

**MS Water Management** 

# High efficiency reliable solutions

for waste water management





Introduction



# Wilo worldwide



#### Wilo Branches / Production Sites

WILO SE, Dortmund plant/Germany WILO SE, Oschersleben plant/Germany WILO SE, Hof plant/Germany WILO EMU Anlagenbau GmbH, Roth/Germany Pompes Salmson S. A. S., Laval plant/France WILO INTEC S. A. S., Aubigny/France TEK S. R. I., Bari/Italy WILO Pumps Ltd., Limerick/Ireland Circulating Pumps Ltd., Kings Lynn/Great Britain WILO USA LLC, Thomasville plant, Georgia/USA WILO China Ltd., Beijing plant/China WILO ELEC China Ltd., Qinhuangdao/China WILO Pumps Ltd., Busan plant/Korea WILO Pompa Sistemleri, Istanbul plant / Turkey Mather & Platt Pumps Ltd., Pune plant/India Mather & Platt Pumps Ltd., Kolhapur plant/India Mather & Platt Pumps Ltd., Kolkata plant/India

#### **SUBSIDIARIES**

With more than 60 subsidiaries, Wilo is at home all over the world.



## Mather and Platt Pumps Ltd

Mather and Platt started its Indian operations in 1913 from Kolkata, and has been fulfilling the need of water supply for more than 100 years in India for segments like building services, water management and industries.

We started our operations at Chinchwad, Pune in the state of Maharashtra, in the year 1959.

Today in Chinchwad plant we make manufacture large size of various types of centrifugal pumps and pumping systems.

### Mather and Platt Pumps Ltd becomes a part of WILO SE in the year 2005.

In the year 2009 a new state of art manufacturing facility covering over approx. 6000 sq. meters has been built at Kolhapur around 260 km from Pune to manufacture the latest high efficiency products of Wilo India.

The Pune & Kolhapur plants have acquired ISO 9001, ISO 14001 and OSHAS 18001 and all products are CE certified.

Recently we had manufactured one of the largest metallic vertical turbine pump supplied with 4 MW motor.

A Green feather in the cap.....

Our Kolhapur plant receives **Gold Certification** from Indian Green Building Council (IGBC) in the year 2013.









Wilo KPR



Wilo Solid Seperation System



**Wilo Pump Station** 



Wilo Non Clog Dry Pit

Wilo pumps and systems set new standards in terms of technical performance and efficiency for municipal sewage management. With regard to the protection of the environment and the maintenance of resources, sewage treatment, in particular plays a major role. Experts in the fields of sewage disposal and treatment are under constant pressure to save costs, whilst still meeting the requirements of national regulations and laws. Continuous challenges, such as increasing solid contents in sewage, which hinder operating conditions for systems and devices, require new and innovative solutions to improve the processes and the corresponding products. Selecting the right pumps and systems guarantees reliable sewage disposal: with the highest standards and at the lowest costs.

## Sewage disposal equipment from Wilo.

In operation throughout the world.

### **Pumping Station Eastern Goochland, Virginia, USA**

 Q<sub>max</sub>
 3759 m³/hr

 H<sub>max</sub>
 64 m

 Motor rating
 365 kW

### Storm Water Retaining Basin, Vinh City, Vietnam

#### **Municipality Fischamend, Fischamend, Austria**

 $\begin{array}{ll} Q_{max} & 166 \mbox{ m}^3/\mbox{hr} \\ H_{max} & 44 \mbox{ m} \\ \mbox{Motor rating} & 50 \mbox{ kW} \end{array}$ 

## Wuhan Hanxi Waste Water Treatment Plant

Wuhan Hanxi, ChinaQmax5560 m³/hrHmax10.5 mMotor rating230 kW

### Bonaventura StraBenerichtungs – Gmbh GroBebersdorf, Austria

Q<sub>max</sub> 1511 m<sup>3</sup>/hr H<sub>max</sub> 18.5 m Motor rating 70 kW

## Stadtgemeinde Ybbs an der Donau

Ybbs, Osterreich $Q_{max}$  $8400 \text{ m}^3/\text{hr}$  $H_{max}$ 6 mMotor rating205 kW

Waste Water Treatment Plant Hradec Kralove Prague, Czech Republic

Q<sub>max</sub> 3600 m³/hr H<sub>max</sub> 34.5 m Motor rating 403 kW

## **Pumpwerk Cormailles**

Paris, FranceQmax1500 m³/hrHmax34 mMotor rating235 kW







Sea water application

## **Energy–efficient waste water disposal.** New submersible motor generation for wet and dry well installation.





The dry well installation variant, in particular the dryinstalled submersible pump, provides a number of advantages compared to dryinstalled pumps, and also compared to wet-installed submersible pumps

## Installation principle of a dry-installed submersible pump

The main difference to a wet-installed submersible pump is the design of the motor. It is a fully encapsulated motor with internal closed circuit cooling. A distinction is made between an open cooling system and a closed cooling system. With an open cooling system, the fluid to be pumped is used as the coolant.

With a closed system (single-chamber or two-chamber system), cooling is performed by an external fluid, such as e.g. water-glycol or medical white oil, in a closed circuit.

Another main difference to the wet-installed submersible pump is that the dryinstalled submersible pump is not installed in the fluid to be pumped. In terms of the technical construction, an intermediate base is required directly in the pumping station. The major advantages are the combination. On the one hand, this submersible pump offers all benefits of a dry installed pump and, on the other hand, all benefits of a submersible pump, such as being overflowproof.

As already mentioned, the pump is installed in a separate pump room. The pump is fastened to the inflow pipe unspectacularly via a pipe elbow.

## Advantages compared to dry-installed pumps (not submersible pumps)

- → Overflow-proof and thus more operational reliability
- Low-maintenance carbide mechanical or seal cartridges
- → No couplings or V-belts, thus fewer wearing parts and less maintenance required
- → Explosion protection is possible at all times
- $\rightarrow$   $\,$  Clean and hygienic working conditions
- $\rightarrow$  Ease of maintenance
- → Pump with dry pit motor in wet pit installation will overcome the problem of tripping on high temperatures



## **Monitoring equipment**

The integrated monitoring units are for protecting the motor:

- Excess temperature in winding/bearing/oil
- Over pressure in the motor
- Water penetrates
  - Sealing chamber
  - Leakage chamber
  - Motor compartment
  - Terminal compartment

## Overview of the monitoring equipment



**DI electrode** Moisture control in terminal compartment (b), motor compartment (b) and sealing chamber (a+b)



## **Bimetal** Winding temperature monitoring in the

monitoring in the motor compartment



### PTC thermistor temperature sensor Winding temperature monitoring in the motor compartment



**Pt 100** Winding temperature and bearing temperature monitoring



**Thermal float switch** Oil level and oil temperature monitoring in the motor compartment (FO/FK motors)



Float switch Leakage monitoring in the control compartment



**Pressure switch** Pressure control in the motor compartment



The possible sensor equipment depends on

the different motor types. The individual

sensors with the corresponding relays are

described in the following.

## **Sewage disposal equipment from Wilo.** Safe transport of heavily contaminated water.

### Wilo submersible sewage pump. Highest reliability.

The numerous combinations of fluids and solids in our sewage pose widely differing demands on a pump solution.

The Wilo FA series offers an extensive portfolio for a wide range of applications here. Self-cooling, dry well-installed and/or explosion-proof motors are standard today. But with regard to flexibility,

Wilo is setting future-oriented standards with the new motor technology of the FKT 27.1. It is suitable for vertical and horizontal installation and is designed for permanent operation for wet well and dry well installation.

### Further advantages:

The cooling is independent of the type of fluid and, in the case of dry well installation, no room ventilation is necessary – thus, the pit volume can be reduced and building costs saved. Through the perfect combination of modern submersible motor technology, high-quality treated hydraulic components and the solvent-free ceramic coating ceram,

Wilo sewage pumps guarantee long-term safe operation – all the time – even for the most demanding fluids and most difficult constraints.

### Ceram. Lifelong corrosion protection.

With ceram, Wilo offers reliable protection against corrosive and abrasive fluids. This solvent-free, ceramic based coating guarantees the perfect corrosion protection of our products.

Ceram coatings are available in different versions (C0, C1, C2 and C3). For use in especially critical fluids, the individual versions can also be combined with each other. With ceram, a cost-effective alternative solution compared to special materials can also be offered.



Motor features

- High operational safety
- Easy maintenance
- Internal closed cooling
  - circuit



Ceram quality	Layers	Thickness [mm]	Application
Ceram C0	1	0.4	Complete outer and inner coating
Ceram C1	1-3	1.5	Impeller and suction port coating
Ceram C2	1	1.5	Coating of the pump housing (inside)
Ceram C3	1	3	Coating of the pump housing (inside)

## Energy–efficient sewage disposal. New impeller shape for minimal clogging.

The challenges facing the field of sewage disposal are continuously increasing. For example, there is a significant increase in the aggressiveness of the sewage and the quantity of solids due to reduced water consumption. The increased demands caused by the contamination can be tackled using innovative impeller geometries – the SOLID impeller for sewage pumps. The impeller combines low susceptibility to clogging – similar to vortex impellers – with a high efficiency of up to 81% which can be approximated to that of single-channel impellers.

### Reliable

Reduction of the idle time and service costs by less deposits and an optimized solids transport.

### Long – Lasting

The innovative design guarantees a very smooth operation and minimizes vibrations for a long service life.

## Energy – efficient

Energy saving by excellent hydraulics efficiencies even outside the best point.

The advantages to you:

- → Optimized clogging resistance for greater operational reliability
- → Low-vibration operation due to defined symmetrical flow design
   → High efficiency of up to 81%
- → Reduces energy costs by up to 25% per year compared to vortex impeller









Very smooth operation





Increasing threats to our environment demand improved and more efficient waste management. The multitude of chemical and biological pollutants contained in household, commercial and industrial sewage presents enormous challenges to the appropriate and safe treatment of these dangerous substances. Disposal over extreme distances – by means of pressurized drainage or large scale pumping stations – ensures safe transportation of sewage from its origins to treatment plants where carried solids and contaminants are removed and biological treatment takes place. The right choice of pumps and systems guarantees continuous and dependable sewage disposal with the highest achievable safety standards and lowest possible costs.

## Wilo Submersible mixers. Target-optimised application due to modular system.

Wilo Uniprop submersible mixers have a modular design. Wilo thus has the fitting unit for almost every application. That increases the degree of efficiency, ensures the long service life of the mixer and reduces energy costs.

#### Wilo Uniprop: Safety in series.

A thermal sensor and a three-chamber system belong to the standard equipment of our Uniprop submersible mixers.

The gear shaft is made of saltwater resistant stainless steel 1.4462 (crome-nickle-molybdenum).

A protective sleeve and the propeller's geometry reliably prevent any entangling.

The mechanical seal is corrosion protected by a stainless steel bush. PUR or stainless propellers, the external sealing chamber control, a Ceram CO coating for applications in aggressive fluids or an explosion protection according to ATEX and FM are optionally available. A special feature of the Wilo Uniprop series is the optional guide carriage, which enables the vertical alignment of the submersible mixers.

#### The well thought out modular system.

With all Wilo submersible mixers, the submersible motor, the gear and the propeller form a compact unit of individual components that enable the precise adjustment of the mixers to the required performance data. With all of our units, ideal mixing results are based on modularly applicable propeller diameters and speeds.

Due to the use of 4, 6 or 8-pole submersible motors and various gear transmission ratios, the propeller speed may vary between 90 and 600 rpm. The optimum adjustment is worth the trouble, since it minimises propeller wear. Installation is possible on flexible lowering devices or fixed stands. Applications in a wide range of different tank geometries is thus possible at all times without any problems. The lowering device also provides the benefit of being able to operate the mixer at different horizontal angles and with additional auxiliary hoisting gear at different heights.

If it is mounted on a tripod, the submersible mixer can be installed freely in the tank. If you mount this stand on a concrete plate, subsequent installation in the full tank is even possible.

Due to the modular system used by Wilo, the motor, the gear and the propeller can be combined in many ways so that a large range of submersible mixers and pump curves are available



#### Wilo Uniprop TR 75-2

- → Standard version with PUR propeller for a wide range of applications
- → Here with sliding carriage for sludge applications



Modular design

→ Modular system for all Wilo submersible mixers, from Uniprop to Megaprop – always the right solution



#### Cut-away view of Wilo Uniprop

→ The special feature of Wilo submersible mixers is that planetary gear with a special pre-chamber for collecting leaking water

## **Wilo Maxiprop and Megaprop.** Low-speed submersible mixers.

Wilo offers different low-speed submersible mixer models:

- → Maxiprop with two-blade propeller
- → Megaprop with three-blade propeller

Different blade loads occur here with the same thrust. With the Wilo Megaprop, the load is distributed among three propeller blades. That ensures smooth operation even if inflowing conditions are unfavorable. Extremely durable one-piece laminated GRP blades ensure maximum periods of use and minimum maintenance costs. They can be replaced individually. "Slow runners" are ideal for creating a directed flow in water treatment systems and for suspending solids. In activated sludge tanks, biological phosphorus removal tanks and denitrification tanks, they prevent activated sludge from settling. That results in a wide range of applications in water treatment technology, industry, agriculture and water supply.

### Equipment.

Wilo Maxiprop and Megaprop submersible mixers are available with propeller diameters of 1,600 mm to 2,600 mm. Depending on the submersible motor (4, 6 and 8-pole motors are available) and the transmission of the planetary gear, propeller speeds between 17 and 60 rpm are feasible.

The resulting mixing forces are absorbed by the oversized gear mounting and not passed on to the motor bearings.

A thermal sensor and a three-chamber system belong to the extensive standard equipment. The gear shaft is made of saltwater-resistant stainless steel 1.4462 (crome-nickle-molybdenum).

The standard protective sleeve, the hub closing ring and the well-designed propeller geometry reliably prevent any entangling. The countering of the mechanical seal is pressed into a stainless steel bush to prevent any corrosion.

The submersible mixer is optionally available with explosion rating according to the ATEX or FM standard. The submersible mixers are equipped with an external sealing chamber control as an option.

We recommend our Ceram C0 coating for applications in abrasive and/or corrosive fluids.

## Installation:

### As individual as your system.

Due to the individual modules, you can ensure that the Wilo Maxiprop and Megaprop submersible mixers meet your requirements precisely. In addition, Wilo will make an exact installation suggestion for your special application. The installation is performed according to the geometry of the tank on fixed stands, either free-standing or, for operating bridges that can be walked on, with an attachment point at the top.





- optimum efficiency → Corrosion-resistance output shaft
- for high operational reliability

## **Wilo accessories.** All you need for intelligent installation.

Wilo offers a wide range of innovative accessories that are compatible with the submersible mixers. Wilo manufactures all accessory parts in its own factories. Planning aids, dimension and ITD sheets (technical engineering data) and accessory sheets in common file formats are available on request.

#### Lowering devices.

Optimum results can only be expected if a mixer can actually be fitted at the ideal installation location. That is why lowering devices that can be positioned freely are the prerequisite for a mixer version that is optimised in terms of energy consumption. Wilo's range of products provides you with flexible systems for wall-mounted installation as well as stands for free positioning in the tank. Mature technology and resistant materials ensure a high degree of stability and durability.

#### Auxiliary hoisting gear.

Wilo's LGA-certified auxiliary hoisting gear makes it easy to install our submersible mixers safely or lift them out of the tank for maintenance. Wilo offers auxiliary hoisting gear with a jib length up to 3.2 m and a load-bearing capacity up to 500 kg. To ensure safe and simple implementation, some models can be disassembled into compact individual parts. In addition, most types allow you to choose between galvanised steel, A2 steel 1.4301 (crome-nickle) and A4 steel 1.4571 (crome-nickle-titanium) as the material and between a two-gear aluminum winch and a stainless steel hand winch

#### Other accessories.

Wilo's range of products is supplemented by extensive, practical accessories, such as e.g.:

• An additional polyamide rope slackening device for control and cable feed. It relieves the supply lines to the mixer.

A separate rope protection (winding unit) for using an auxiliary hoisting gear at different installation locations.
A catch hook or an automatic catch device for lifting and lowering submersible mixers. The rope is thus not constantly exposed to the fluid.



- Can be swivelled or is fixed
- → Resistant materials
- High degree of stability and durability



Auxillary hosting gear

- → LGA-certified
- Wide range of different jib lengths
- Adapted precisely to Wilo submersible mixers



- Wilo provides all accessories – from guide pipes, frames and sliding carriages to ruber buffers
- Adjustment to a wide range of different applications without problems.

Seen as mixing and aeration normally account for 50 to 80% of a waste water treatment plant's total energy consumption, it makes good economical and ecological sense to minimize energy consumption and increase system efficiency using modern system ecchnology.

At Wilo, submersible mixers and aerators come from one source. This guarantees that both system components are optimally matched, thereby ensuring, for instance, increased substance exchange during sludge activation.

The Wilo–Sevio AIR aeration systems are not only of interest for new waste water treatment plants, but they can also be subsequently installed in existing plants, thereby making waste water treatment more efficient.

## **Efficient aeration with the Wilo-Sevio AIR.** Thanks to flow-optimised design.

The Wilo disc aerator design is based on considerations regarding flow and strength.

Wilo disc aerators are all factory-tested to ensure that they are within the specified pressure loss range.

The aeration systems are individually configured for every requirement and are characterized by their compact modular design. Depending on the aeration power required, an appropriate number of disc aerators are installed on pipes and supplied with compressed air. The system is delivered in the form of components that are pre-assembled at the factory – no need for gluing or welding. This allows for quick and easy installation on site.

The combination of submersible mixers and aeration ensures an increased exchange of oxygen. Common configuration to suit the requirements at hand increases the system's overall efficiency. At Wilo, all components are provided from one source.



#### **Process-optimised** Aerator housing with integrated membrane mount, non-return valve and twist guard





**Flow-optimised** Evenly distributed small-bubble oxygen entry over the entire membrane surface



**System-optimised** Increased oxygen exchange through the combination of aerator systems and submersible mixers

## The advantages to you

- → Reduced energy costs
- → Optimal process
- → Increased oxygen entry
- $\rightarrow$  Improved treatment performance
- → Minimal installation and maintenance required increased overall efficiency
- $\rightarrow$  Combination with Wilo submersible mixers
- → Comlete configuration to suit the requirements at hand
- → A contract person for all project phases







Type of construction	Submersible drainage pump for stationary and portable installation	Submersible sewage pump for wet, dry and portable installation	Pumps station as single or double pump station with submersible motor and macerator pumps. Diameter of 400 mm to 1,100 mm
Application Q <sub>max</sub>	For draining excavation pits, cellars, sumps and basins, as well as for house and site drainage, water extraction from lakes and rivers, water control in mines and tunnels, fountain applications 340 m <sup>3</sup> /h	Pumping raw water and sewage with solid content in waste water treatment plants and pumping stations, local drainage, water control and process water extraction 7,950 m <sup>3</sup> /h	For pressure drainage of waste water and sewage, for applications below the back flow level, without natural fall, or for connecting residential houses to the sewage disposal system in remote areas 180 m <sup>3</sup> /h
NIIIdA	,		
H <sub>max</sub>	71 m	87 m	55 m
Product features	<ul> <li>→ Permanent operation, even with non-immersed motor and in slurping operation</li> <li>→ All size fitted with a Stroz coupling connection on the pressure side as standard</li> <li>→ Special materials and coating for increased resistance to abrasion and corrosion</li> </ul>	<ul> <li>→ Many different motor and impeller combinations possible</li> <li>→ Self-cooling motors with 1 or 2 chamber sealing system and hermetically sealed cooling system</li> <li>→ NEW: SOLID impeller for maximum process reliability when working with untreated sewage</li> <li>→ Pumps with a macerator or mixer head</li> <li>→ For horizontal and vertical installation</li> <li>→ Special materials and coatings against abrasion and corrosion</li> <li>→ ATEX and FM versions</li> </ul>	<ul> <li>→ Increased corrosion resistance due to synthetic pumps stations made from recyclable PE</li> <li>→ Easy pump installation and maintenance due to surface coupling</li> <li>→ Maximum strength and optimum in flow conditions to the pump due to hemispherical sump floor</li> <li>→ Monolithic construction up to 3m and range of heights or extensions</li> <li>→ Elements operable from above and removable non- return value</li> </ul>
Product features	<ul> <li>→ Reliable operation</li> <li>→ Universal use</li> <li>→ Heavy-duty construction, wear-resistance components and wide</li> <li>→ Range of accessories</li> </ul>	<ul> <li>→ Broad application range</li> <li>→ High process reliability</li> <li>→ Hydraulic pump output optimally adapted to the desired duty point</li> <li>→ Innovative SOLID impeller</li> </ul>	<ul> <li>→ Maximum durability</li> <li>→ Flexible application</li> <li>→ Suitable for macerator pumps and smaller pipe diameters</li> <li>→ Service-friendly</li> </ul>

Type of construction	Prefabricated pumping station with Wilo-EMUport solids seperation system, for installing in a building, existing sump or integrated into a PE-HD plastic sump	Recirculation pump with housing unit, directly driven or with single stage planetary gear	Axial submersible pump for use in pipe sumps
Application	De-watering entire localities or large industrial and commercial complexes using conventional gravity-flow drainage systems	Pumping drainage and sewage at low delivery heights with large volume flows, e.g. between nitrification and denitrification tanks; pumping process, untreated, clean and cooling water; flow generation, incl. for amusement	Flooding protection, pumping treated sewage, cooling water and rainwater, watering and drainage
Q <sub>max</sub>	Upto 600 m³/h as standard, larger volumes available on request	6,800 m³/h	9,500 m³/h
H <sub>max</sub>	Upto 80 m as standard, larger delivery heights available on request	1,1 m	8,4 m
Product features	<ul> <li>→ High efficiency due to small pump free ball passage</li> <li>→ Uninterrupted operation thanks to double-pump system and individual blocking of solids collection reservoirs</li> <li>→ Enviornmental-friendly PE-HD material, corrosion- resistant and recyclable</li> <li>→ Easily accessible, dry- installed pumps and gas- tight collection reservoirs, hygienic and odour-free</li> </ul>	<ul> <li>→ Stationary installation directly on guide pipe</li> <li>→ Flexible installation through the use of lowering device</li> <li>→ Vertical or in-line installation possible</li> <li>→ Seld-cleaning propeller</li> <li>→ Special materials or coating against abrasion abd corrosion</li> <li>→ Modular system: Individual combination of motor, gear and propeller</li> <li>→ Longitudinally watertight cast cable inlet</li> </ul>	<ul> <li>→ Heavy-duty version made of greycast iron</li> <li>→ Free ball passage of 85 to 130mm</li> <li>→ Propeller blade angle adjustable on site</li> <li>→ Self-cleaning blade for use with long-fibrous elements in the fluid</li> <li>→ Special material, e.g. stainless steel propeller and coatings to protect against abrasion and corrosion</li> <li>→ Longitudinally watertight cable inlet</li> </ul>
Product features	<ul> <li>→ Energy-efficient</li> <li>→ Optimised plugging immunity</li> <li>→ Maximum durability</li> <li>→ Service-friendly</li> <li>→ Patented individual blocking</li> <li>→ Economic renewal of pumping stations thankstoretrofits system</li> </ul>	<ul> <li>→ Safe operation</li> <li>→ Versatile installation</li> <li>→ Patented self-cleaning propeller hub helix</li> </ul>	<ul> <li>→ Very smooth operation</li> <li>→ Adjustable propeller blades</li> <li>→ Long service life</li> <li>→ Wear-resistant components</li> </ul>





Type of construction Application	Cast iron, Bronze, ductile iron, Cast steel, Ni resist, Stainless steel Duplex stainless steel & special alloys Municipal raw sewage transfer Sewage treatment plants Effluent treatments plants Dirty water in industry	High, mild or low speed submersible, directly driven or with single- stage or two-stage planetary gear Prevention of swirling deposits and solids in rain spillway basins, utilisation inaeration basins and sludge tanks, sus-pension of solids and homogenisation, targeted flow generation plus a wide range of other possible applications, e.g. biogas systems and fish farming
Q <sub>max</sub>	8,000 m³/h	Thrust Max. 6,500 N
H <sub>max</sub>	70 m	
Temp <sub>max</sub>	90℃	
Product features	<ul> <li>→ End suction top discharge</li> <li>→ Mounting: Horizontal</li> <li>→ Stage: Single</li> <li>→ Casing with hand hole inspection cover</li> <li>→ Mechanical seal/gland packing</li> <li>→ Large free passage upto 200 mm</li> <li>→ Grease lubricated antifriction bearing</li> </ul>	<ul> <li>Product features → Innovative blade geometry, one-piecte glass fibre-reinforced laminate blades (low-speed mixer)</li> <li>→ New: with highly wear-resistant incoming flow edge (Tr212)</li> <li>→ Modular system: Individual combination of motor, gear and propeller</li> <li>→ Wide range of accessories, lowering device, catch device, etc.</li> <li>→ Special materials and coatings against abrasion and corrosion</li> </ul>
Optional features	<ul> <li>→ Mounting: Vertical</li> <li>→ Delivery flange orientation possible</li> <li>→ Bush bearing</li> </ul>	<ul> <li>Product advantages → Highly efficient</li> <li>→ Maximum period of use with minimum maintenance coasts</li> <li>→ Energetically optimised, needs base configuration to suital most any application</li> <li>→ Patented self-cleaning propeller hub helix</li> </ul>
Prime mover	→ Motors	



## **Pioneering for You**

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\*Technical matter subject to change

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