SULZER

# 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

**Water and wastewater** | **General industry** | **Pulp, paper and board**

* see motor power table on page 4

# 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.

# The right installation to fit any needs

The submersible XFP pumps can be installed according to the following installations, to fulfill virtually any customer requirements:

- Wet well installation with pedestal
- Wet well transportable installation
- Dry well vertical installation
- Dry well horizontal installation

# Features and benefits of hydraulics

## 1 Versatile range of Contrablock Plus impellers*

- This technology has been specially engineered to handle tough requirements, such as reduced water consumption leading to a higher rag and solids content
- 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- or 3-channel closed, skew or mixed flow impeller types available

## 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

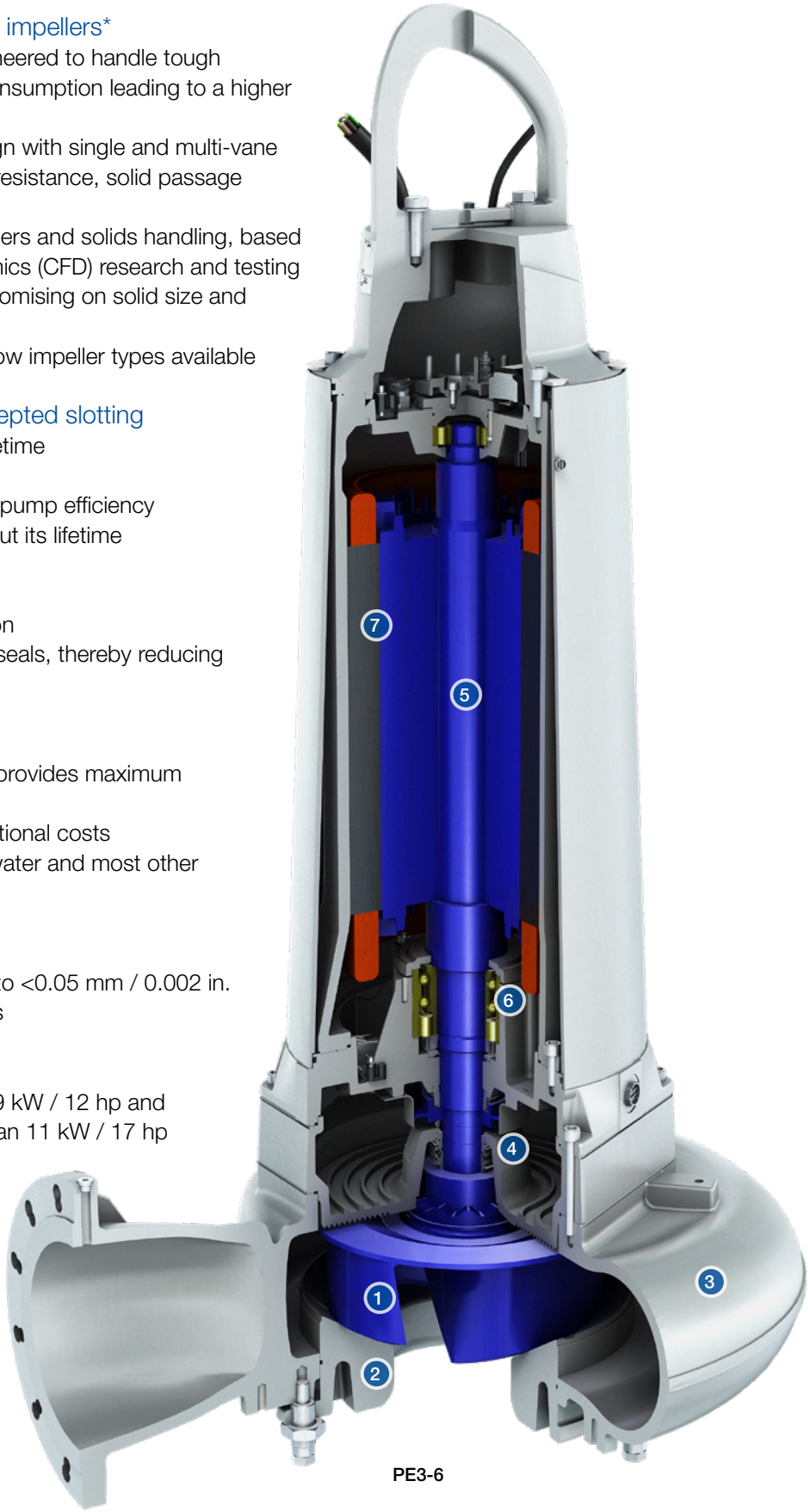
## 5 Heavy-duty stainless steel shaft

- 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




PE3-6

# 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 Contrablock Plus 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. A TEX, 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 | - | - | - | - |
| | 60 Hz | 4.5 | 8 - 12.5 | 18.5 - 30 | - | - | - | - |
| 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 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

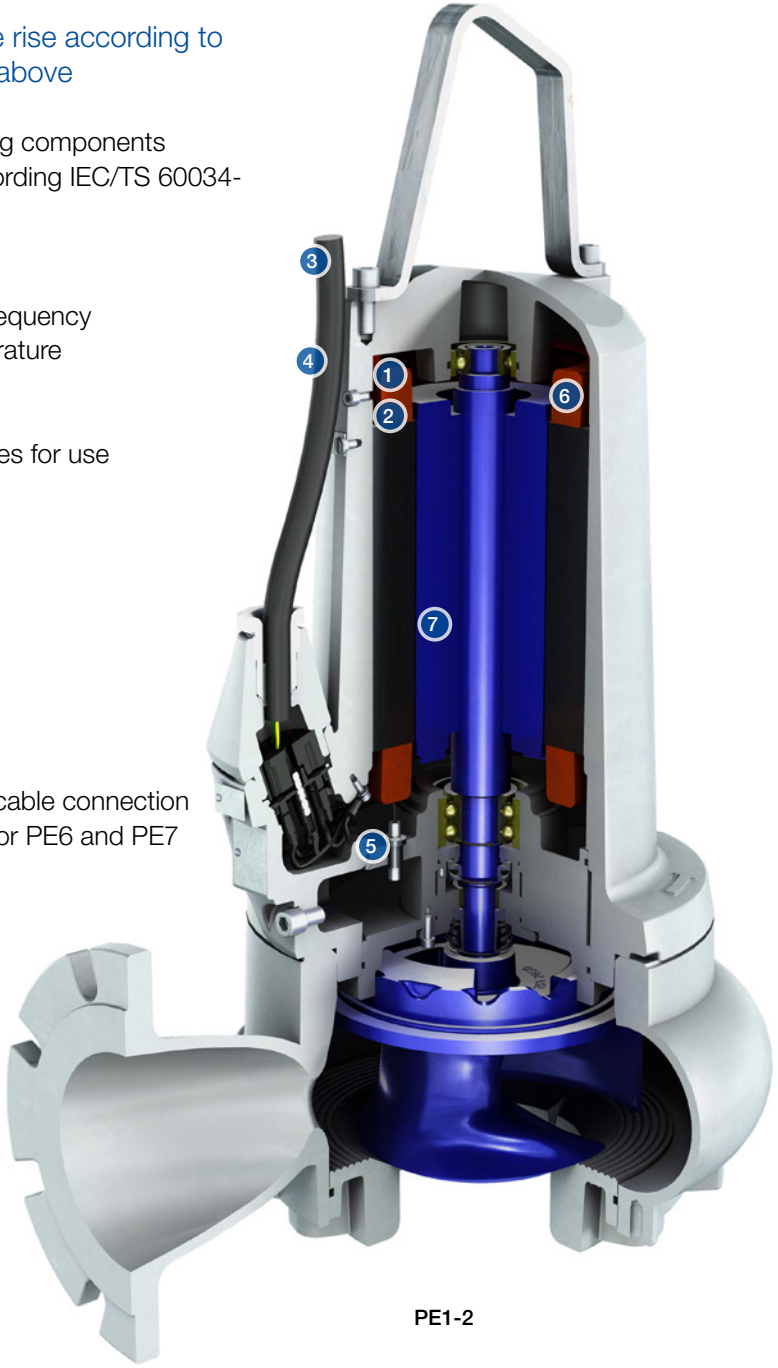
- Power supply failure motor protection (low voltage, single phase)

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




**PE1-2**

## 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

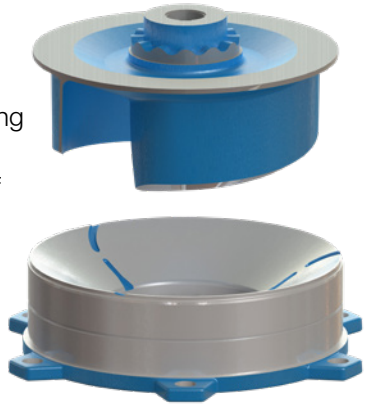
- Continuous operation in wet well installation with un-submerged motor
- Continuous operation in dry installation

PE7: Open loop cooling system

- Continuous operation in wet well installation with un-submerged motor
- Continuous operation in dry installation

# Efficient blockage resistance

Over 75% of pump breakdowns are a direct result of blockage. This is why pump hydraulics have traditionally involved compromises between efficiency, rag handling and free solids passage. Yet Sulzer has arrived at a lasting solution.



Our wastewater pumps with the unique Contrablock Plus impeller are designed to handle wastewater with a high amount of wet wipes, rags and other contaminations including solids. The patented impeller design uses a large radius and backswept leading edge vane with a tapered profile that encourages material not to become 'hung up' on the vanes, instead directing it to slide off into the downstream flow, without any need of cutting. Thanks to the large free passages even large solids can be discharged without clogging the pump. In addition the CB Plus bottom plate uses a precisely machined conical design that allows the gap between the plate and the impeller to be set at the optimal spacing for overall pump performance.

Routine on-site maintenance can include a simple manual adjustment that allows the optimum gap to be re-established, bringing pump efficiency back to the as-new condition.

Using the state-of-the-art Contrablock Plus impellers, we never need to compromise between efficiency and reliability. The XFP pumps are today's most efficient and reliable wastewater pumps.

# Easy selection with ABSEL and BIM

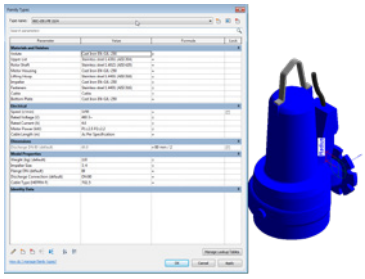
## ABSEL – Sulzer's wastewater pump selection program


With ABSEL, you can select specific pumps by configuring the application area, pump series and duty point using the "Hydraulic selection" function. Alternatively, you can navigate through our pump offering by using the "Pump browser".

Once you have selected a pump, you have the option to download complete product information in PDF format with pump and motor performance curves, a product description, dimensional drawings, operational cost calculations and data sheets.

You can also run a friction loss calculation on dry or wet well applications using the "PipeCalc" function. The "PipeCalc" database contains a wide variety of predefined pipes and fittings such as elbows, valves, transition pieces, inlets and outlets. To provide a first calculation in seconds, the "PipeCalc" function offers you a predefined piping arrangement in a pumping station.

## The easy way to navigate in building information modeling (BIM)



Building information modeling (BIM) is an intelligent process for improving collaboration between end users and suppliers in terms of OPEX costs. We have collected the BIM models you need for our lifting stations and submersible pumps in a single location, BIM search at www.sulzer.com/bim. Use the filter to find your product of interest or make a direct entry of the product name.

# Materials

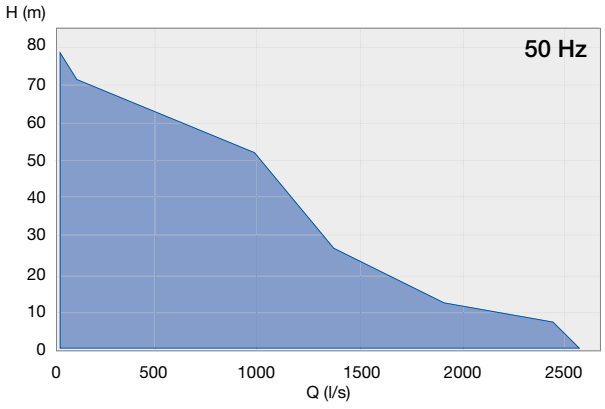
| Pieces | Material |
|---|---|
| **Volute** | EN-GJL-250, 1.4470* or 1.4469* |
| **Impeller / bottom plate** | EN-GJL-250, EN-GJL-250 flame hardened, 1.4470 or 1.4469* |
| **Motor shaft** | 1.4021 or 1.4462 |
| **Motor housing / connection chamber** | EN-GJL-250 |
| **Cooling jacket** | 1.0036, 1.4571* or 1.4462* |
| **Pedestal** | EN-GJL-250, 1.4470* or 1.4469* |

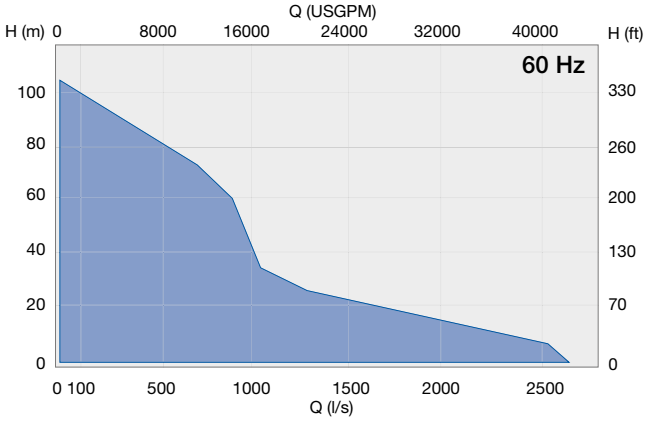
* available for PE4-7 and PE1-3 on request

# 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 ranges

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