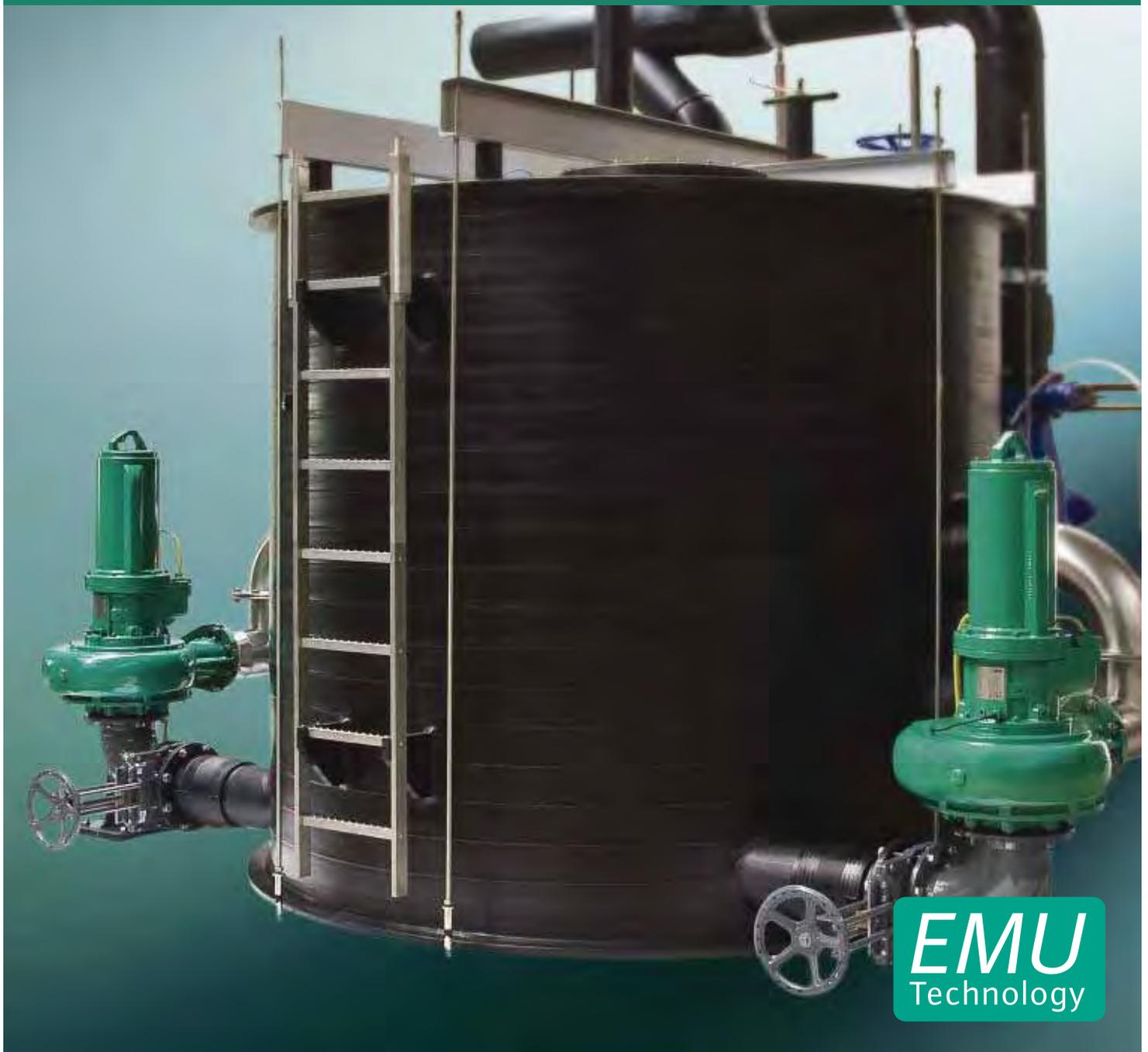


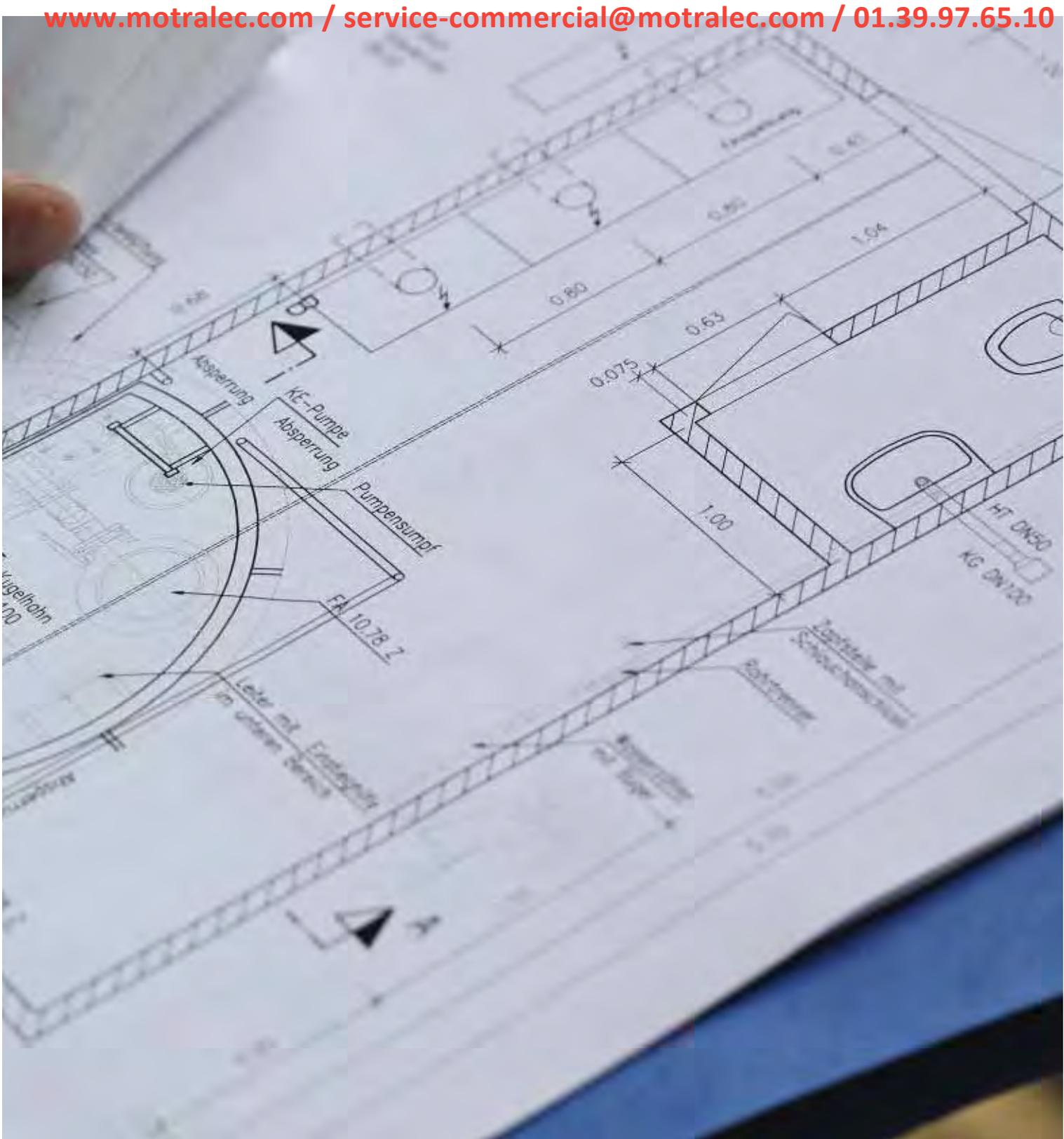
Wilo-EMUport solids separation system.

Product brochure.





Pumpen Intelligenz.



Wilo is synonymous throughout the world with the tradition of first-class German engineering. Wilo pumps and systems set new standards in terms of technical performance and efficiency for municipal water and sewage management. Sewage disposal currently plays a major role with regard to protection of the

environment and maintenance of resources. Continuous challenges such as increasing solid contents in sewage, which hinder operating conditions for systems, require new and innovative solutions to constantly improve the processes and the corresponding products. One innovation in the field of sewage

disposal is the Wilo-EMUport solids separation system. The solids separation system is distinguished from conventional sewage disposal systems by its energy efficient function, extremely durable, corrosion-resistant PE-HD components and low life cycle costs. Far-sighted? We call it Pumpen Intelligenz.



Intelligent sewage disposal.





Pumping stations – an overview.

Solids separation system –

The premium solution for sewage pumping.

Wilo provides the right solution for all your sewage disposal requirements. Based on an extensive product range, pumping stations can be individually planned and assembled. Whether in a prefabricated, concrete or plastic sump – Wilo will work out the most economic solution for you.

Wet well installation

With wet well installation, costs are saved above all by the simple construction. The pumps stand directly in the sewage and can be assembled without having to climb into the sump by using a self-coupling system.

Dry well installation

With the dry well installation version, the sewage is collected unfiltered in a reservoir. The pumps are located outside the reservoir. This means that maintenance work on the pumps can be carried out conveniently without coming into contact with the sewage. Dry well installation is suitable for uncritical sewage with a low solids content.

Solids separation system

This innovative Wilo technology separates the solids from the sewage and holds them back in separate solids tanks upstream of the pumps. Only pre-purified sewage comes into direct contact with the pumps on the way to the combined collection space. Once the coarse solids have been eliminated from the sewage using this technique, the sewage is transported by the dry well pumps and pumped out into the collection tank. On the way to the outgoing pressure pipeline, the sewage flows through the solids separation tank, pressing the solids out into the pressure pipeline. Sewage and solids remain in the system. The pumps remain dry due to their location outside the tank. This allows maintenance work on the pumps to be carried out conveniently and hygienically.



Wet well installation

- Pumps stand in the fluid
- Usually without operating building
- Cost-effective due to simple construction



Dry well installation

- Pumps do not stand in the fluid
- Technology accessible at all times
- Simple and hygienic maintenance



Solids separation system

- Pumps do not stand in the fluid
- Unrestricted function thanks to double-pump station
- Optimised plugging immunity
- Maximum level of hygiene



The Wilo-EMUport solids separation system. Innovative technology for cost-cutting operation.

From a technological and economical viewpoint, completely preassembled pumping stations with Wilo-EMUport solids separation systems are the best choice for drainage for entire localities or larger industrial and commercial complexes via conventional gravity-flow drainage systems.

Economical:

Thanks to their small free ball passage.

Since only prepurified sewage without coarse solids flows through the pump hydraulics, the free ball passage of the pumps can be designed to be considerably smaller than in traditional systems, so that the pumps are significantly more efficient. This leads to significant savings on energy and thus on operating costs.

Operational reliability:

Thanks to optimised plugging immunity

The solids are held back in the solids separation tank and pumped directly into the pressure pipeline during each pumping sequence, without coming directly into contact with the pump. This prevents plugging and immensely increases reliability and operational safety. Since the inside of the pump is protected from contact with coarse solids, its service life is also significantly prolonged. The result: fewer break-downs and less servicing, and much more efficient operation.

Long service life:

Thanks to PE-HD components

Wilo-EMUport products have to function reliably for long periods of time under difficult environmental influences. This can only be achieved by using high-quality materials. For this reason, a large proportion of the material is made of polyethylene (PE-HD) which, according to a study in the city of Göttingen, has a resistance of approx. 70–100 years. The material is made exclusively of hydrogen and carbon, and contains non-poisonous colourings. For manufacturing and processing, PE-HD is completely environmentally friendly and can be recycled up to seven times without suffering a reduction in quality.

Easy to maintain:

Thanks to dry well installation.

The pumps are always dry and clean. This makes maintenance much more pleasant, hygienic and efficient, as all of the mechanical components can be accessed quickly and easily from the outside.

"Non-stop":

Thanks to individual blocking

The Wilo-EMUport solids separation system is a double-pump station which uses two pumps in alternation. Each pump is assigned its own solids separation tank which can be individually blocked off. This means there are no interruptions to operation during maintenance and repair work.



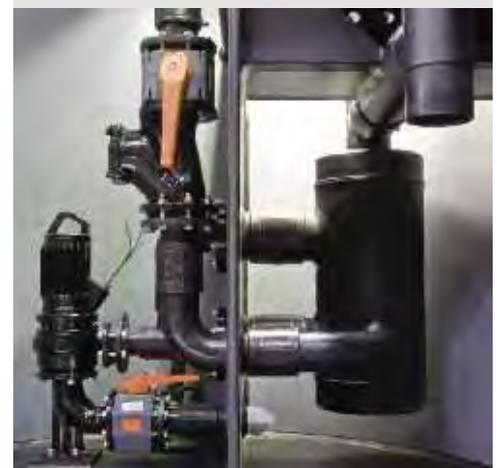
Economical

- More efficient due to smaller pump free ball passages
- Increased pump service life
- Non-stop operation due to individual blocking



Long service life

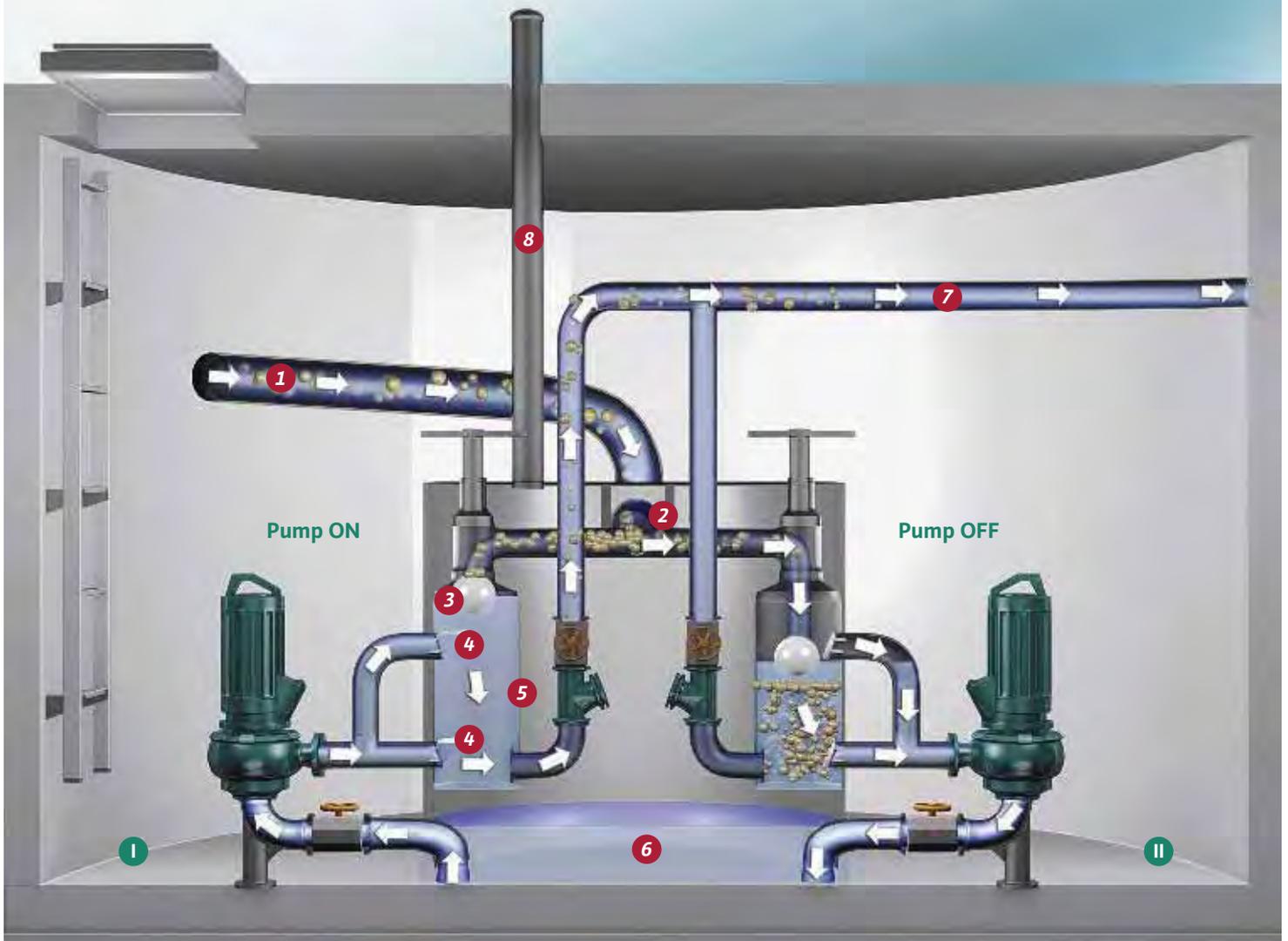
- 10-year guarantee on all PE-HD components
- Environmentally-friendly material, corrosion-resistant and recyclable



Operational reliability and easy maintenance

- Optimised plugging immunity
- Dry, clean and odour-free
- Hygienic assembly and maintenance conditions

Schematic diagram of function.



I Pumping sequence

II Filling sequence

1 Inlet

2 Distribution tank

3 Shut-off ball

4 Separation flaps

5 Solids separation tank

6 Collection reservoir

7 Pressure pipeline

8 Ventilation and exhaust

Function of the Wilo-EMUport solids separation system.

Technology that sets standards.

With the solids separation system, the inflowing sewage flows into the distribution tank and from there into the open solids separation tank. The solids are kept back here. Only pre-purified sewage is now able to pass through the pump into the large, combined collection reservoir.

While the collection reservoir is filled, the water level in the solids separation tank rises. The shut-off ball automatically closes the inlet.

Now, pumping starts when the correct level has been reached. The pump pumps in the reverse direction. The sewage flows through the solids separation tank and thus conveys the "filtered-out" solids into the outgoing pressure pipe.

Then, the entire solids separation system is flushed and cleaned. Pumping is stopped again when the correct level has been reached. The shut-off ball drops, leaving the path free for a new filling sequence. During this pumping sequence, the sewage is pumped into the other solids separation tank.

Advantages of the solids separation system:

- Uses pumps with free ball passage < 80 mm, thus reducing fuel requirements and operating costs while increasing efficiency
- Hygienic conditions for maintenance and assembly work
- Pump room is dry, clean and odourless
- Less wear, since the solids are not pumped by the hydraulic unit
- Submersible sewage pump with adjusted impeller and protection class IP 68 (submersible)
- No corrosion problems, no effect from the formation of hydrogen sulphide



Filling process

- Inflowing sewage flows into the solids separation reservoir
- Solids are held back
- Pre-purified sewage continues into the combined collection reservoir



Reservoir filled

- Collection reservoir filled
- Shut-off ball automatically closes the inlet
- Pumping sequence begins

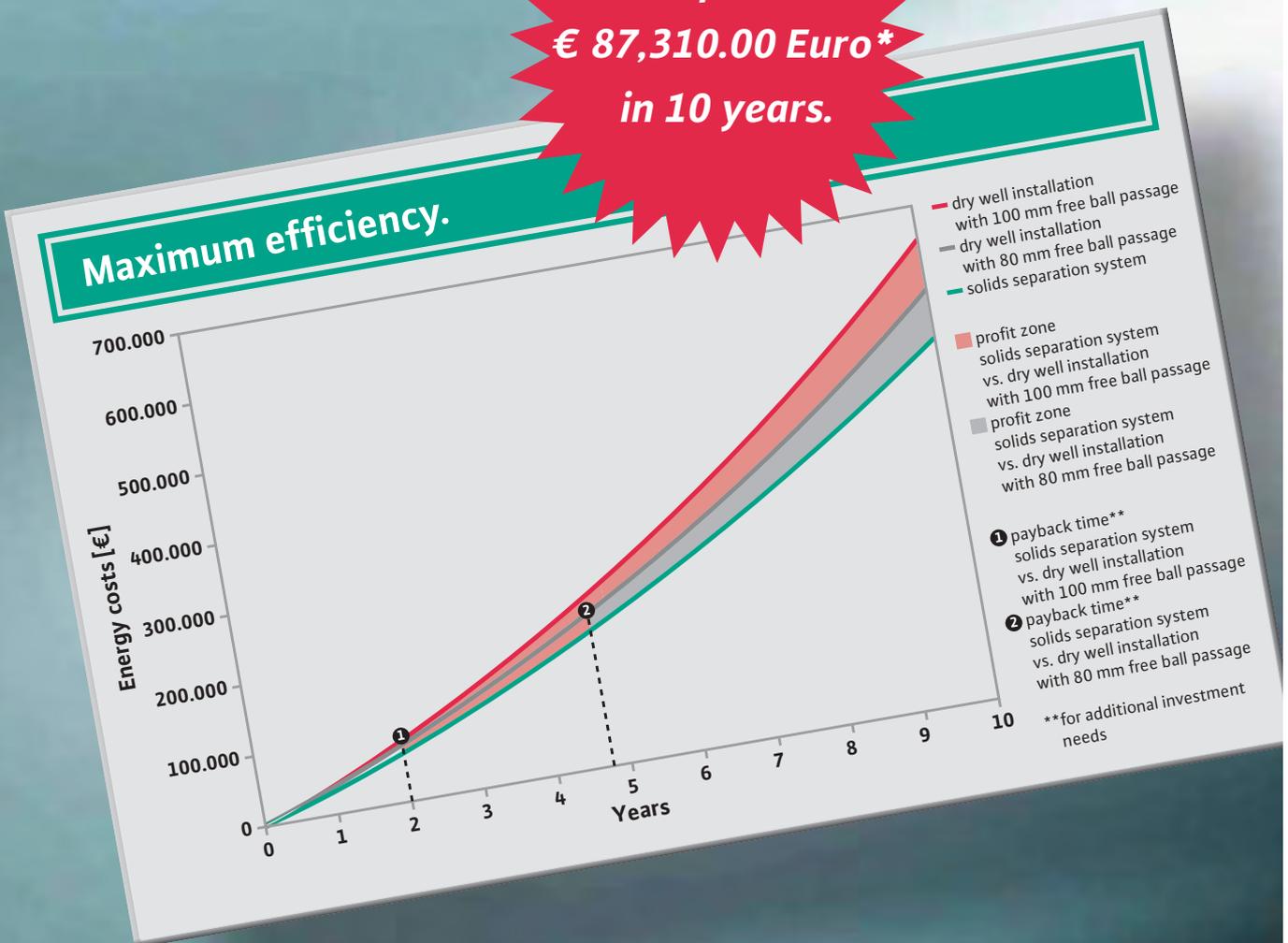


Pumping sequence

- Pump pumps in the reverse direction
- Sewage flows through the solids separation tank, pumping the solids into the outgoing pressure pipeline

Intelligent energy cost saving.

**Up to
€ 87,310.00 Euro*
in 10 years.**



Example	Conventional dry well installation with free ball passage 100 mm	Conventional dry well installation with free ball passage 80 mm	Pumping station with solids separation system with free ball passage 50 mm
Sewage pumping station in Lauter, Germany			
Wilo-EMU sewage pump type	FA 30.78 D	FA 20.98 D	FA 15.99 D
Impeller type	Multi-channel impeller	Multi-channel impeller	Multi-channel impeller
Free ball passage of pump type [mm]	100	80	50
Power requirements at duty point P1 [kW]	110	98	87
Annual energy costs [€]	41,756.00	37,201.00	33,025.00
Extra energy costs [%] compared to solids separation system	26%	13%	

*At an energy cost of 0.13 €/kWh (actual energy costs without basic fees, charged according to the specified rated power)
Please note that maintenance costs are the same for all systems. However, pump wear is much lower for the solids separation system.

Amortisation and life cycle costs.

Long-term economic efficiency.

Maximum efficiency.

How economical a pumping station actually is can only be seen when all additional costs are considered. Investment costs alone are only the tip of the iceberg. Much more decisive are the life cycle costs that arise during a long pump life.

Only solids separation systems can use pumps with small free ball passages which lead to a higher degree of efficiency and lower energy costs. The example calculations for the pumping station in Lauter, in the German Ore Mountains, show the enormous savings which are possible.

Renew your pumping station.

With the retrofit system, Wilo offers you the most economical solution for reconstructing old pumping stations. Our experienced employees take the exact dimension of the existing installation on site, including all inlets and pipe outlets. This data can then be used together with individual customer requirements to plan and produce a new pumping station together with all the necessary equipment.

Once the old installation has been dismantled, a new base is constructed using sand and concrete. The new Wilo-EMUport pumping station is then inserted into the base. Next, the connections are re-established, meaning the new system can usually be commissioned the same day, before any necessary filling and surface work is carried out. Using this method, the amount of sewage which is pumped out or repumped is restricted to a minimum, or sometimes eliminated completely.



Life cycle costs

- LCC analysis is an especially efficient method for monitoring total costs
- For new systems or also for optimising existing installations



Reference installation in Lauter, Germany

- Wilo-EMUport pumping station with solids separation system
- Innovative Wilo technology allows enormous savings on energy costs – **up to € 87,310 in 10 years**



Retrofit system

- Economical renewal of pumping stations
- Reconstruction in one day



Expert support. From planning to maintenance.

Consulting and planning

Optimum solutions come from objective-oriented planning. Our employees are here for you and will draw up an exact assessment of what you require. The cheapest duty point of a pump is the key factor in deciding whether to install a pumping station with or without a solids separation system.

This requires a longitudinal section of the planned pipe and a decision as to whether to construct a closed system without ventilation and exhaust or half-closed system with ventilation and exhaust.

If all the basic parameters and planning data are available, we will make a hydraulic calculation, contrasting all the systems in order to find the most economical solution for you. Using modern software, we calculate all the relevant measurements for you such as delivery head, head loss, volume flow, flow velocity, Reynolds number etc., from the flow calculations in impellers, housings, inlet constructions and pressure pipes to pipe calculations.

Installation and assembly

The installation and the complete assembly for the pumping station are performed by qualified construction personnel with many years of experience. Wilo takes personal supervision on site as a given, right up to commissioning.

Wilo customer service

At Wilo, we have a long tradition of customer support. A major component of our partnership philosophy is our own customer service, which is unique in the market.

52 Wilo customer service technicians are available with their practical support 365 days a year, all across Germany. In addition, we have all common spare parts in stock and we are able to deliver within 24 hours, if required.



Consulting and planning

- Individual planning and configuration



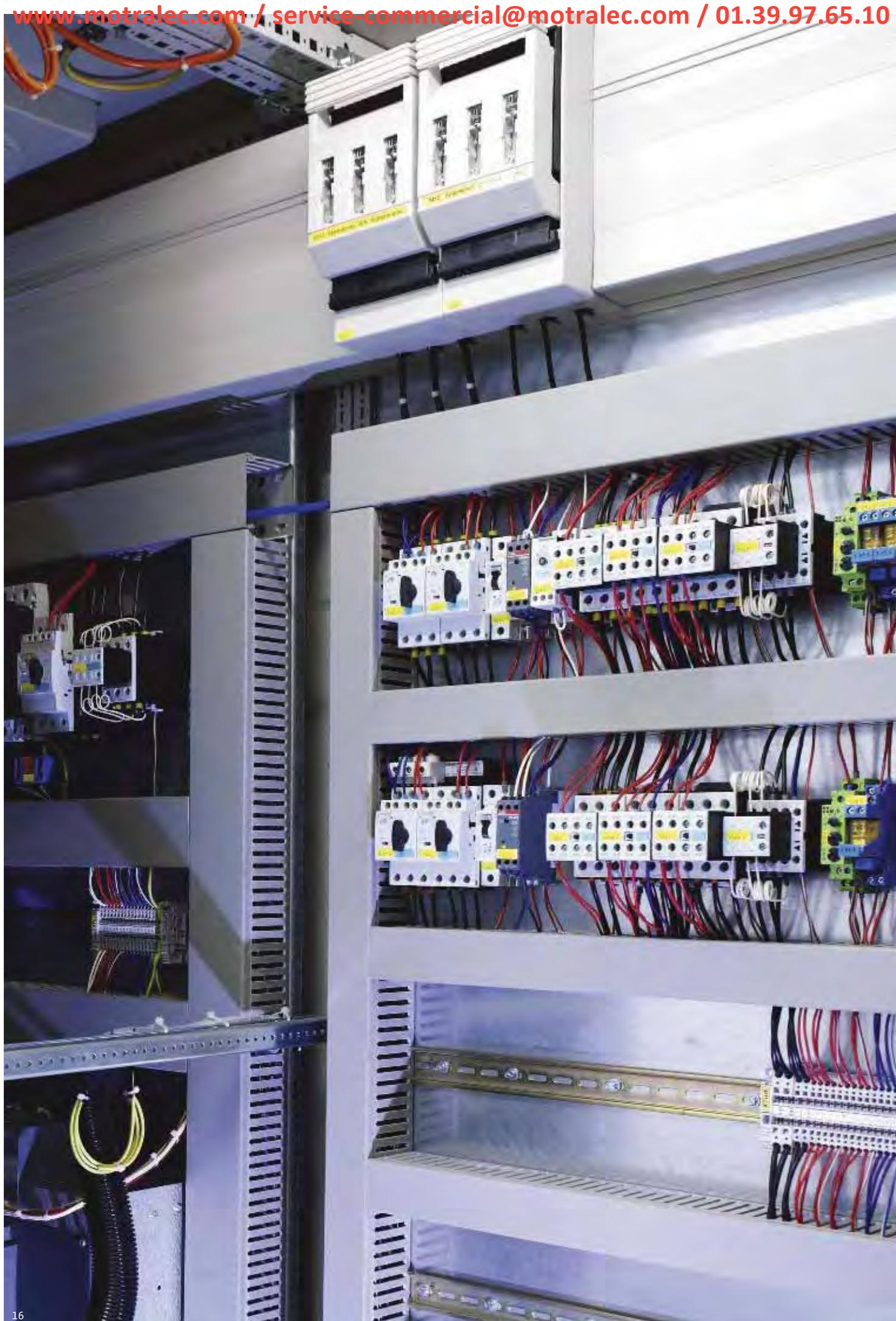
Installation and assembly

- Expert installation and assembly of all system parts in co-operation with the customer on-site



Wilo customer service

- Maintenance of the solids separation system and switching systems by Wilo customer service



Technology and service.

From system technology to accessories.

Pumping stations from Wilo can be reconfigured to meet individual requirements on their processing and performance functions. We produce within a standard program: from the mini-system for the smallest volumes (inlet pipes up to 10 m³/h) to systems with delivery heads of up to 80 m and inflows of up to 600 m³/h. What is more, Wilo also supplies customer-specific switching systems and operating buildings.

Submersible sewage pumps

The numerous combinations of fluids and solids in our sewage place many different demands on a pump solution. The Wilo-EMU FA series offers an extensive portfolio for a wide range of applications. Through the perfect combination of modern submersible motor technology, high-quality treated hydraulic components and the solvent-free two-component Ceram coating, Wilo-EMU sewage pumps guarantee long-term safe operation – even for the most demanding fluids.

Switching systems

Modern pumping systems require electrical/electronic components to control the mechanical parts such as the pumps and slide valves. Wilo supplies customer-specific, preassembled switching systems and control systems. The range of functions of the switching systems and control systems stretches from simple pump control to complex remote control systems.

Operating buildings

Large pumps installed in soil often require an operating structure. Wilo offers various preassembled operating buildings. From the size of the structure to the colour of the roof brick, there are a wide range of options available for you to customise your building. The operating building is delivered by lorry to the site and placed in its final position with the aid of a mobile crane.



Sewage pumps

- Operational reliability thanks to high-quality materials and technical components



Switching systems

- Standing cabinets for the entire electrical system
- Safe housing for highly delicate electronics
- Simple and safe



Operating buildings

- Sturdy design
- Short construction time
- Weathering and break-in protection