



**Putzmeister**



# Solids handling pumps EK0

Can't be pumped? Of course it can!

# Solids handling pumps EKO – the powerful press among pumps

The EKO is a specialist when it comes to conveying high-density solids that are too much for other pumps

Extremely dry media mixed with a wide variety of foreign bodies are fed through the open material chambers of the pump. The hydraulically driven piston presses materials into the pipeline that previously could not be pumped, such as extremely dewatered paper sludges.



Maximum reliability, minimum costs – decisive benefits:

- Pumps substances with an extremely high solids content and up to 2/3 of the piston diameter
- International testimonials indicate a broad range of experience with different projects and substances
- High level of automation provides increased safety and reduced costs
- Minimum maintenance costs
- Designed for over 10 years operation
- Can be installed in existing plants and systems
- Process-specific accessories make the EKO fit for use in all applications

Can't be pumped?  
Of course it can!  
The EKO does it all.

- Extremely dewatered sludges from filter presses
- Packaged foodstuffs
- Hazardous waste from barrel crushing, including shredded barrels
- Screenings in waste water treatment plants



Shredded barrel material



Leftovers and expired, packaged foods



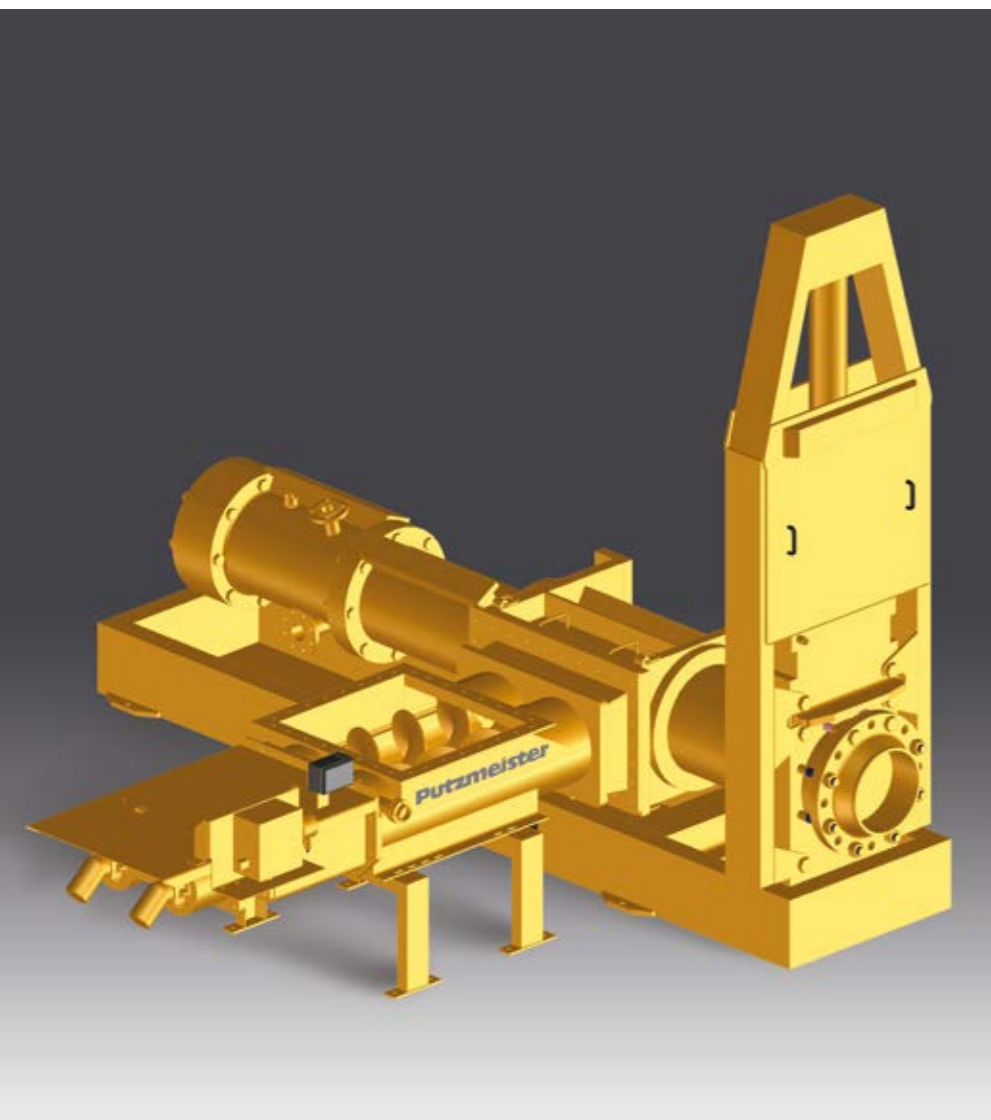
Highly dewatered sludge



Screenings from sewage plants

# EKO with feeding screw THS / screw conveyor

# EKO with feeder WADO + compactor



## Completely leak-tight – the clean and safe solution

The SMP solution is one of the only way to eliminate hazardous wastes without any human contact with the product. The system is full automatic. It reduces the contamination risk for the operating technicians.

A large range of wastes can be treated. They can be bulk, in a container / box or on a wood pallet.

The Putzmeister EKO pump is able to handle very big particles like shredded containers. It grants a continuous operation and avoid as much as possible human actions.

## Compressed into the pump – for the optimum performance

The pump represent the bottle neck of the total installation. It's absolutely mandatory to optimize the feeding and increase as much as possible the through put of the piston pump.

The Putzmeister Wado system together with the compactor system are used to push the maximum of waste into the compression chamber of the pump. We are reaching a very high feeding ratio.

The Putzmeister Wado system is less sensitive to the long elements. We have no risk to get waste wrapping around the shafts.



EKO 14100 for Chengde, China



EKO 1060, Ingelia, Spain

### Technical Data

Pump type:	EKO 14.100
Feeding device:	THS 232 SCB
Throughput:	max. 10.0 m³/h
Design:	shaftless feeding screw
Screw diameter:	315 mm
Total length:	ca. 2500 mm
Inlet flange THS:	700 x 700 mm

### Technical Data

Pump type:	EKO 14.100
Feeding device:	SHS 1861 WADO
Number of compactors:	2 x Dia 220 mm
Throughput:	max. 10.0 m³/h
Design:	shaftless single feeding screw
Screw diameter:	600 mm
Total length:	ca. 2625 mm
Inlet flange THS:	700 x 700 mm



EKO 14100 for Guangxi, China



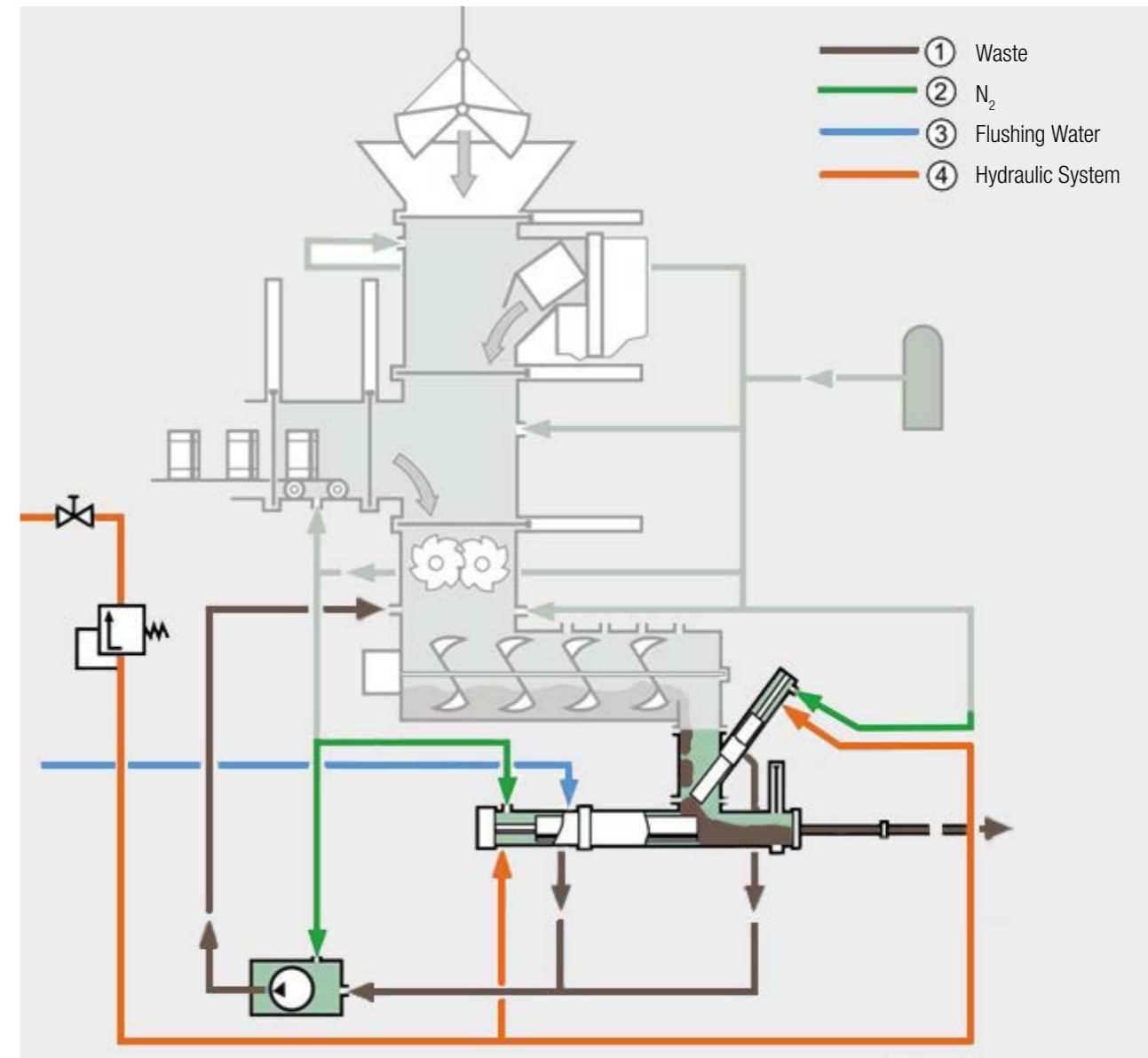
EKO 14100 for Chengde, China

# Shredding / Mixing / Pumping



## Material in continuous flow

- Closed system – mixer-pump-pipeline – no odour escaping, no air introduction into gastanks
- Compact, robust and economic unit with hydraulical drive (overload protection)
- Homogeneous mixture in the flow, mixing paddle in the inlet area, remixing zone
- Prepress screw conveyors (on the same shaft) ensure intense filling of the feed cylinders
- Reliable dosing of the return material into the mixer



North River, USA, 2003  
EKO 1060



Japan, EKO14100 + WADO feeding device



Parsippany, USA, 2003  
EKO 1060



Coney Island, USA, EKO 1060



Burghausen, Germany, 1996



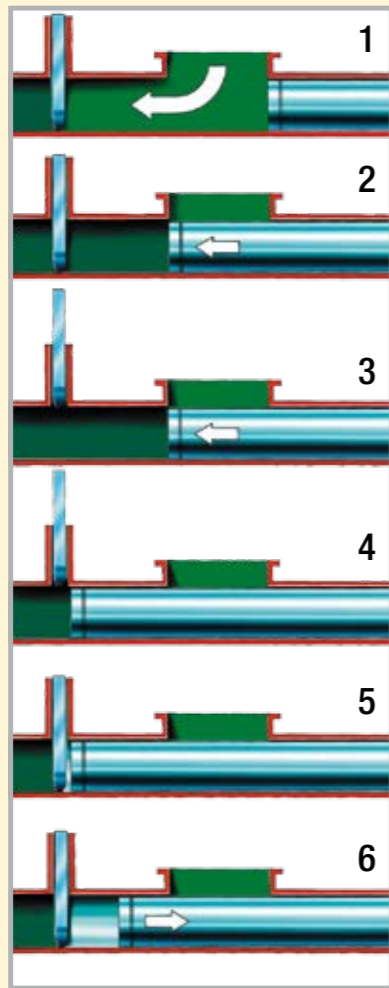
Fukuyama, Japan, 2001

# The EKO series

## Principle of function and pump construction

The material to be conveyed is fed into the pump via a material feeding hopper.

1. A hydraulic drive cylinder moves the plunger forwards and backwards. As the piston is retracting, the feed chamber is filled.
2. The plunger pushes the compressed material out of the feed chamber into the supply cylinder.
3. The slide valve opens on entry of the plunger into the cylinder.
4. The hydraulically driven plunger delivers the material into the pipeline.
5. The gate valve closes the pipeline, preventing any reverse flow material. In addition, this prevents „burn back“ from the furnace.
6. The plunger returns to its starting position, thus opening the feed chamber allowing the material to enter.



## The gate valve

A special gate valve designed for extremely heavy loading **prevents back-flow of material from the discharge pipe.**

This gate valve is directly attached to the outlet flange of the EKO and is operated via the pump's control system. An automatic lubrication system guarantees reliable operation, even with continuous use.

The specially formed, robust valve blade is made from highly wear resistant steel, which easily shears foreign bodies on closing.

For bulky dry material that cannot flow back (e.g. screenings), a lamellar non-return valve is used. **This is a simply-added economical and reliable system.**



Gate valve

## The EKO crown cuts and transports in one operation

The EKO Crown is used where the material contains large foreign bodies. In other systems, these often lead to blocking of the pump. The EKO crown has a transport piston with a hardened and toothed cutting edge.

**Foreign bodies** (metal, steel, glass, wood, etc.) **that may come between the piston and the inlet to the feed chamber, are simply cut through.** Thus a medium that may, for instance, contain long metal strips, can be transported into the discharge pipe without problems.

A double chromium-plated and hardened plunger and various types of seals (e.g. Viton) are only two of the features that **significantly increase the life-time of the EKO crown, making it capable of withstanding the most extreme demands.**

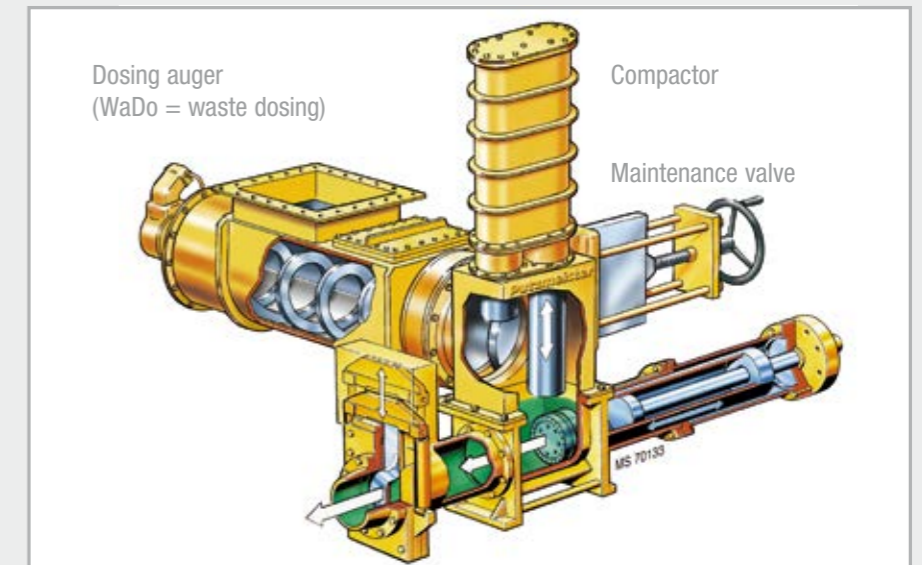
Other performance features of the EKO:

- If a foreign body sticks between the piston and the material feed chamber, or if the material jams in the pipeline, the EKO crown switches over automatically to half stroke speed. At the same time, the piston drive power doubles. The foreign body is cut up with double the force. **Blockages are cleared automatically.**

- If the foreign body should still be stuck, the piston automatically retracts a short distance and is then pushed forward again. This process repeats up to three times. This „loosening“ procedure usually leads to **continuation of the flow.**

- If the foreign body cannot be removed in this way, a **fault signal is automatically given** to alert the operator and permit the pump to be driven clear in manual operating mode.

Awkward shapes or oversize materials may additionally have to be pressed into the material feed area using a compactor. In the case of sticky materials, there is a **danger of bridging.** This problem is **solved** by the compactor as well. A sticky consistency can also result in overfilling, with the consequence that blockages can form. This can be avoided by **metered dosing** of the material using a dosing auger.



EKO with lamellar non-return valve



Plunger with cutting edge

## 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.



CI power pack with acoustic enclosure (optional)

## Leakage collection and flushing system (Piranha® pump)

To keep system leakages under control, Putzmeister offers an integrated leakage collection and flushing system.

This includes a collector, a Piranha® Shredder with 1.6 kW drive output, a solenoid valve for the flushing system and a fill-level sensor



## 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.



## ATEX Explosion protection



Putzmeister offers the CE declaration according to Directive 94/9/EU. The EKO can be used in Zone 2 and 22.

Putzmeister offers an on-site device and plant commissioning service. Commissioning is performed together with the owner/operator.

## 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.

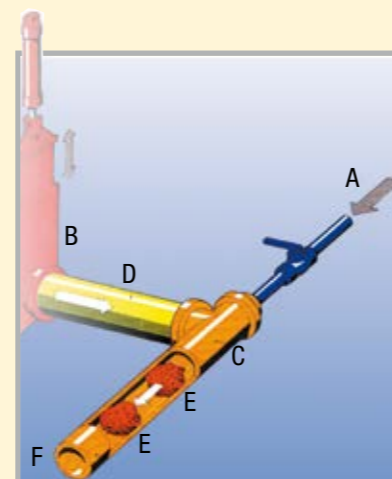
Gate valves are hydraulically operated. For a faster switch, it is suggested to use a power pack of at least 7.5 kW. The valve housing is sealed with hardened sealing rings, that are pressed against the moving blade of the valve.

## The hybrid feed system

Even with dry materials that are prone to bridging, long distances can be overcome. It is for just such cases that the "hybrid feed system" is designed. (The „hybrid“ designation denotes hydraulic + pneumatic).

It functions on the „pneumatic delivery“ principle. Compressed air is injected into the pipeline. This separates and fluidizes the material. Depending on the quantity of air, the material which is initially in the form of plugs can, with increasing distance, become a steady airborne stream. In this way, extending feeding distances are possible. The feed air mixes readily with the combustion air in the furnace.

- A Compressed air
- B Shut-off valve
- C T-piece for air injection
- D Pressure line for compression stream
- E Plug of material
- F Delivery line



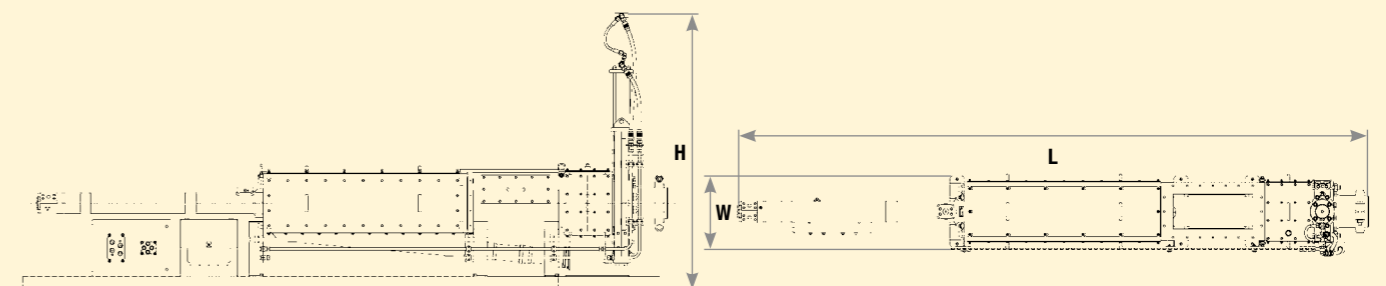
Type	Output*	Permanent delivery pressure**	Delivery cylinder Ø	Delivery cylinder Length	Cutting force	Length (L)	Width (W)	Height (H)
<b>EKO 1260</b>	5 m³/h 22 gpm	100 bar 1450 psi	200 mm 7.87 in	500 mm 19.69 in	–	4500 mm 177.17 in	520 mm 20.47 in	1900 mm 74.80 in
<b>EKO 1260 Crown</b>	5 m³/h 22 gpm	100 bar 1450 psi	200 mm 7.87 in	500 mm 19.69 in	25/80 t	4500 mm 177.17 in	520 mm 20.47 in	1900 mm 74.80 in
<b>EKO 14100</b>	14 m³/h 62 gpm	40 bar 580 psi	350 mm 13.78 in	700 mm 27.56 in	–	4000 mm 157.49 in	1020 mm 40.16 in	3100 mm 122.05 in
<b>EKO 14100 Crown</b>	14 m³/h 62 gpm	40 bar 580 psi	350 mm 13.78 in	700 mm 27.56 in	80 t	4000 mm 157.49 in	1020 mm 40.16 in	3100 mm 122.05 in

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

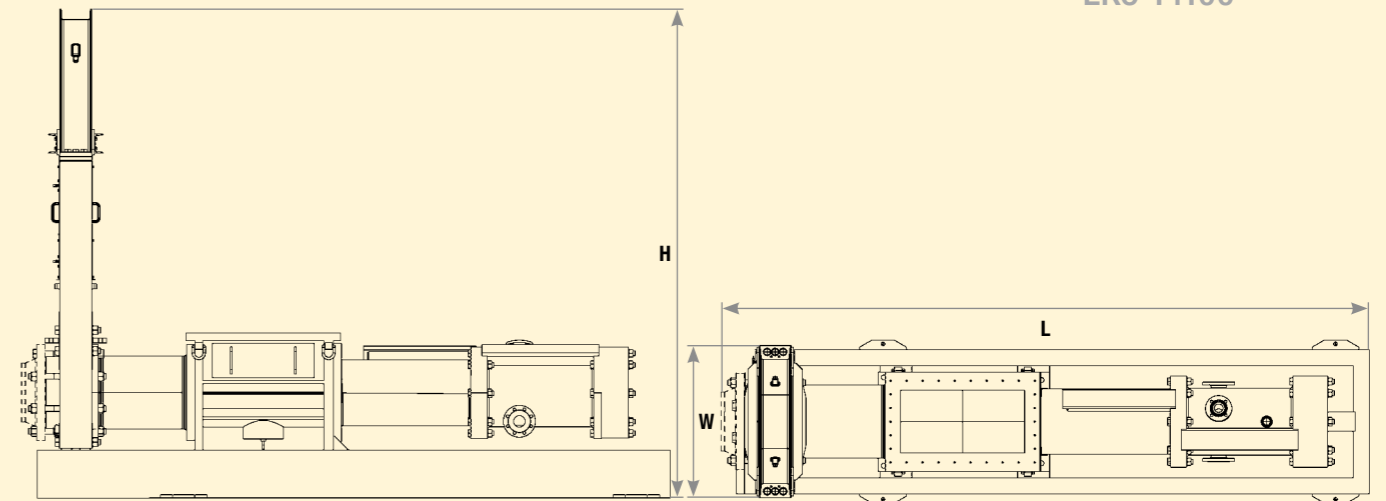
\* geometric, rounded  
\*\* maximum theoretical

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

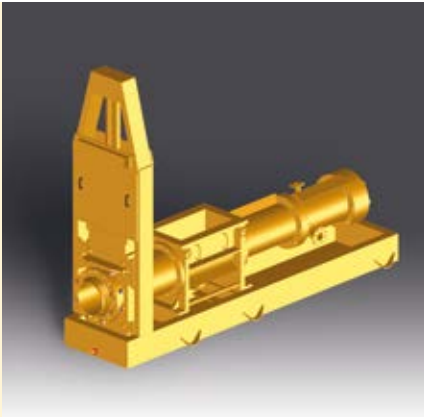
## EKO 1260



## EKO 14100



# The right application – worldwide



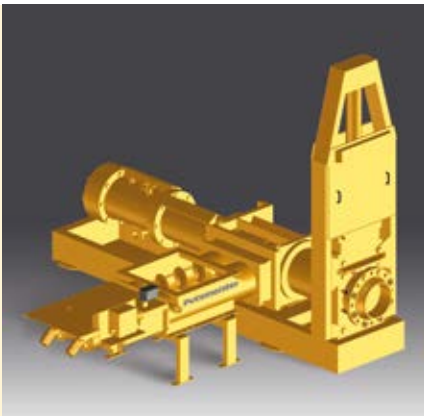
## Special waste utilisation GEOCYCLE (former Scoribel), Belgium

System: SP (Shredding, Pumping)  
Medium: Various special waste materials in liquid, pasty form, delivered as barrel waste, highly flammable  
Design: EX protection  
Machines: 1 x EKO 14100, 1 x HA 132 E, 1 x control cabinet  
Output: max. 10.0 m<sup>3</sup>/h @ 40 bar  
Commissioning: 1997



## Special waste utilisation Wien Energie AG (former EBS Wien), Austria

System: SMP (Shredding, Mixing, Pumping)  
Medium: Various special waste materials in liquid, pasty form, delivered as barrel waste, highly flammable  
Design: System is overlaid with nitrogen as cover gas, EX protection  
Machines: Twin compactor, 2 x EKO 14100, 2 x HA 132 E, 2 x control cabinets  
Output: max. 15.2 m<sup>3</sup>/h @ 40 bar  
Commissioning: 1997



## Special waste utilisation BeeHa, Saudi Arabia

System: SP (Shredding, Pumping)  
Medium: Various special waste materials in liquid, pasty form, delivered as barrel waste, highly flammable  
Design: EX protection  
Machines: 1 x THS 232 SCB, 1 x EKO 14100, 1 x HA 75 CI, 1 x control cabinet  
Output: max. 5.0 m<sup>3</sup>/h @ 40 bar  
Commissioning: 2017



### Putzmeister Solid Pumps GmbH

Max-Eyth-Straße 10 · 72631 Aichtal/Germany

P.O. Box 2152 · 72629 Aichtal/Germany

Phone +49 (7127) 599-500 · Fax +49 (7127) 599-988

psp@pmw.de · www.pmsolid.com

