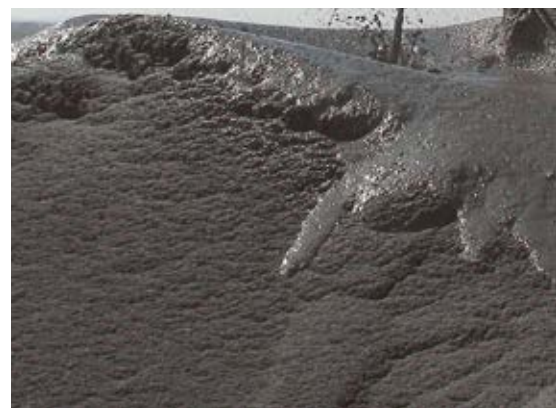




Putzmeister



Solids handling pumps KOS

For coarse grain high density solids and high pressure applications

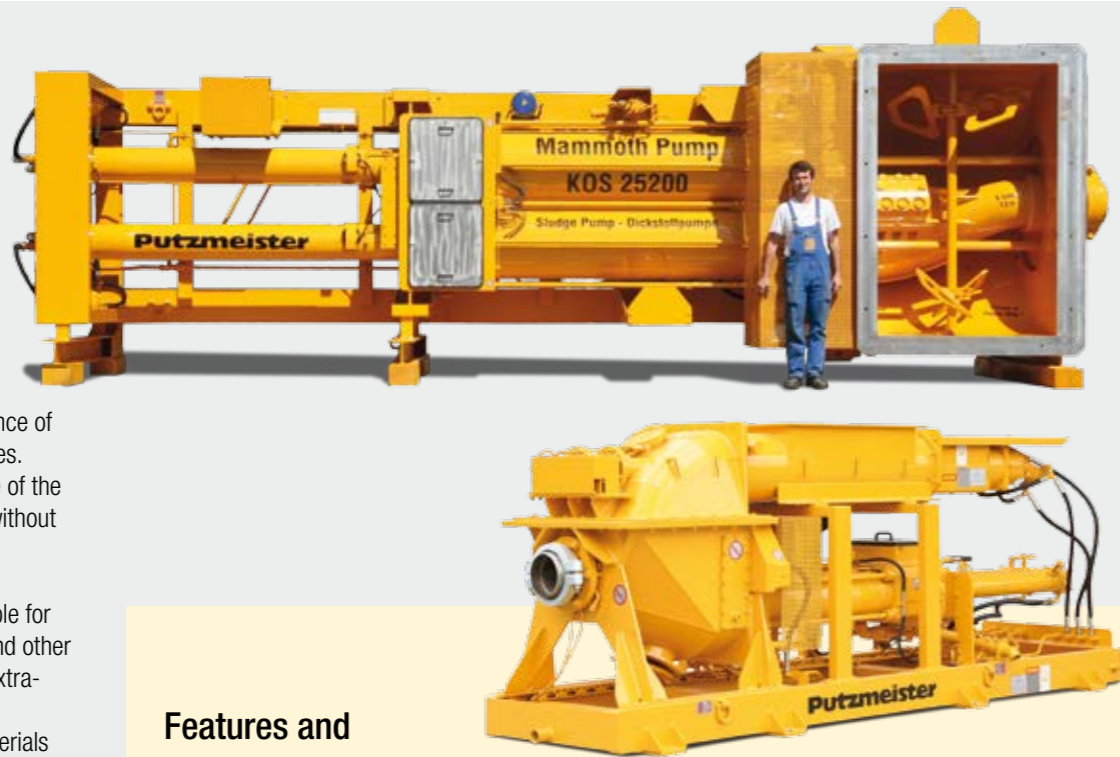
Solids handling pumps KOS

Oil-hydraulic double-piston pump with S-transfer tube

In the KOS series, the intake (for connection of the delivery line) and the delivery cylinders are connected by an S-transfer tube. This enables a freeflowing conveyance of the material without the use of valves. Foreign bodies up to 2/3 of the size of the discharge outlet can be conveyed without any issue.

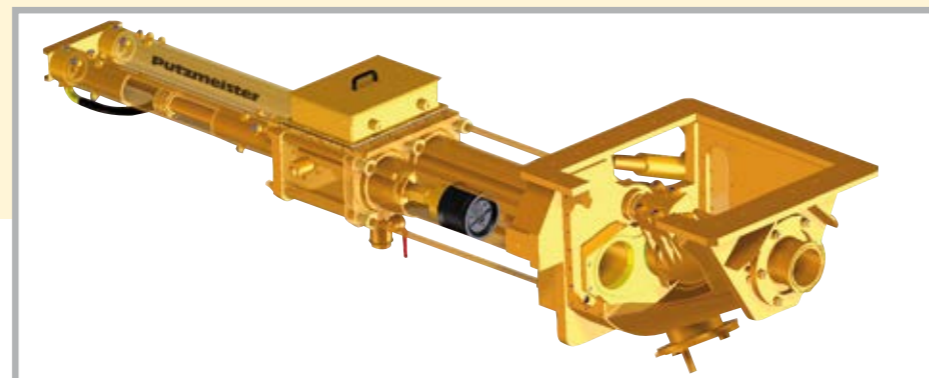
The KOS pump is particularly suitable for conveying highly viscous sludges and other material with a high proportion of extraneous material. The main fields of application of the KOS are with materials which present the most extreme requirements, such as dewatered sludges containing solids, oil sludges, high-viscosity solids and so on.

For extreme applications, a wide range of task-specific components and functions are available from Putzmeister. The pump's simple design and the few wear parts offers a very robust, low maintenance pump with low operating costs.



Features and advantages

- Best in class for conveying coarse sludges or slurries with a high grain-size content
- Reliable isolation of hydraulic circuit from the material, even when inadequately maintained
- Low maintenance and wear due to few moving parts
- Output up to 400 m³/h
- Minimized suction resistance thanks to large inlet permitting constant freeflow of the material
- Delivery pressures up to 150 bar
- Continuous material flow due to large discharge diameter



Redundant transport of fly and bottom ash from a power plant

Conveying materials with most extreme requirements

- Highly dewatered sewage sludges
- Sewage sludges with percentages of foreign bodies, for example when handling external sludges
- Fly and bottom ash from power plants
- Tailings from mining and tunnelling
- Oil sludges with percentages of foreign bodies
- Bio waste and other waste
- Chemical and organic high density solids with highest viscosity

Your material is not listed above? Contact us.



Tailings transport in mining



Fly and bottom ash



Sewage sludge from filter press and centrifuges

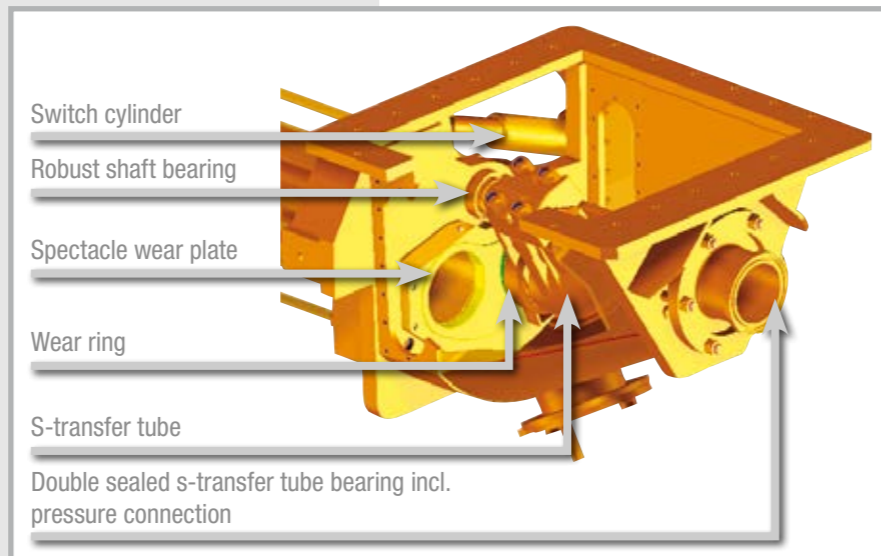


Bio-waste and special waste

The powerful solids handling pumps with S-transfer tube

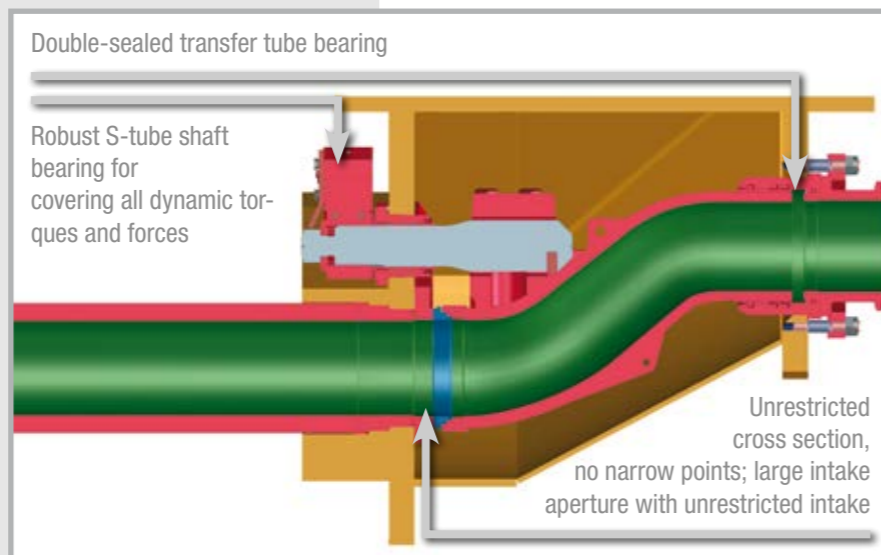
Large unrestricted passages for optimum material flow

- The large unrestricted S-transfer tube cross section presents no problems for considerably large foreign bodies.
- Foreign bodies with a size of up to a maximum of 70% of the pressure connection diameter can be pumped.
- The S-tube system is extremely insensitive to foreign bodies



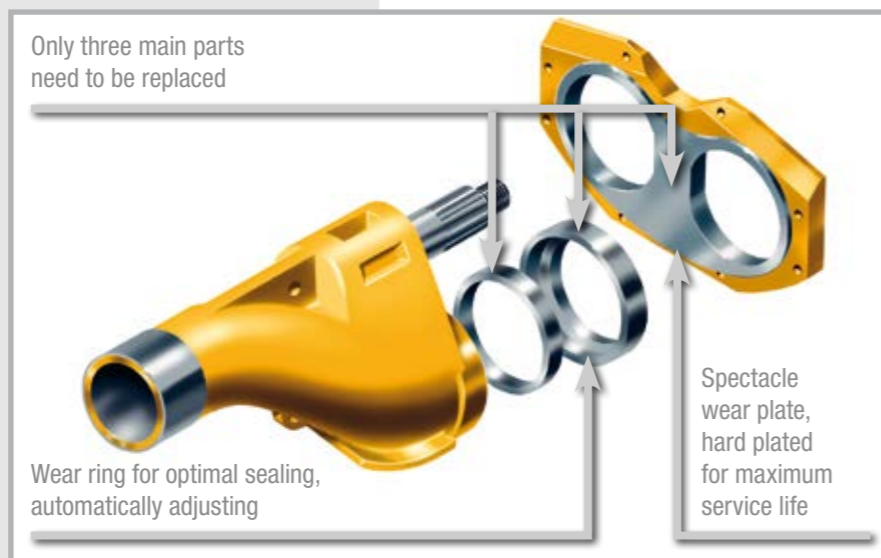
Automatic sealing function minimizes wear

- The wear ring is pressed against the spectacle wear plate by the delivery pressure. The sealing effect is automatically improved as delivery pressures increase.
- The S-transfer tube has only one sliding metallic sealing point.
- Armoured wear parts (hard plating) for maximum service life



Few wear parts reduce spare part costs

- Wear parts are easy to replace, resulting in short machine downtimes and increased availability.
- By re-adjusting the S-transfer tube, it is possible to fully utilize the wear parts to the limits of their life.



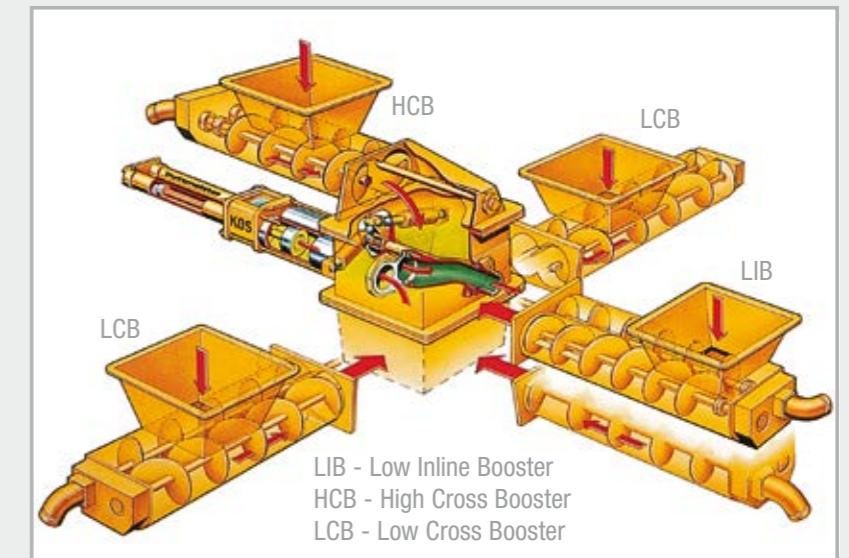
Advantages at a glance

- **Reliable and powerful operation**
 - Large unrestricted passages, with no restricting contours in the material flow
 - Conveying of foreign bodies up to 2/3 of the size of the discharge outlet
 - Powerful, fast switchover thanks to robust hydraulic cylinders
 - Simple, tried and tested design based on more than 50 years of experience
 - Controlled conveying of material reduces energy costs
- **Low wear, low costs**
 - Automatic seal at the sealing point using a self-adjusting ring
 - Fewer wear parts than other piston pump models
 - The S-transfer tube has only one sliding sealing point
 - Low spare part costs
- **Long service life**
 - Armoured wear parts
 - Not sensitive to running dry
 - Optimum utilization of wear parts thanks to the adjustability of the S-transfer tube
 - Proven thousands of times in various applications
 - S-transfer tube switching by two hydraulic cylinders outside the sludge hopper – contamination of hydraulic oil is not possible
 - All moving parts are connected to the automatic grease lubrication system

The prepresser unit

For stiff media which cannot be drawn in as they are, prepresser units with self-cleaning screw conveyors have to be installed on the intake side. The conveyed product in the hopper is intensively kneaded and mixed in the screw conveyors and then forced in the cylinders to achieve a high level of volumetric efficiency. This enables even compact, moist and almost dry waste to

be pumped into the cylinders. The design of the screw conveyors determines the mixing intensity. The waste continues to be mixed in the pump and delivery line due to the turbulent flow. The prepresser unit is modular and can be adapted to best suit each individual application.



The power pack

The output and pressure can be adjusted to suit various applications thanks to the hydraulic drive. Both are controlled via the control cabinet or from a higher level control room. The electric and diesel power packs are between 5.5 and 1800 kilowatts, more can be achieved under certain circumstances with special requirements.

The machine is delivered with an open (VHS-EU) or closed hydraulic circuit (FFHE) depending on the volume of fluid required. For problem-free operation, all essential information (hydraulic fluid temperature, pressure, level of filter contamination and motor speed) is displayed and recorded as required.

The power packs can be optionally equipped with acoustic enclosures.

The system is controlled by the Putzmeister Operation Panel.



Control cabinet with Operation Panel



CI power pack with acoustic enclosure (optional)

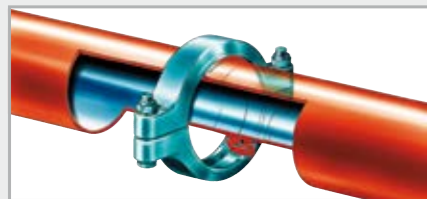
Accessories for custom design and equipment of your system

KOS Technical data

Delivery lines

Delivery lines in industry must especially be safe over a long period of operation (24/7). The pressure resistance with pulsating load is one particular criteria when designing the delivery line. These can be designed in DIN, SK and ZX with different flange and coupling systems. The Putzmeister SK and ZX systems have proved themselves worthy for abrasive and non-abrasive materials. They have a clamp coupling for easy installation and removal.

ZX delivery lines are used in sewage treatment works, in waste recycling, in coal-fired power plants, water desludging, in mining and other numerous special applications. Depending on the application, the design, material and the surface treatment can be modified in order to be ideally adapted to the pump and material to be conveyed.



Ball, gate or diversion valves

Delivery line components must be designed regarding the dynamic loads and characteristics of the media. Ball valves for example are therefore equipped with stronger shaft shanks and flush connections.

Gate and diversion valves are essential when multiple delivery lines have to be installed. Thus, the material located in the pipeline after the pump can be diverted through a gate valve to other routes such as a thermal dryer or intermediate storage.

Gate valves are hydraulically operated. For a faster switch, it is suggested to use a power pack of at least 7.5 kW. The valve housing is sealed with hardened sealing rings, that are pressed against the moving blade of the valve.

Specific components and functions to cope with a wide range of applications and with extreme operational demands

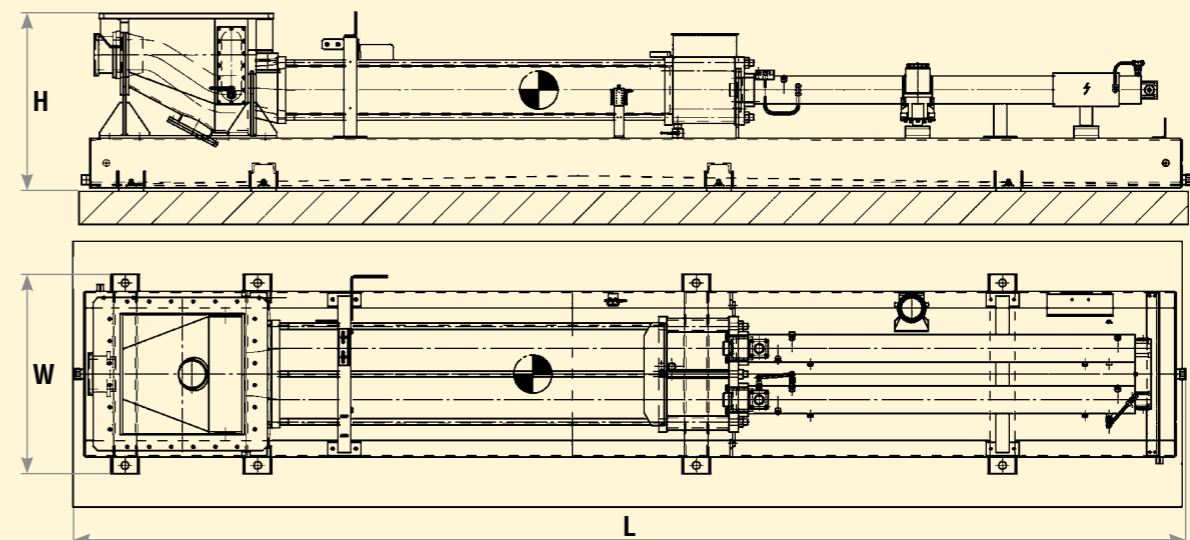
- Reinforced S-pipes and S-pipe piston for shearing off the foreign bodies
- Automatic reverse pumping functions for preventing and automatically removing blockages
- Mixer paddles in the feeding device for homogenizing the materials
- Agitators in the suction housing for extremely stiff and inhomogeneous materials
- Different materials for the machine elements for handling abrasive and aggressive media (i.e. stainless steel in the food industry or salt mining)
- Different types of feeding devices on the suction side
- Receiver container with or without agitator
- Vibration damper for the delivery system
- Gate and distribution valves
- Boundary layer lubricant injection (BLI) station
- Scraper pig gates for delivery line cleaning

| Type | Output* | | Permanent delivery pressure** | | Delivery cylinder Ø | | Delivery cylinder length | | Cylinder-volume per stroke | | Length (L) | | Width (W) | | Height (H) | | Weight approx. | |
|---------------|---------|-------|-------------------------------|-------|---------------------|-------|--------------------------|-------|----------------------------|--------|------------|--------|-----------|--------|------------|-------|----------------|-------|
| | m³/h | gpm | bar | psi | mm | in | mm | in | l | gal | mm | in | mm | in | mm | in | kg | lb |
| KOS 740 | 23 | 101.2 | 60 | 870 | 150 | 5.91 | 700 | 27.56 | 11.4 | 3.01 | 3042 | 119.76 | 920 | 36.22 | 670 | 26.38 | 1000 | 2205 |
| KOS 1030 | 16 | 70.4 | 90 | 1305 | 120 | 4.72 | 1000 | 39.37 | 10.5 | 2.77 | 3220 | 126.77 | 920 | 36.22 | 910 | 35.83 | 1200 | 2646 |
| KOS 1040 HP | 25 | 110 | 100 | 1450 | 150 | 5.91 | 1000 | 39.37 | 15.6 | 4.12 | 4100 | 161.42 | 1100 | 43.31 | 1072 | 42.20 | 2500 | 5512 |
| KOS 1050 | 36 | 158.4 | 60 | 870 | 180 | 7.09 | 1000 | 39.37 | 22.5 | 5.94 | 4100 | 161.42 | 1100 | 43.31 | 1072 | 42.20 | 2500 | 5512 |
| KOS 1050 HP | 36 | 158.4 | 80 | 1160 | 180 | 7.09 | 1000 | 39.37 | 22.3 | 5.89 | 4100 | 161.42 | 1100 | 43.31 | 1072 | 42.20 | 2800 | 6173 |
| KOS 1070 | 60 | 264 | 45 | 652.5 | 230 | 9.06 | 1000 | 39.37 | 36.8 | 9.72 | 4100 | 161.42 | 1100 | 43.31 | 1072 | 42.20 | 2800 | 6173 |
| KOS 1070 HP | 60 | 264 | 70 | 1015 | 230 | 9.06 | 1000 | 39.37 | 36.4 | 9.62 | 4100 | 161.42 | 1100 | 43.31 | 1072 | 42.20 | 3000 | 6614 |
| KOS 1080 HP | 90 | 396 | 60 | 870 | 280 | 11.02 | 1000 | 39.37 | 53.9 | 14.24 | 4500 | 177.17 | 1100 | 43.31 | 1072 | 42.20 | 3200 | 7055 |
| KOS 1080 HPS | 85 | 374 | 70 | 1015 | 280 | 11.02 | 1000 | 39.37 | 45.6 | 12.05 | 4500 | 177.17 | 1100 | 43.31 | 1072 | 42.20 | 3300 | 7275 |
| KOS 2180 HP | 100 | 440 | 70 | 1015 | 280 | 11.02 | 2100 | 82.68 | 113.3 | 29.93 | 6700 | 263.78 | 1200 | 47.24 | 1072 | 42.20 | 5000 | 11023 |
| KOS 2180 HPS | 100 | 440 | 120 | 1740 | 280 | 11.02 | 2100 | 82.68 | 113.3 | 29.93 | 6700 | 263.78 | 1200 | 47.24 | 1072 | 42.20 | 7500 | 16535 |
| KOS 25100 | 160 | 704 | 35 | 507.5 | 360 | 14.17 | 2500 | 98.43 | 224.6 | 59.34 | 8140 | 320.47 | 1700 | 66.93 | 1540 | 60.63 | 8500 | 18739 |
| KOS 25100 HP | 160 | 704 | 100 | 1450 | 360 | 14.17 | 2500 | 98.43 | 216.4 | 57.17 | 8140 | 320.47 | 2150 | 84.65 | 1540 | 60.63 | 10700 | 23589 |
| KOS 25100 HPS | 160 | 704 | 150 | 2175 | 360 | 14.17 | 2500 | 98.43 | 223.9 | 59.15 | 8015 | 315.55 | 2246 | 88.43 | 1790 | 70.47 | 10700 | 23589 |
| KOS 25150 HP | 250 | 1100 | 100 | 1450 | 450 | 17.72 | 2500 | 98.43 | 349.9 | 92.44 | 8758 | 344.80 | 2246 | 88.43 | 1990 | 78.35 | 19000 | 41887 |
| KOS 25200 | 385 | 1694 | 30 | 435 | 560 | 22.05 | 2500 | 98.43 | 523.6 | 138.34 | 8950 | 352.36 | 3112 | 122.52 | 2088 | 82.20 | 22600 | 49824 |
| KOS 25200 HP | 385 | 1694 | 100 | 1450 | 560 | 22.05 | 2500 | 98.43 | 523.6 | 138.34 | 9262 | 364.65 | 2800 | 110.24 | 2419 | 95.24 | 32000 | 70547 |

The values provided above are to be viewed as guideline values only and may alter depending on machine applications. Please request detailed quotation drawings.

* geometric, rounded
** maximum theoretical

Conversions:
1 bar = 14.5 psi
1 inch = 25.4 mm
1 US Gallon = 3.785 l
1 kg = 2.2046 lb



KOS solids pump, exemplary illustration

The S-transfer tube – successfully in use worldwide

- **Tested and proved system thanks to over 35 years of development.**

The potential of the S-transfer tube only led to success – **Putzmeister led it to success.**

- **Used thousands of times all over the world in a wide range of mobile and fixed industrial applications**

- **Delivery rates up to 400 m³/h**

- **Delivery pressures up to 150 bar for fixed industrial applications, up to 250 bar for concrete applications**

- Drive outputs up to 1600 kW

- **World records for high- and long-distance delivery systems**

- **The “standard” for materials which are difficult to pump, such as**

- Drained sewage sludges with a high proportion of foreign bodies
- Oil sludges, coal sludges, paper sludges
- Bio-waste from household waste
- Recirculated material in biogas plants
- Mineral wastes
- Fly ashes and bottom ashes
- Concrete, coarse concrete, salt concrete
- And many more difficult types of high-density substances



S-transfer tube means power!

Putzmeister concrete pumps are the world record holders at Burj Khalifa with a pumping height of 606 m!

Pumps with S-transfer tube are used in many applications and can handle the most difficult materials with ease:



Sewage sludge/ – **Sewage plants**
municipal cake



Backfilling/tailings – **Mining industry**



Drill cuttings – **Offshore/onshore industry**



Paper sludge – **Chemical industry**



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