM and CSA as option (PE4 to PE7) *
- Clean water and wastewater
- Sewage containing solids and fibrous material
- Sewage with sludge and high contain of rags
- Industrial raw water and wastewater
- Various types of industrial effluents
- Municipal combined sewage and storm water systems

* see motor power table on page 10

Savings with Premium Efficiency

The XFP pumps benefit from high efficiency in both motor and hydraulics, resulting in substantial savings:

- Lower energy consumption
- Reduced operating costs
- Fewer maintenance costs
- Less downtime caused by breakdowns and blockages

Great savings means a healthier environment, reducing your carbon footprint and the risk of harmful overflows.
XFP pumps make your operation more competitive while contributing to a greener future.

Features and benefits of hydraulics

1 Vast choice of impellers
- Highly reliable and efficient impeller design with single and multi-vane models to ensure exceptional blockage resistance, solid passage min. 75 mm / 3 in and greater
- Optimum balance of impeller vane numbers and solids handling, based on extensive Computational Fluid Dynamics (CFD) research and testing
- Market leading efficiency, without compromising on solid size and rag handling

2 Adjustable bottom plate with intercepted slotting
- Significant energy savings throughout lifetime
- Blockage free operation
- Adjustment of the bottom plate restores pump efficiency
- Maintains efficient rag handling throughout its lifetime

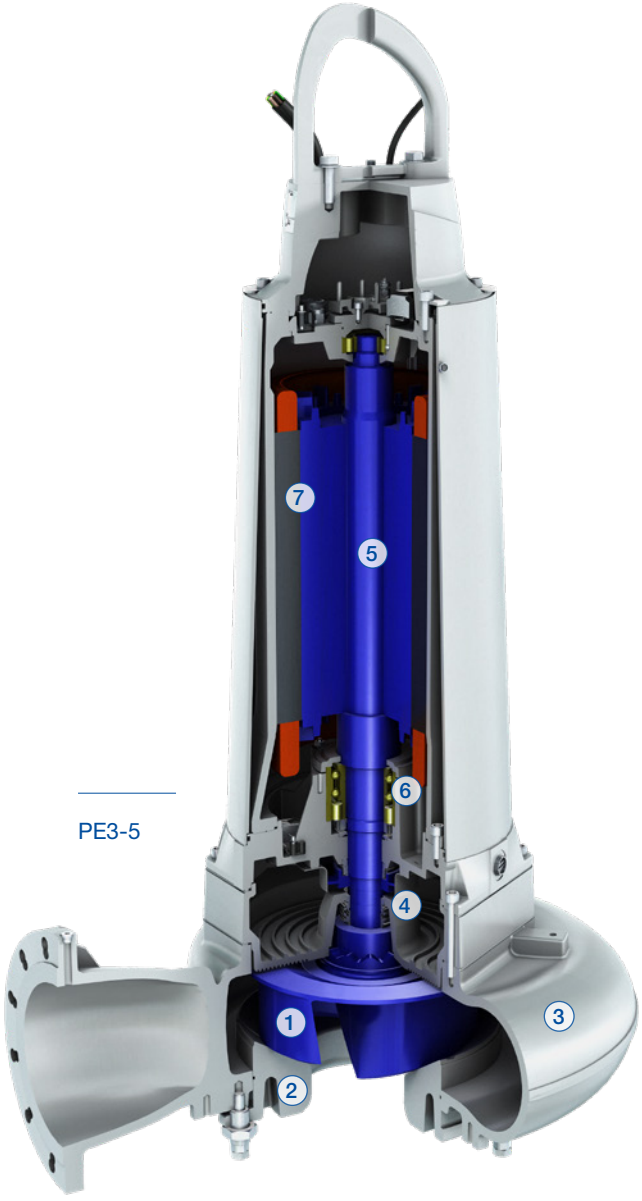
3 Double volute casing from DN 400
- Reduces radial forces and shaft deflection
- Maximizes the life of bearings and shaft seals, thereby reducing lifecycle costs

4 Double mechanical seals
- Silicon carbide/silicon carbide (SiC/SiC) provides maximum resistance from abrasives
- Seal blockage prevention reduces operational costs
- SiC/SiC is chemically resistant in wastewater and most other industrial applications

5 Heavy-duty stainless steel shaft
- Minimizes deflection at mechanical seal to <0.05 mm / 0.002 in.
- Increased safety against fatigue fractures

6 Heavy-duty bearings
- Minimum life 50’000 h for motors up to 9 kW / 12 hp and minimum 100’000 h for motors larger than 11 kW / 17 hp
- Electrically, insulated upper bearing as standard for PE6 and PE7, optional for PE5, which protects against stray electrical currents and avoids micro-cratering in the raceway of the inner and outer rings

7 Premium Efficiency IE3 motor in accordance with IEC 60034-30



PE3-5

Cutting-edge innovations shape every design

ContraBlock Plus / ContraBlock Evo

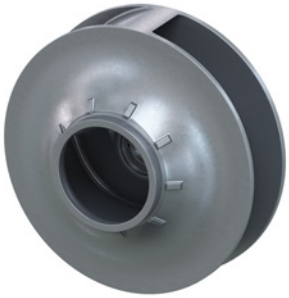
This technology has been specially engineered to handle tough requirements, such as higher rag and solids content caused by the need to reduce water consumption.

Vortex

Vortex impellers are ideal for handling liquids containing gas or sand as well as low flow/high head applications. The impellers have a relatively high solid passage and they are often used for handling sewage in rural areas in small pumping stations.

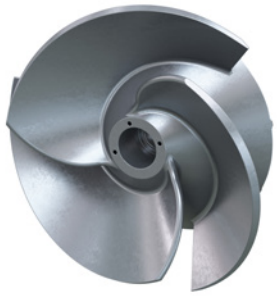
Channel

Channel impellers are ideal for handling liquids without fibrous materials. For wastewater containing fibrous materials, the suitability depends on the pump size and is shown in ABSEL, Sulzer's wastewater pump selection program.



Skew

Skew impellers have a semi-open, mixed flow design and combine features of both axial flow and centrifugal flow impellers. They have a large solids passage that makes them ideal for handling sewage in large terminal, inlet, and effluent pumping stations.



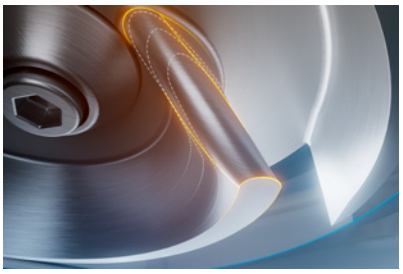
Chopper

In certain applications, waste materials can be long or bulky and effective handling must be accomplished by cutting them into smaller pieces. To meet this need, chopper impellers are used.

ContraBlock Evo – an evolution of the ultimate solids handling system

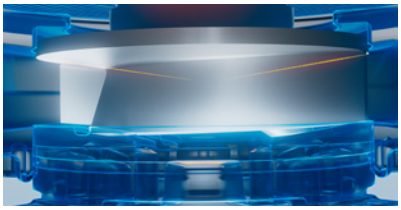
Unique vane geometry

The variable slope leading edge forces solids towards the high velocity regions to prevent solids accumulation.



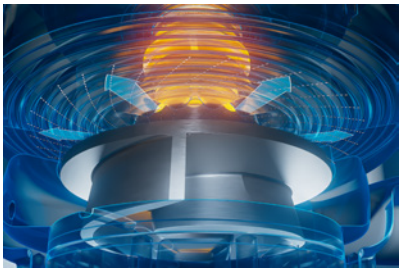
The trailing edge is optimized for the exit angle to reduce pulsations and reduce vane load.

The hub cone geometry ensures solids cannot accumulate in the low velocity zone.

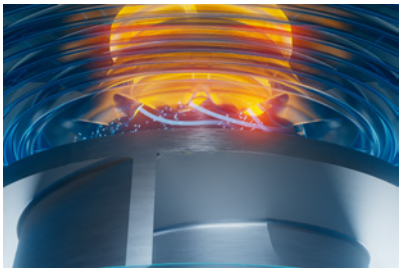


Integrated seal protection system

The spiral flow diffuser creates an outward pumping force to eject solids from behind the impeller.

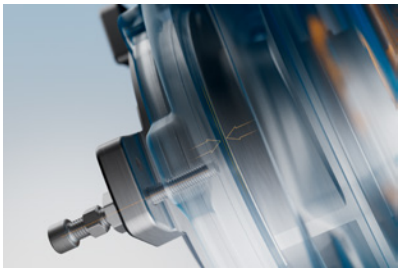


The high torque cutter ring shears any long or stringy materials into fine particles to protect the seal.



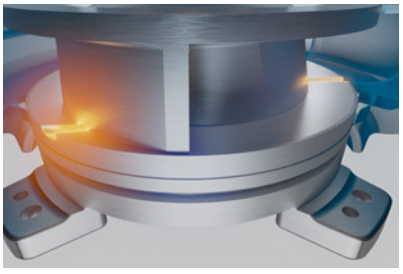
Field adjustable wear plate

Simple adjustments with basic tools will maintain optimal solids handling and efficiency. The optimal gap can be set in a few basic steps using fine-tuned adjustment screws from the outside of the pump.



Pulse-out slot technology

The arced slots in the wear plate dislodge any material from collecting between the impeller and wear plate.



The asymmetric slot design creates micro-shearing and pulses to prevent solids from traveling along the impeller vane.

Premium Efficiency submersible motors (IE3)

Sulzer was the first company in the world to offer Premium Efficiency IE3 submersible motors, in order to achieve the perfect balance of reliability and energy consumption. Using Premium Efficiency IE3 motors and non-clogging impellers, the submersible sewage pump type ABS XFP is the most efficient wastewater pump on the market.

Main design features, in accordance with IEC 60034-30, for low lifecycle costs by energy saving, significant carbon footprint reduction and increased lifetime by low winding temperature rise. Designed for Variable Frequency Drive (VFD) operation. ATEX, FM and CSA certified motors.

Motor power, PE1 - PE7

No of poles		Power P2 (kW)						
		PE1	**PE2**	**PE3**	**PE4**	**PE5**	**PE6**	**PE7**
2	50 Hz	3 - 4	5.5 - 11	15 - 25	35 - 42	-	-	-
	60 Hz	4.5	8 - 12.5	18.5 - 30	43 - 54	-	-	-
4	50 Hz	1.5 - 2.9	4 - 9	11 - 30	22 - 45	55 - 110	132 - 250	-
	60 Hz	2.2 - 3.5	4.5 - 10.5	13 - 35	25 - 52	63 - 125	150 - 335	-
6	50 Hz	1.3	3	9 - 22	18.5 - 37	45 - 90	110 - 200	250 - 550
	60 Hz	2	3.5	9 - 25	21 - 43	52 - 104	125 - 220	290 - 620
8	50 Hz			-	15 - 30	37 - 75	90 - 132	160 - 450
	60 Hz			12	17 - 35	43 - 86	104 - 150	185 - 500
10	50 Hz					30 - 55	75 - 132	160 - 350
	60 Hz					35 - 63	86 - 150	185 - 415
12	50 Hz						-	160 - 300
	60 Hz						86 - 150	185 - 350

Features and benefits of motors (IE3)

1 Insulation
- Class H (140°C / 284°F) insulation, temperature rise according to NEMA Class A up to 110 kW/168 hp and Class B above
- Extremely long lifetime of motor
- Unprecedented motor reliability due to Class H winding components
- Insulation systems are suitable for VFD operation according IEC/TS 60034-25A

2 Service factor up to 1.3
- Allows short-time operation at lower voltage, higher frequency (generator sets) and temporary higher medium temperature

3 Versatile cable types
- European, FM or CSA approved country-specific cables for use in sewage water

4 Optional shielded cable (EMC)
- Operation for frequency controlled AC drives
- Installation according to EMC directives

5 Moisture DI probe in seal chamber as standard
- Early mechanical seal failure indication

PE4 to PE7: Additional moisture DI probe, separate for cable connection chamber and motor compartment as option, standard for PE6 and PE7
- Early moisture ingress indication

6 Thermal protection switch in stator as standard
- Power supply failure motor protection (low voltage, single phase)

PE4 to PE7: Additional separate thermal protection switch in upper and lower bearing as option and standard for PE6 and PE7. Sensor options:
- Bimetallic Switch, PTC or PT100
- Early warning at beginning of bearing malfunction

PE4 to PE7: Optional vibration sensor
- Early indication of vibration

7 Cooling system
PE1 and PE2: Oil cooled motor as option in 60Hz, standard in 50Hz
- Continuous operation in dry installation

PE3 to PE6: Closed loop water cooling system with integrated heat exchanger as option, standard for PE6
- Continuous operation in wet well installation with un-submerged motor
- Continuous operation in dry installation

PE7: Open loop cooling system
- Continuous operation in wet well installation with un-submerged motor
- Continuous operation in dry installation

PE1-2

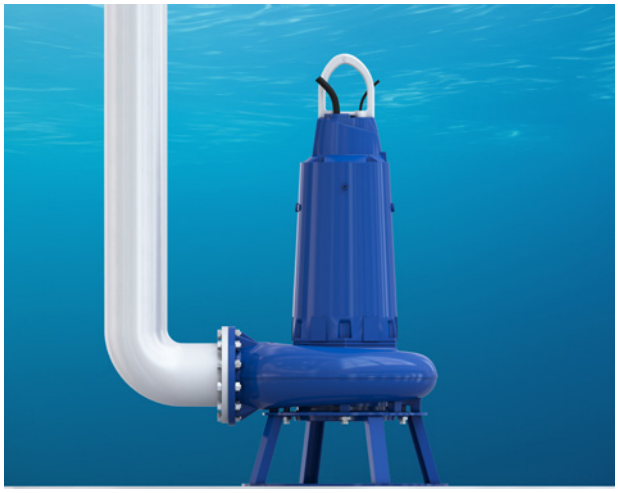
The right installation to fit any need

Wet well installation with pedestal

Wet well installations are the most common design for small and medium-sized pumping stations. Using submersed pumps allows for the smallest footprint and saves on building and installation costs.

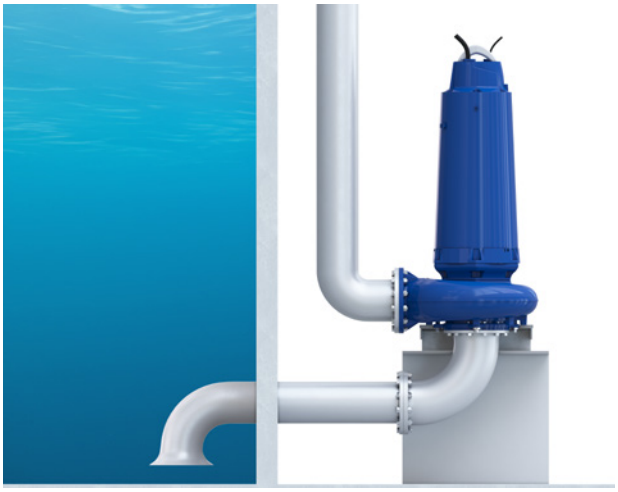
Wet well transportable installation

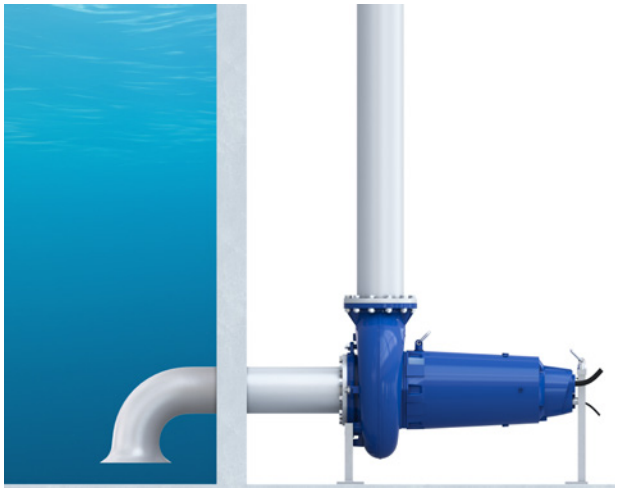
A transportable installation is used for temporary structures, bypassing sewers or pumping stations under construction.



Dry well installations

Dry well installations are more often used for medium and large pumping stations. Building costs are higher since a second dry chamber is required. However, it allows for easier and safer access for inspection, repair and maintenance of pumps. Dry well stations are either designed for vertical or horizontal pump installations.





Easy switch with Sulzer adapter brackets

Time for change

Over the years, the equipment in your pumping station gets older and the risk of breakdowns and disruptions increases. When it is time to replace your old pump with a new, more efficient one, we can offer both the pump and an easy way to install it. Our submersible sewage pumps type ABS XFP can be fitted with an adapter bracket to match your existing pedestal and guiderail. Choosing the XFP also means lower energy consumption, reduced maintenance costs and blockages.

Simple switch for better efficiency

Any previously installed product may easily be replaced without the need to replace the pedestal and guiderail, simply by using the Sulzer adapter bracket. This way you can save both time and money, during the switch to a more efficient pump.

Retrofitting is easy if the discharge size is the same as the pump it is replacing. All that is required is to fit the bracket with the bolts to your new energy efficient XFP pump and re-install it in the pump station using the existing guiderail. Quick and easy!

Creating solutions that provide ease of use and field adjustability are important considerations. Our adapter brackets bring these concepts to life.

Specifications

Material options

Pieces	Material
Volute	EN-GJL-250, 1.4470* or 1.4469*
Impeller / bottom plate	EN-GJL-250, EN-GJL-250 flame hardened, 1.4470 or 1.4469*, high chrome (A-532 III A)**
Motor shaft	1.4021 or 1.4462
Motor housing / connection chamber	EN-GJL-250
Cooling jacket	PE3: EN-GJL-250 PE4-7: 1.0036, AISI 316*
Pedestal	EN-GJL-250, 1.4470* or 1.4469*

* available for PE4-7 and PE1 on request

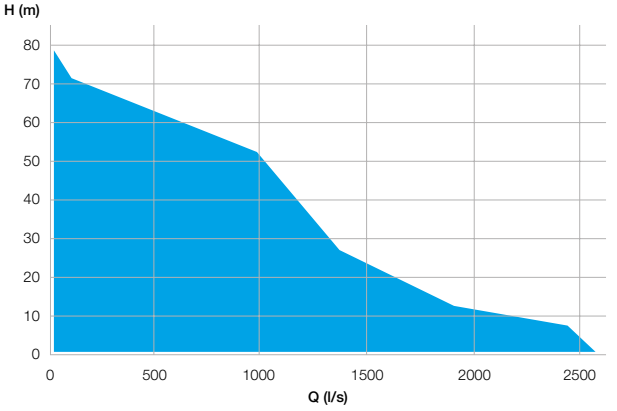
** available for PE2-5

Operating data

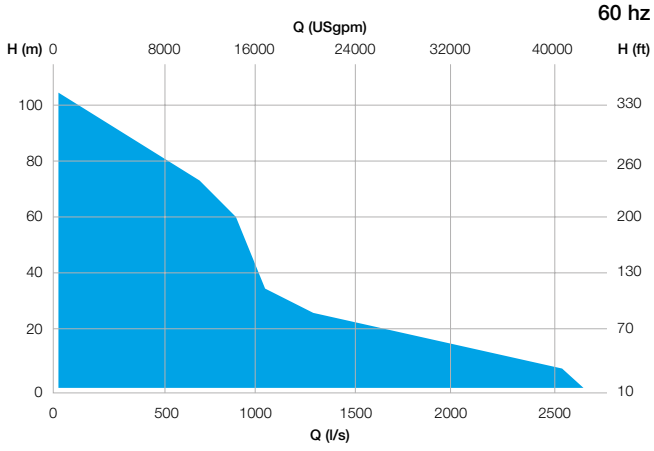
	50 Hz	60 Hz
Pump sizes	80 to 800 mm	80 to 800 mm / 3.2 to 32 in.
Capacities	up to 2'400 l/s	up to 2'500 l/s / 39'600 USgpm
Heads	up to 80 m	up to 95 m / 310 ft.
Motor powers	1.3 to 550 kW	2 to 620 kW / 2.7 to 830 hp

Performance range

50 hz



60 hz



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The Sulzer Flow division keeps your processes flowing. Wherever fluids are treated, pumped, or mixed, we deliver highly innovative and reliable solutions for the most demanding applications.

The Flow 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.