



# JUNG PUMPEN WASTEWATER TECHNOLOGY

SOLUTIONS FOR THE WASTEWATER SYSTEMS



# WE ARE JUNG

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We are JUNG (pronounced “young”) ... is our corporate philosophy, and we look back over a long and proud tradition. A great deal has happened since Heinrich Christian Jung developed the “Jauchepumpe” (slurry pump) in 1924 and marketed it at the so-called “Kirchturm” tower. Today, Jung Pumpen belongs to the Pentair group and thus to one of the ten largest companies in the field of water supply and disposal.

Jung Pumpen is the market leader in Germany in many areas of domestic and municipal drainage technology.

Jung Pumpen products are marketed on all continents, and a tight network of our own marketing companies and partners worldwide ensures that the quantity sold increases every day.

Through our close customer relations, we constantly strive to react quickly to market requirements to provide practice-oriented solutions. The traditional promise that

- Jung Pumpen products equal “reliable wastewater disposal”
- and adhering faithfully to this promise will remain our top priorities throughout the next decades.



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# PRESSURE DRAINAGE

## THE ECONOMIC AND EFFICIENT SOLUTION

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In sparsely populated residential areas with flat or hilly terrain, high groundwater, or adverse soil characteristics, a special disposal method has continued to prove itself over many years: pressure drainage.

The wastewater is first collected in a compact pumping station – such as a plastic sump – and is then pumped by a wastewater pump to a gravity sewer or to another pumping station. Wastewater pumps with the MultiCut

cutting system have gained widespread acceptance as a particularly reliable solution for this type of requirement profile: The solids in the wastewater are broken down so small that pressure pipes with diameters as small as DN 32 are perfectly adequate. Enormous savings in infrastructure investments can thus be made in comparison to conventional gravity sewers, which have a minimum diameter of DN 150.

Furthermore, these pumps generate a high pumping pressure, which enables very long distances to be bridged. This makes significant increases in the efficiency of wastewater disposal systems possible.





# MUNICIPAL PUMPING STATIONS

## PUMPS AND CONTROL UNITS FOR OPTIMUM RESULTS

Wherever water cannot be drained via gravity sewers, it must be “lifted” with the aid of pumps. These pumping stations collect the wastewater from residential, industrial or municipal sewage

collection systems and pump it to the next transfer station or to the treatment works.

Pumping stations are also employed in gravity sewer systems to overcome differences in level.

Jung Pumpen offers you support during the entire design phase, free of charge.



### THE COMPONENTS OF A PUMPING STATION:

- ▶ SUMP
  - PKS
- ▶ PUMP(S)
  - MultiCut: pumps with cutting system
  - MultiStream: pumps with single-channel impeller
  - MultiFree: pumps with vortex impeller
- ▶ CONTROLL UNIT
  - BasicLogo: printed circuit board controls
  - HighLogo: microprocessor controls
- ▶ PRESSURE PIPE CLEANING SYSTEMS BREEZE (optional)



## UNPLEASANT ODOURS CAN BE REDUCED BY:

- fewer deposits in the sumps
- short retention periods in the pressure pipes
- adequate flow velocities in the pressure pipes
- sufficient oxygen added to the wastewater
- a turbulence-free transition at the end of the pressure pipe

# ODOUR PREVENTION

## DESIGNING FOR GOOD AIR QUALITY IS POSSIBLE

Organic constituents in the wastewater are broken down over time due to natural decay processes, producing hydrogen sulphide (H<sub>2</sub>S) as a result. Long pipelines and long retention periods can result in the decay process commencing in the pressure pipe. This leads to unpleasant odours and corrosion problems, and sometimes even to problems in treating the wastewater. In addition to preventative measures incorporated into the design of the wastewater disposal system, the use of various devices can reduce the decay process considerably.

### Technical options for odour reduction

#### ► FLUSHING PIPE

A stainless steel pipe fitted to the pump generates a powerful jet of water that bypasses the pressure pipe and hits the water surface to prevent a floating layer of solids from forming.

#### ► COMPRESSORS

Compressors are used to supply oxygen to the wastewater. Adequate flow velocities prevent the formation of deposits and the wastewater takes less time to reach the treatment works.

- Pump sump ventilation
- Pressure pipe cleaning system, to flush and aerate

#### ► PRESSURE PIPE END SUMP

The pressure pipe end sump is where the pressure pipe discharges and the wastewater continues on its way via a gravity sewer. The inflowing wastewater is fed in below the water level in the sump, without causing turbulence. This prevents the formation of H<sub>2</sub>S gas.





# PRESSURE PIPE CLEANING SYSTEM

## MORE THAN JUST GOOD QUALITY AIR

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If wastewater remains in the pressure pipes for longer than two hours without the supply of additional oxygen, a decay process begins which can produce unpleasant odours due to the formation of hydrogen sulphide. This fact should always be taken into account when designing a wastewater disposal system! With the aid of pressure pipe cleaning systems, wastewater pipes can be cleaned and decay processes can be prevented before odours have a chance to develop.

### ► PUMP SUMP VENTILATION

A compressor feeds oxygen into the wastewater at regular intervals through a ventilation hose in order to prevent anaerobic degradation in the pump sump.

### ► AERATION OF PRESSURE PIPE

Where pressure pipes are laid with only positive gradients, the wastewater is enriched with oxygen via a compressor system. The increased oxygen content stems the decay process.

### ► PRESSURE PIPE CLEANING

This process ensures that the pipes are cleaned at regular intervals with compressed air generated by a compressor. The introduction of compressed air results in:

- The wastewater spending less time in the pressure pipe
- Oxygen being introduced into the wastewater
- High flow velocities and therefore a reduction in deposits in the pressure pipe

### ► INTELLIGENT CONTROL UNIT

A microprocessor control unit calculates and controls the optimal oxygen supply and cleaning of the pressure pipe.

- Automatic and energy-efficient adjustment of the cleaning times
- Fluctuations in the wastewater quantities are taken into account
- Cleaning times are adjusted automatically to suit the wastewater quantities



**PKS-B 800**

# SUMP SYSTEMS

ADAPTABLE, RELIABLE, ECONOMIC AND ENVIRONMENTALLY FRIENDLY

Whether for pumping stations in pressure drainage systems or municipal pumping stations. Whether for wastewater, drainage, or surface water - Jung Pumpen offers complete solutions for economic and environmentally friendly wastewater conveyance.

We provide support for our customers right from the beginning, above and beyond the actual product. In this way, mistakes can be avoided and important questions regarding chamber size for emergency storage or the load capacity for vehicle overrun can be answered professionally in advance.

The result is a solution that meets the highest of requirements. Prefabricated poly sumps are the key to the solution. The light weight and high chemical resistance of the material make the sumps ...

- ... extremely adaptable
- ... absolutely safe
- ... and particularly economically efficient.

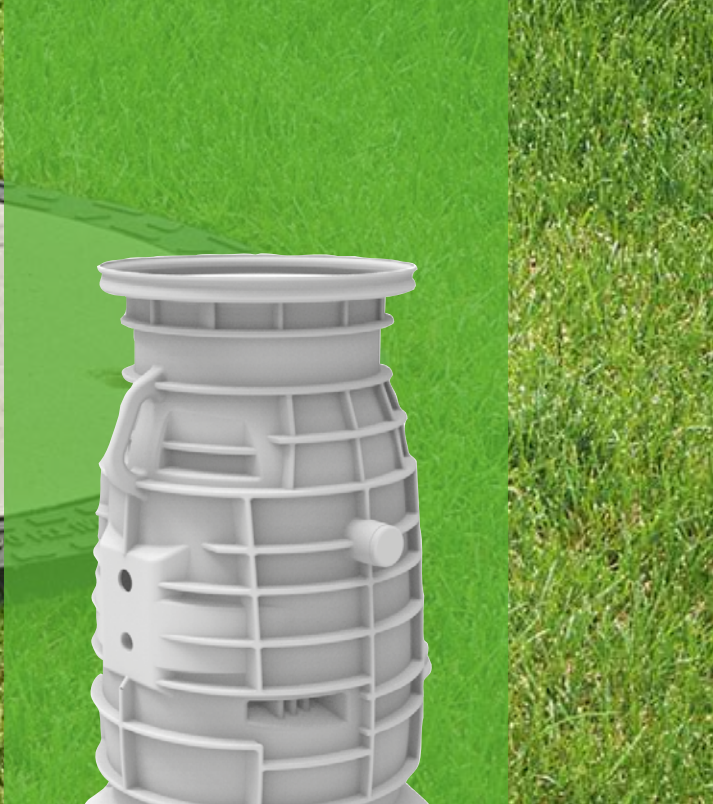


► Small residual volume reduced the odour problem from the start



► Different loading classes possible





**PKS-B 800-D 32**

## **PREFABRICATED SUMPS FOR EVERY APPLICATION, EVERY REQUIREMENT AND EVERY TASK**

### **▶ ADAPTABILITY**

The PKS plastic sumps offer a broad spectrum of diameters, depths and loading classes. The standard diameters are 800 mm until 3000 mm, and chamber depths range from 1.60 m.

### **▶ SAFETY**

The loading capacity of the sumps is impressive - whether for pedestrian (cl. A), for car traffic loading (cl. B), for lorries (cl. D) or for use in areas with high groundwater levels. Our monolithically produced sumps guarantee the great-

est possible safety, even when used for special applications, such as in water protection areas, for example. The impermeability of the chambers is checked by independent testing institutes and certified by means of a building control authority approval

### **▶ ECONOMIC EFFICIENCY**

The excellent economic efficiency of our poly sumps is based on three deciding factors:

#### **· Low weight**

Poly is e. g. 90 percent lighter than concrete. This results in lucrative savings in transport and installation costs. These savings are especially high where the installation sites have restricted access.

#### **· Durability**

Pumping stations that collect and convey wastewater containing sewage are particularly exposed to chemical attack. Poly precludes the hazards that this type of exposure could cause. It guarantees high durability and corrosion resistance.

#### **· Minimum maintenance**

The smooth surfaces allow little opportunity for the formation of deposits. The sump bases are designed to prevent deposits forming. Two aspects that increase the time between services and reduce costly maintenance work.

PKS 1200-3000

PKS 1000



The biggest plastic sumps are used primarily in industrial and municipal areas. Due to their low weight they ensure an easy transport and relocation.

► QUALITY

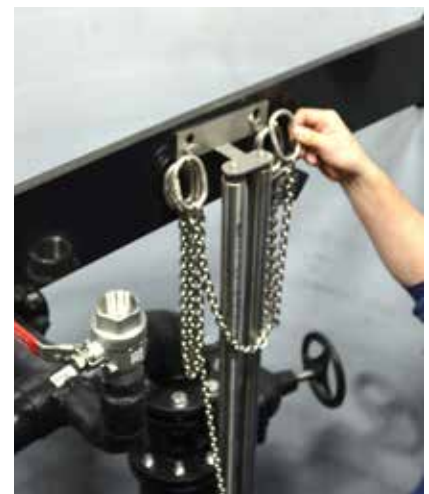
The used material meet the highest requirements e. g. corrosion resistance. Materials like stainless steel, PE und grey cast iron ensure a long durability.

► EASY INSTALLATION

Preformed transport eyelets / transport handles allow the installation in lean concrete or directly into the ground.



► Pumps with flushing tube



► Audited and certified stainless steel chains



# REPAIR SET

FLEXIBLE, ECONOMICAL AND ECO-FRIENDLY

The first generation of pressure drainage systems is already older than 30 years. The previously used materials like grey cast iron or galvanised steel cannot hide their age. Because of aggressive preconditions within the sumps (especially by inadequate aeration and ventilation) the material is affected that much, that an exchange is absolutely essential.

## ► DURABILITY

- Tie-bar made of stainless steel (1.4571) or fibre-glass reinforced plastic
- Coupling system made of high-quality plastic
- Ball reflux valve removable for maintenance

## ► FLEXIBLE

- Guide rail extension
- For nearly every plastic sump
- Even for third-party sumps





# MULTICUT

## PUMPS WITH CUTTING SYSTEM

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For more than a 30 years the MultiCut submersible sewage pump has been a success with its approved cutting system.

High-quality pumps that always guarantee a clean solution:

### ▶ HIGH OPERATIONAL RELIABILITY

Unsusceptible to blockages, since the cutting takes place upstream of the pump's hydraulic system.

### ▶ HIGH PERFORMANCE

Outstanding cutting performance with around 67,200 cuts per minute.

### ▶ LOW MAINTENANCE COSTS

The cutting system and impeller can be adjusted without the need for replacement parts.

### ▶ LOWER COSTS FOR MATERIAL AND PIPE LAYING

Small diameter pressure pipes, starting from DN 32, can be used.

### ▶ TYPES OF MEDIA THAT CAN BE PUMPED

- Wastewater containing solids and fibrous matter
- Wastewater containing sewage
- Domestic wastewater with no sewage content
- Mechanically cleaned wastewater

All good reasons to choose a MultiCut pump for your pressure drainage systems.

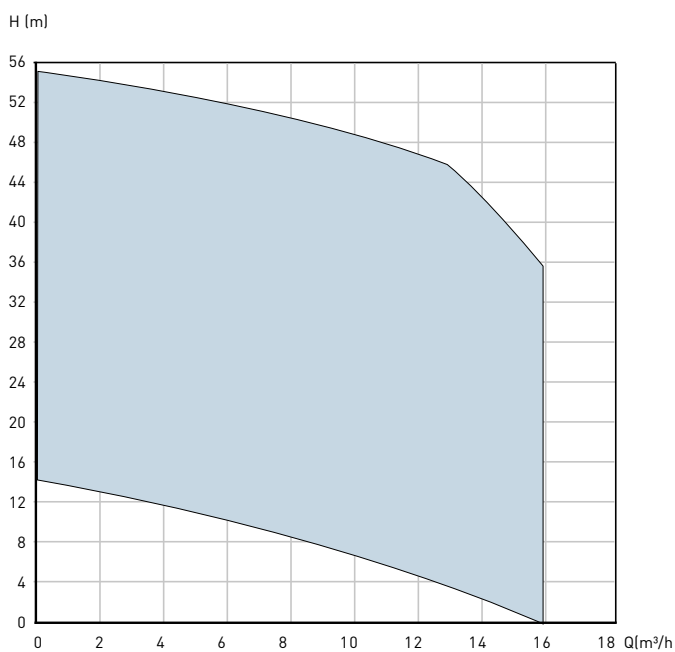
### MULTICUT TANDEM

In the MultiCut tandem systems (TAN), two MultiCut pumps are connected to one unit in order to achieve a higher delivery head.

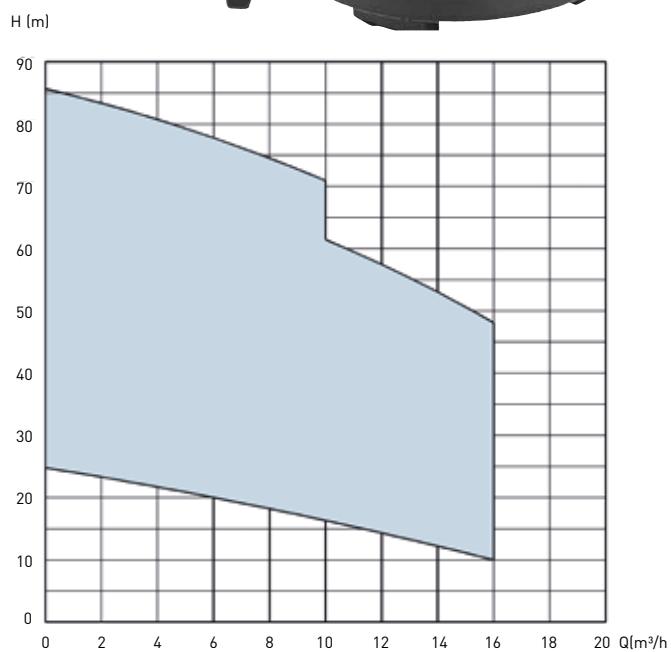




## PERFORMANCE RANGE



[The pumps are supplied with and without explosion protection.]



[The Tandem pumps are supplied with explosion protection.]

	<b>DN 32 (2-pole)</b>
<b>PUMP RATING (P1)</b>	1.37 – 7.7 kW
<b>ROTATIONAL SPEED</b>	2900 min <sup>-1</sup>
<b>H MAX.</b>	55 m
<b>Q MAX.</b>	18 m³/h
<b>FREE PASSAGE</b>	7 mm

	<b>MultiCut TAN DN 32 (2-pole)</b>
<b>PUMP RATING (P1)</b>	3.70 – 4.84 kW (value per 1 pump)
<b>ROTATIONAL SPEED</b>	2900 min <sup>-1</sup>
<b>H MAX.</b>	84 m
<b>Q MAX.</b>	16 m³/h
<b>FREE PASSAGE</b>	7 mm



# MULTISTREAM

## PUMPS WITH SINGLE-CHANNEL IMPELLER

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Our MultiStream pumps show their strength in pumping various types of wastewater in municipal and industrial pumping stations, rainwater retention basins and in disaster control applications. The single-channel impeller pump is unbeatable when it comes to pumping large quantities and bridging large differences in height.

### ▶ ENERGY-EFFICIENT PUMPING

The high efficiency of the pumps makes this possible.

### ▶ LONG SERVICE LIFE

Optional wear coating on the impeller – also ideal when pumping abrasive wastewater.

### ▶ MAXIMUM OPERATIONAL RELIABILITY

Hydraulics optimised to prevent entwining.

### ▶ LOW MAINTENANCE COSTS

The adjustable axial gap allows the efficiency of the pump to be maintained even if there are signs of wear.

### ▶ LOW LIFE CYCLE COSTS

Thanks to easily exchangeable components, such as the wear plate and the adjustable axial gap.

### ▶ WIDE RANGE OF AUXILIARY EQUIPMENT

Enables optimum use of the pumps in each type of application.

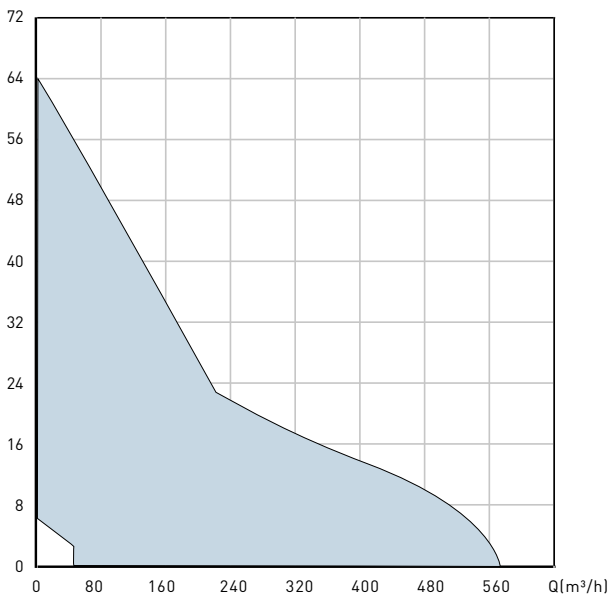
### ▶ TYPES OF MEDIA THAT CAN BE PUMPED

- Wastewater containing fibrous and solid matter
- Raw wastewater
- Raw sludge
- Rainwater and combined wastewater



## PERFORMANCE RANGE

H (m)



[The pumps are supplied with and without explosion protection.]

	<b>DN 65</b> (2-pole)	<b>DN 80</b> (2-pole)	<b>DN 80</b> (4-pole)	<b>DN 100</b> (2-pole)	<b>DN 100</b> (4-pole)	<b>DN 150</b> (4-pole)	<b>DN 200</b> (4-pole)
<b>PUMP RATING (P1)</b>	1.3–3.7 kW	2.6–10.5 kW	0.95–3.5 kW	17.3–27.0 kW	0.95–25.5 kW	5.8–25.5 kW	19.3–25.5 kW
<b>ROTATIONAL SPEED</b>	2900 min <sup>-1</sup>	2900 min <sup>-1</sup>	1450/ min <sup>-1</sup>	2900 min <sup>-1</sup>	1450/ min <sup>-1</sup>	1450 min <sup>-1</sup>	1450 min <sup>-1</sup>
<b>H MAX.</b>	27 m	40 m	15 m	64 m	39 m	36 m	35 m
<b>Q MAX.</b>	70 m <sup>3</sup> /h	190 m <sup>3</sup> /h	140 m <sup>3</sup> /h	280 m <sup>3</sup> /h	420 m <sup>3</sup> /h	520 m <sup>3</sup> /h	540 m <sup>3</sup> /h
<b>FREE PASSAGE</b>	40 mm	70 mm	70 mm	70 mm	70 / 100 mm	100 mm	100 mm



# MULTIFREE

## PUMPS WITH VORTEX IMPELLER

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These pumps are proficient in conveying many types of wastewater in municipal and industrial pumping stations and in rainwater overflow basins.

For a long and fault-free pump life:

### ▶ LONG SERVICE LIFE

The surface area of the impeller that comes into contact with the abrasive wastewater is relatively small, keeping wear to a minimum.

### ▶ HIGH OPERATIONAL RELIABILITY

The medium being pumped does not flow through the impeller, so the pumping process is assured, even if the wastewater contains long fibres.

### ▶ LOW LIFE CYCLE COSTS

Reduced maintenance costs because the vortex impeller is insusceptible against twining.

### ▶ EXTENSIVE RANGE OF ACCESSORIES

The pumps for the various different applications are optimally equipped.

### ▶ TYPES OF MEDIA THAT CAN BE PUMPED

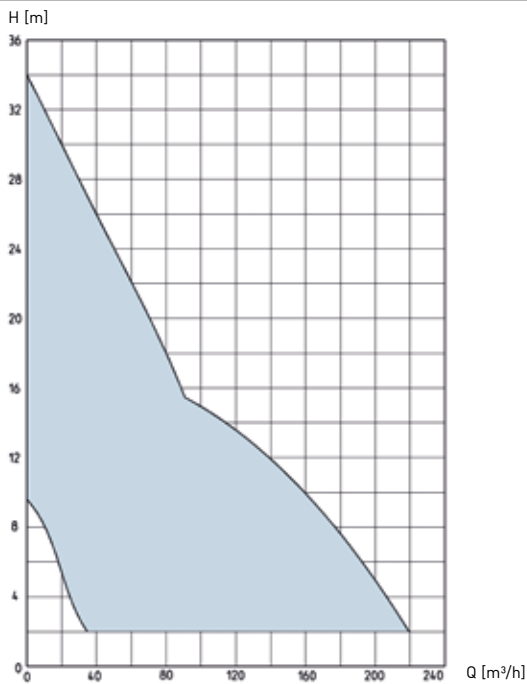
- Wastewater containing abrasive, fibrous and solid matter
- Wastewater containing air or gas
- Raw wastewater
- Raw sludge
- Rainwater, surface water and combined wastewater

The high technical standard of the MultiFree pumps raises the bar and enables you to achieve perfect results in wastewater conveyance.





## PERFORMANCE RANGE



[The pumps are supplied with and without explosion protection.]

	DN 65 (2-pole)	DN 65 (4-pole)	DN 80 (2-pole)	DN 80 (4-pole)	DN 100 (2-pole)	DN 100 (4-pole)
<b>PUMP RATING (P1)</b>	1.7 – 6.0 kW	1.8 – 5.6 kW	3.3 – 11 kW	2.2 – 10 kW	6.0 – 11 kW	1.8 – 13 kW
<b>ROTATIONAL SPEED</b>	2900 min <sup>-1</sup>	1450 min <sup>-1</sup>	2900 min <sup>-1</sup>	1450 min <sup>-1</sup>	2900 min <sup>-1</sup>	1450 min <sup>-1</sup>
<b>H MAX.</b>	26 m	14 m	34 m	20 m	32 m	19 m
<b>Q MAX.</b>	95 m <sup>3</sup> /h	110 m <sup>3</sup> /h	85 m <sup>3</sup> /h	190 m <sup>3</sup> /h	100 m <sup>3</sup> /h	230 m <sup>3</sup> /h
<b>FREE PASSAGE</b>	65 mm	65 mm	80 mm	80 mm	100 mm	100 mm

YOU WOULD LIKE TO ACTUATE PUMPING PROCESSES, TRANSFER OPERATION STATUS MESSAGES, OR CONTROL THE COORDINATION OF SEVERAL PUMPING STATIONS?

Then our intelligent control systems are the first choice to ensure reliable and fault-free operation. There are three different series of control units available to suit the various particular requirements. This makes it possible to control one, two or several wastewater pumps, with ratings from 0.5 kW to 30 kW.

# CONTROL UNITS

THE OPTIMUM SYSTEM FOR EVERY REQUIREMENT

## **BASICLOGO – THE PRINTED CIRCUIT BOARD CONTROL UNIT**

The basic features of BasicLogo satisfy all the prerequisites for trouble-free control of your pumps.

- Direct or star-delta starting
- Various level contact switches can be connected
- Alarm system, fitted as standard
- Modules such as time meters or ammeters, etc., are available as extras
- Temperature resistant to  $-20^{\circ}\text{C}$

## **HIGHLOGO – THE MICROPROCESSOR CONTROLS WITH ADDED VALUE**

HighLogo has the significant advantages of a cleartext display and intuitive operation over a "Push Wheel). Through the use of this modern technology cost reduction and efficiency improvement are guaranteed:

- Simple, intuitive operation
- Extensive standard features, such as time meter, level indicator, operating cycle counter, and many more
- Direct or star-delta starting
- Various level contact switches can be connected
- Temperature resistant to  $-20^{\circ}\text{C}$

## **THE SPECIAL**

We configure the control unit to suit our customers' specific requirements.



BasicLogo



HighLogo



MADE IN GER

# QUALITY PAYS OFF

SINCE MORE THAN 90 YEARS

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JUNG PUMPEN has been a reliable partner in the field of wastewater disposal since 1924. High-quality pumps and pumping stations for large industrial and municipal projects as well as for individual houses and grounds are manufactured.

This high quality depends on many key factors:

## ► EXCELLENT VERTICAL INTEGRATION

Wastewater pumps comprise a large number of components that first constitute a quality product when combined as an entity. Throughout all the stages of the production process, the high degree of vertical integration

ensures that the exacting quality requirements of every Jung Pumpen product are met.

## ► QUALITY CONTROL AND ENVIRONMENTAL PROTECTION

Before each component is fitted, comprehensive functional checks are carried out. This means that faults are immediately detected and rectified. The success of this rigorous checking mechanism is evident: JUNG PUMPEN is certified in accordance with DIN ISO 9001.

Sustainability and environmental protection are documented in our environmental management system, according to DIN EN ISO 14001.

## ► THE PEOPLE

The most important factor in the production of quality products is, of course, the people who manufacture them. JUNG PUMPEN is a traditional German company that, for decades, has employed staff who identify with their work and are proud to play a large part in ensuring the quality of their products.



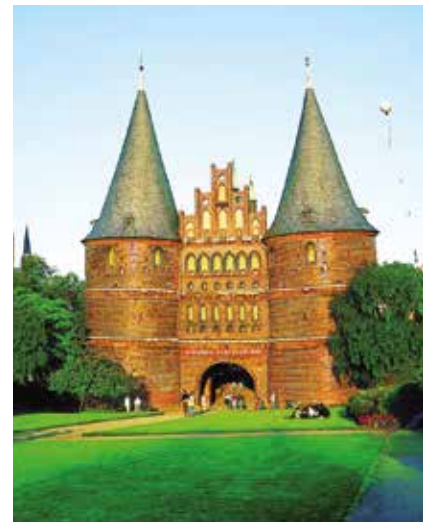
# REFERENCES

## ► HOLSTENTOR LÜBECK, GERMANY

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The Holstentor gateway in Lübeck was built between 1464 and 1478. It is probably the most well-known medieval town gate in the world. Over the centuries, the building has been steadily sinking into the soft subsoil. It wasn't until the 1930s that extensive conservation measures finally brought this world cultural heritage building to a secure stand-

still. Today, a duplex pumping station equipped with two MultiStream wastewater pumps (type UAK 25/4 B4) helps to protect the Holstentor. The two main tasks of the pumps are: to hold pressing water back from the foundations of the gate when the water level of the nearby river Trave rises, and to drain the ground if the groundwater level rises.



## ► MADAGASKAR

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In terms of area, Madagascar is the second largest island state in the world. It lies in the Indian Ocean, off the coast of Africa. The largest company in Madagascar is the food concern TIKO, which was established by the former head of state, Marc Ravalomanana. Since the protection of the environment is laid down in the Madagascan constitution, Ravaloma-

nana attached great importance not only to high quality products, but also to environmentally friendly wastewater disposal. All the wastewater is biologically treated before being allowed to infiltrate back into the subsoil. The wastewater is pumped to the treatment works by duplex pumping stations fitted with MultiFree pumps.





#### ► SHANGRI-LA'S BARR AL JISSAH RESORT

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The now award-winning six-star luxury resort Shangri-La's Barr Al Jissah, set in an idyllic bay to the south of Muscat, the capital city of the Sultanate of Oman, was opened in the autumn of 2005.

His Majesty the Sultan Quaboos called for typical Oman architecture, but also for high "made in Germany" quality.

The wastewater from the hotel is collected in PKS-A pumping stations.

The buoyancy-proof plastic chambers serve as collection chambers and are equipped with either MultiCut or MultiStream pumps depending on the type of wastewater. These pumps pump the wastewater into the local sewer network.



#### ► THE DARSS

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The Darß is the middle section of the Fischland-Darß-Zingst peninsula on the Baltic coast of Mecklenburg-Western Pomerania in Germany. With its picturesque villages and expansive sandy beaches, the Darß is one of the most popular holiday destinations on the Baltic Coast. This popularity presents special technological challenges. The population fluctuates bet-

ween 4,000 and 35,000. To cope with these extreme fluctuations in wastewater quantities, the largest and most complex pressure drainage system in Europe was constructed. More than 1,500 pumping stations with MultiCut pumps pump the wastewater through approximately 100 km of pressure pipe, ensuring reliable and environmentally friendly wastewater disposal.





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