Pioneering for You

**Product Catalogue** 

# Wilo-EMU FA

Solution for Submersible Drainage, Sewage & Industrial Applications







# "Top quality in standard applications"



Wilo is the system expert who supports you with tailor-made solutions during all phases of the project. From design and configuration to commissioning and maintenance. This means we are just the right partner for the growing challenges posed by sewage disposal. This includes requirements for greater energy efficiency and costeffectiveness, coping with increasing solid matter content in the sewage as well as burgeoning regulations and the stricter legal environment. One thing is certain: you can rely on us when it comes to pumping sewage.

Wilo-EMU FA Series

# Wilo-EMU FA

Nowadays, it is right and proper for people to be more sparing with the valuable natural resource of water.

However, this increases the proportion of solid material in the sewage, and makes the transport question more and more complicated. The simple solution from Wilo: the Wilo-EMU FA submersible sewage pump. This technology can be individually configured and thus adapted to suit practically all of your requirements. From drainage through to sewage transport. The wide bandwidth of different hydraulics and motor versions makes it possible for you to adjust the output of the Wilo-EMU FA precisely for your requirements also with regard to durability. For pumping abrasive or corrosive fluids, the standard 2-component coating can be replaced by a Wilo-Ceram coating. This offers very good adhesion and is highly resistant to aggressive media because of its aluminium oxide constituents. The Wilo-EMU FA – a pump adapted to your requirements. Bringing reliable pumping within your reach, from wastewater through to untreated sewage.



# **Wilo-EMU FA** The right impeller for practically any fluid

Whether untreated sewage, pre-treated sewage or wastewater – optimum transport of different fluids requires the appropriate impeller. No single requirement is like another, so we carry a large number of impeller shapes in our range – from the vortex impeller through to multi-channel impellers and the SOLID impeller. This means you can select an impeller for your Wilo-EMU FA that is adapted to your system and takes account of individual situations such as inflow conditions, delivery head and the type of fluid. The result is that you can count on efficient and reliable pumping operations. Irrespective of the composition of the fluid.

# Comparison of efficiency and anti-clogging properties of the impellers

When it comes to the hydraulic selection, it is necessary to consider the specific factors of the system such as inflow conditions, fluid composition or volume flow.

During system optimisation, the aim is to find the best compromise between efficiency and process reliability.



# Wilo-EMU FA Impeller Type



### **Closed multi-channel impellers (two, three, four-channel impellers)**

- $\rightarrow$  Pre-treated sewage
- $\rightarrow$  Wastewater
- $\rightarrow$  Activated and digested sludge

# Technical data:\*

Qmax: 7,800 m<sup>3</sup>/h Hmax: 103 m Free ball passage: 50–130 mm



### **Closed SOLID-T impeller**

- $\rightarrow$  Untreated sewage
- $\rightarrow$  Pre-treated sewage
- $\rightarrow$  Activated and digested sludge

### Technical data:\*

Qmax: 2,830 m<sup>3</sup>/h Hmax: 55 m Free ball passage: 78–170 mm



# Half open SOLID-G impeller

- $\rightarrow$  Untreated sewage
- $\rightarrow$  Pre-treated sewage
- → Activated and digested sludge

### Technical data:\*

Qmax: 344 m<sup>3</sup>/h Hmax: 61 m Free ball passage: 80-90 m



### **Closed single-channel impellers**

- $\rightarrow$  Untreated sewage\*\*
- $\rightarrow$  Pre-treated sewage
- $\rightarrow$  Activated and digested sludge

# Technical data:\*

Qmax: 1200 m<sup>3</sup>/h Hmax: 40 m Free ball passage: 45–200 mm



# Vortex impeller

- $\rightarrow$  Untreated sewage
- $\rightarrow$  Pre-treated sewage
- $\rightarrow$  Wastewater
- $\rightarrow$  Activated and digested sludge
- $\rightarrow$  Fluids with coarse constituents

### Technical data:\*

Qmax: 418 m<sup>3</sup>/h Hmax: 62 m Free ball passage: 40–130 mm

# Wilo-EMU FA Installation Type



# Wet Sump Installation

- → Low investment costs for building and assembly
- $\rightarrow$  Little space required for the pumps  $\rightarrow$  Installation and removal by
- suspension device
- $\rightarrow$  Use of T-motors



# **Dry Sump Installation**

- → Internal cooling system
- $\rightarrow$  Flood-proof pump
- → Pump can be controlled during operation
- → Maintenance-friendly due to accessible pump chamber
- → Use of F; FK; HC and FKTmotors



# **Portable Installation**

- → Application in deep, narrow sumps and flat tanks
- → Dewatering on construction sites and with sewer rehabilitations



# Wilo-EMU FA Motor Construction Type

Not only the hydraulics, but the motor is the driving force for your pump when it comes to pumping different fluids with practically no obstructions. Here too, the Wilo–EMU FA adjusts itself precisely to your requirements. You can select between surface-cooled and self-cooling motors, depending on the installation type you require. Moreover, you can choose between several sealing variants depending on the fluid involved. A further boost to operational reliability is within your reach by selecting from various monitoring possibilities.

# **Motor Construction Type – Motor Cooling**

Submersible motors with passive and active cooling are used for drive:

- → T motors (surface-cooled motors) have passive cooling. They imet their heat directly into surrounding fluid via the housing parts. For this reason, these motors can operated immersed in continuous duty (S1), depending on performance, and non-immersed in short-time duty (S2)
- → FK, FKT and HC motors are self-cooing and have an active cooling systems. The waste heat is guided via the coolant (white oil or water-glycol mixture) to an integrated heat exchanger, and this releases the waste heat too the conveyed medium. As a result, these motors are suitable for continuous duty (S1) either in immersed or non-immersed state.

All motors have sealing chamber that protects the motor from fluid ingress. It can be accessed from the outside and can be monitored with an optionally sealing chamber electrode. All filling fluids used are potentially biodegrable and environmentally safe.

# Seal variants. Operational reliability, double-protected.

Whenever fluid enters the motor compartment, it will lead to a breakdown. To prevent this, there is a seal housing between the hydraulics and motor which is provided with seals on the motor and pump sides as well as a sealing and leakage chamber.

The requirements on the seal increase with the solid matter content and the proportion of long-fibre constituents in the fluid. As a result, the seals on the motor and pump sides can be made in up to three different ways:

- → Standard seal for normal loads. A mechanical seal on the fluid side, a rotary shaft seal on the motor side made of NBR or FPM.
- → High-quality seal for high loads provided by two independently rotating mechanical seals.
- → High-quality seal for extreme loads provided by two independently rotating mechanical seals made of silicon carbide fitted in a stainless steel cartridge.

### **Cooling Variants**

- T Air-filled without cooling shroud
- FKT Air-filled with cooling shroud
- HC Air-filled with cooling shroud, hermetically tight cooling system
- F Oil-filled with internal cooling
- FK Internal oil circulation cooling



# **Monitoring and control**

Everything under control

You can select various monitoring devices according to the motor, allowing you to keep an optimum eye on the reliable function of the Wilo–EMU FA. This means the winding, the motor compartment, the sealing chamber and also the bearing temperature can be checked. Appropriate switchgears are available in each case for optimum remote control and monitoring.

# In this way, the following components are monitored:

### Winding temperature

The temperature is registered by bimetallic, PTC or Pt100 sensors. Straightforward temperature limiting or temperature control can be fitted. With the limit, the switch-off must take place as soon as the threshold value is reached. With temperature control, an advance warning can be given if the temperature is low. Switching off is only required at high temperature.

# Moisture monitoring in the terminal and motor compartment

Whether fl uid ingress or condensation formation is involved, special moisture sensors can detect and report this reliably.

### **Sealing chamber**

The chamber is filled with medicinal white oil. A rod electrode measures the water content and reports if there is a corresponding amount of water in the oil.

### Leakage chamber

This chamber is empty as standard. A float switch measures the leakage and reports if there is a corresponding volume flow.

### Storage temperature

If the bearings get too hot, the motor will have to be switched off so as to avoid breakdowns. The bearing temperature can be measured with a Pt100 sensor to avoid this happening and to detect bearing damage at an early stage. A relay evaluates the data from the sensor and always displays the current temperature of the motor bearings.



# **Sewage and Drainage Pumps**



Pumping of untreated sewage with faeces and long-fibre components, sewage containing faeces, and process water

Mains connection: 3~400 V, 50 Hz → Protection class: IP68

- → Insulation class: H
- $\rightarrow$  Fluid temperature: 3...40 °C, higher temperatures on request
- $\rightarrow$  Free ball passage of 45...130 mm
- → Max. immersion depth: 20 m

Pump Housing	:	cast iron/ductile
		cast iron
Impeller	:	cast iron/ductile
		cast iron
Shaft	:	stainless steel
Seal on pump side	:	sic/sic

- → Can be tailored to suit your exact requirements. For reliable and efficient pumping of pre-treated sewage and untreated sewage.
- Versatile. Optimum pumping of various fluids at all times using different impeller shapes.
- → Energy-efficient thanks to optional IE3 motor technology
- Protected against abrasion and corrosion with Ceram coating and special materials
- Suitable for immersed and non immersed applications, even in continuous duty





### Wilo-EMU FA...SOLID

Pumping of untreated sewage with faeces and long-fibre components, sewage containing faeces, and process water

 $\rightarrow$  Fluid temperature: 3 – 40 °C, higher

temperatures on request

 $\rightarrow$  Free ball passage (G impeller):

Max. immersion depth: 20 m

 $\rightarrow$  Free passage (T impeller):

78x105...150x150mm

Seal on pump side : SiC/SiC

→ Patented SOLID hydraulics for

suitable for untreated sewage

Reduction of vibrations through a

protection against abrasion and

→ SOLID hydraulics for reduction of

clogging susceptibility, suitable for

→ Process reliability thanks to optimised

untreated sewage with long-fibre

impeller geometry for safe pumping of

flow-optimised impeller geometry

Ceram coating and special material for

reduction of clogging susceptibility,

80 or 90 mm

**Pump Housing** 

**SOLID T impeller** 

corrosion

**SOLID G impeller** 

untreated sewage

Impeller

Shaft

→ Protection class: IP68

Pumping of highly abrasive and faeces-

: cast iron/ductile cast iron

: cast iron/ductile cast iron

: stainless steel

containing sewage without long-fibre components Mains connection: 3~400 V, 50 Hz → Mains connection: 3~400 V, 50 Hz

- → Protection class: IP68
- $\rightarrow$  Max. fluid temperature: 3 40°C; higher temperatures on request
- Free ball passage: 23 58 mm. Permanently lubricated roller bearings
- Max. immersion depth: 20 m

Pump Housing	:	cast iron
Impeller	:	cast iron/ductile
		cast iron
Shaft	:	stainless steel
Seal on pump side	:	sic/sic
Stirring apparatus	:	abrasite

- $\rightarrow$  Selectively dissolves deposits in the sand trap via a mechanical stirring apparatus
- Process reliability ensured by use of Abrasit and stainless steel
- → Low vibration and long service life with direct mounting of the stirring apparatus on the impeller
- → Durable due to Ceram-coated internal surfaces of the hydraulics which enhance wear resistance







Wilo-EMU FA Series

# THE FUTURE IS CONNECTED.



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