

ANDRITZ Atro

Screw pumps



ANDRITZ Atro screw pumps

Efficient, rugged, and environmentally friendly

ANDRITZ Atro has been developing and supplying individually planned systems in water, waste water, environmental, and energy technology for customers all over the world for over 40 years.

The principle of the screw pump was born in ancient Greece. The Archimedean screw - a sophisticated structure - made water flow uphill. While the principle has remained basically the same, the technology has been improved over the centuries and perfected by ANDRITZ Atro. Today, screw pumps are the optimum solution to transporting large volumes of water or waste water to a fixed height.



The facts

- Screw diameter up to 5 m
- Head up to 12 m
- Flow rate up to 10,000 l/s
- Installation angle 30° to 40°
- Efficiency up to 86%

Thanks to our many years of experience in construction and maintenance of screw pumps, we are able to offer our customers individual solutions and particularly durable, reliable, and environmentally friendly products.

Fields of application

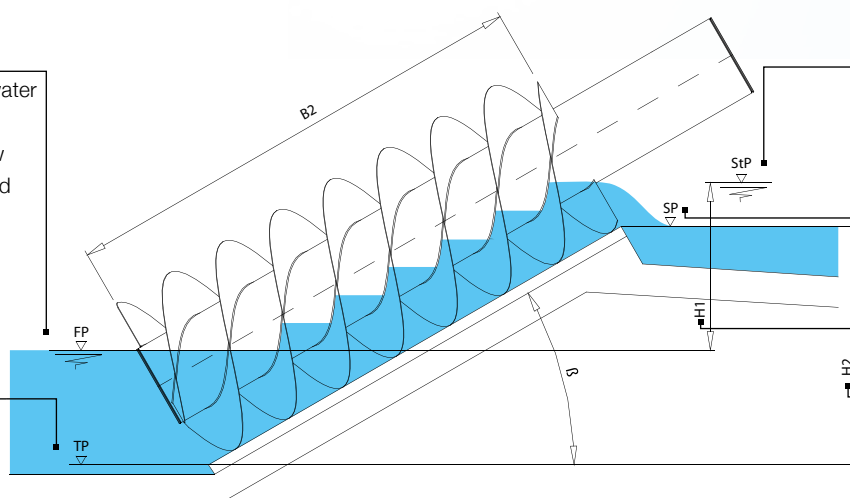
- Municipal waste water
- Return sludge
- Polder drainage
- Irrigation
- Paper and recycling industries
- Various types of industrial effluent

FP - Filling point

Accumulation level in tailwater where the screw pump operates at maximum flow rate, highest efficiency, and greatest possible input

TP - Touch point

Level of tailwater where the flow rate is equal to zero



StP - Delivery point

Maximum level the screw trough pump can reach without reflux occurring

SP - Chute point

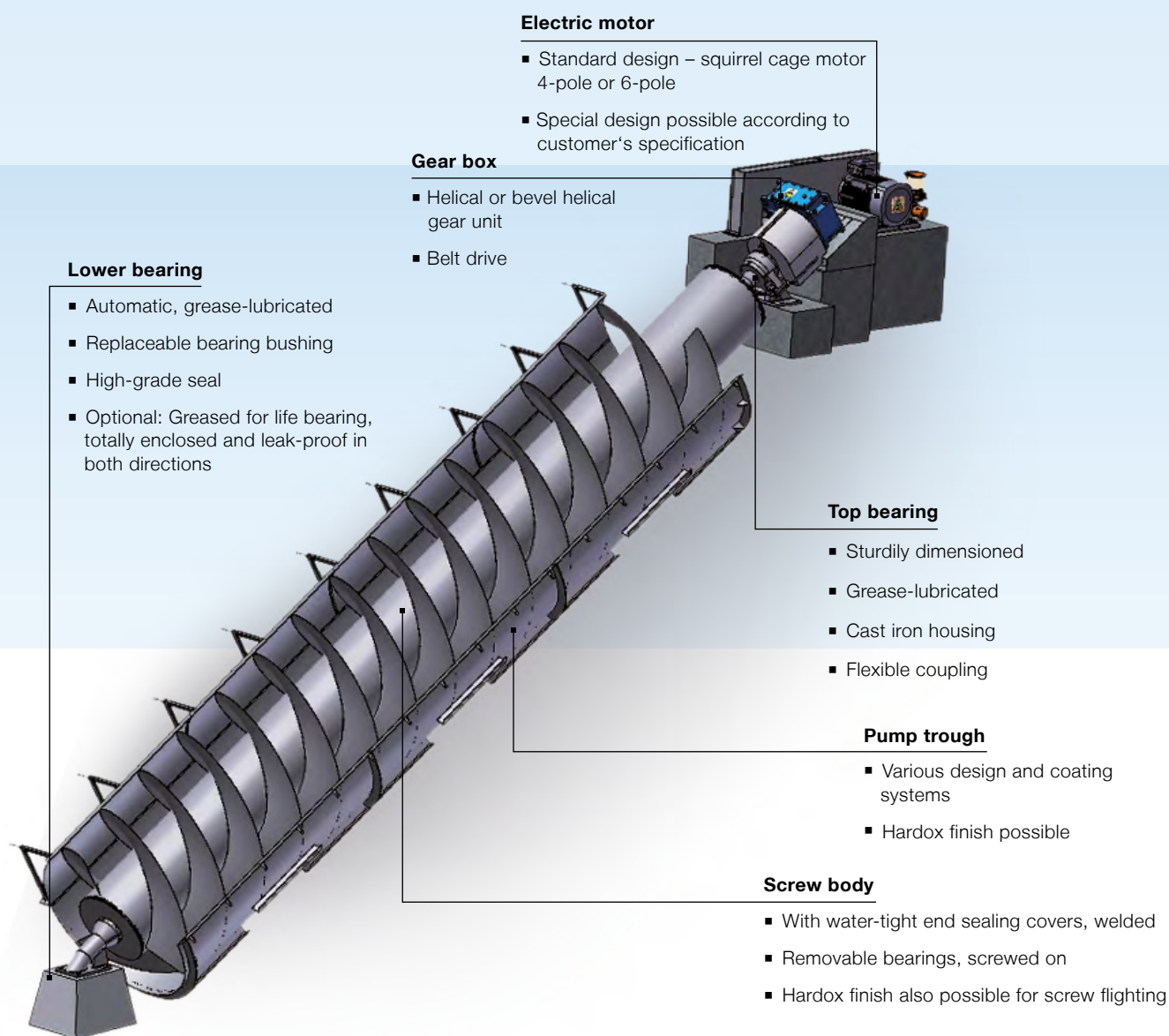
Overflow into the escape channel

H1 - Hydraulic head StP-FP

H2 - Constructional head SP-TP

Your advantages

- Very long life cycle and low wear thanks to low speeds, high-grade materials, and mature technology
- Efficiency up to 86%
- Very economical, also in the partial load range
- Reliable operations, also at high flow rates
- Safe and gentle transport of solids in liquids without plugging the machine
- Automatic adjustment to feed flow



Electric motor

- Standard design – squirrel cage motor 4-pole or 6-pole
- Special design possible according to customer's specification

Gear box

- Helical or bevel helical gear unit
- Belt drive

Lower bearing

- Automatic, grease-lubricated
- Replaceable bearing bushing
- High-grade seal
- Optional: Greased for life bearing, totally enclosed and leak-proof in both directions

Top bearing

- Sturdily dimensioned
- Grease-lubricated
- Cast iron housing
- Flexible coupling

Pump trough

- Various design and coating systems
- Hardox finish possible

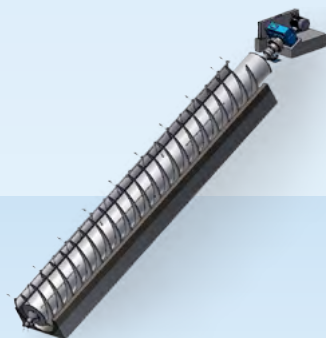
Screw body

- With water-tight end sealing covers, welded
- Removable bearings, screwed on
- Hardox finish also possible for screw flighting

Types

Screw pump in a concrete trough

The most common form is the arrangement of a screw pump in an open concrete trough, where the screw rotates freely in the trough with a gap of only a few millimeters. The trough is formed (screeding) with the help of the slowly rotating screw itself, which is provided temporarily with a metal strip; while soft concrete is poured into the trough, the rotating screw forms a perfect trough shape to fit the screw.



Screw pump with cast basalt trough

Built from highly abrasion-resistant cast basalt parts for special requirements. These are placed in a prepared concrete trough with ready-mixed mortar.

Screw pump with a steel trough liner

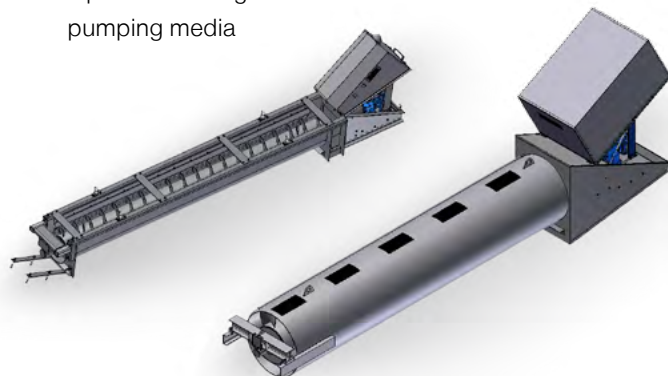
This type requires a similar civil construction as the concrete trough described previously, but no screeding is necessary in this case. Instead, a prefabricated steel trough liner is back-filled with concrete. The steel trough is prefabricated (either in steel or stainless steel) with the exact diameter required. Then it is assembled and delivered together with the screw pump. A steel trough liner increases the wear resistance and lifetime of a trough, especially if the inlet is exposed to abrasive liquids or stones.



The compact plant

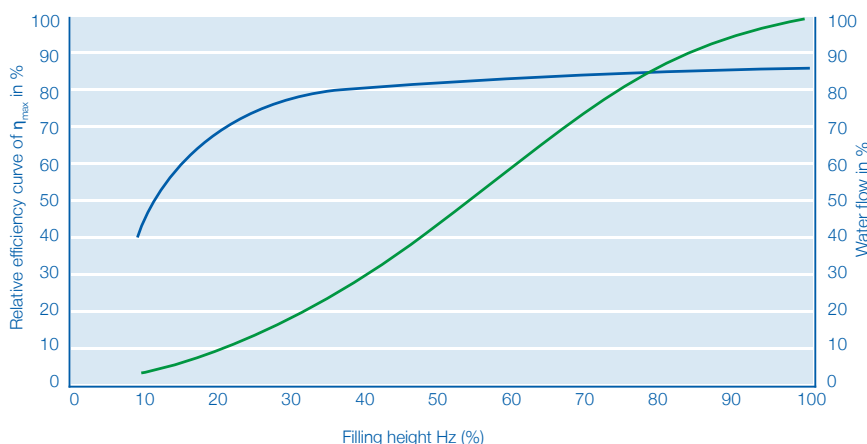
Supplied as a prefabricated, self-supporting steel structure with integrated inlet section, outlet section, trough, screw pump, and drive unit. This screw pump type is fully pre-assembled in our factory and shipped in one piece, ready for immediate installation. The only civil work required is a support in the inlet channel and a support in the outlet channel. Our compact screw pumps are available with:

- Enclosed steel trough for mechanically cleaned pumping media
- Open steel trough for non-screened pumping media



High efficiency

Save energy efficiently



Blue Line – indicates the efficiency (relationship between power fed in and power passed on) measured according to the water flow pumped.

Green Line – shows the the relationship between filling height and water flow, where 100% is equivalent to the maximum water flow that can be pumped.

The diagram shows how screw pumps can achieve very high efficiency with a very small water flow. Thus, they provide significant savings in energy and costs.

The following table provides an overview of the possible flow rates. It contains approximate values for possible installation angles and different screw diameters for your planning work. Such factors as number of flights or outer diameter can be used to optimize the output to the given needs. Screw pumps with larger flow rates and larger heads are available on request.

| Ø (mm) | 30° | | 35° | | 38° | |
|-----------|---------|-----------------------------|---------|-----------------------------|---------|-----------------------------|
| | Q (l/s) | H ₂ SP-TP (m) | Q (l/s) | H ₂ SP-TP (m) | Q (l/s) | H ₂ SP-TP (m) |
| 400 | 27 | 3,2 | 22 | 3,8 | 19 | 4,0 |
| 500 | 46 | 3,5 | 38 | 4,0 | 33 | 4,3 |
| 600 | 69 | 4,3 | 57 | 4,5 | 45 | 5,0 |
| 700 | 103 | 4,3 | 85 | 4,5 | 73 | 5,0 |
| 800 | 138 | 4,3 | 114 | 4,5 | 93 | 5,0 |
| 900 | 183 | 5,5 | 151 | 6,5 | 131 | 6,6 |
| 1000 | 239 | 5,5 | 197 | 6,5 | 170 | 6,6 |
| 1100 | 276 | 6,6 | 227 | 7,5 | 194 | 8,0 |
| 1200 | 347 | 6,6 | 286 | 7,5 | 248 | 8,0 |
| 1300 | 432 | 6,6 | 356 | 7,5 | 309 | 8,0 |
| 1400 | 524 | 6,6 | 431 | 7,5 | 372 | 8,0 |
| 1500 | 606 | 6,6 | 499 | 7,5 | 431 | 8,0 |
| 1600 | 704 | 6,6 | 581 | 7,5 | 502 | 8,0 |
| 1700 | 808 | 7,5 | 666 | 8,3 | 579 | 9,0 |
| 1800 | 947 | 7,5 | 779 | 8,3 | 673 | 9,0 |
| 1900 | 1074 | 7,5 | 884 | 8,3 | 763 | 9,0 |
| 2000 | 1160 | 7,5 | 957 | 8,3 | 826 | 9,0 |
| 2100 | 1320 | 7,5 | 1087 | 8,6 | 937 | 9,5 |
| 2200 | 1498 | 7,5 | 1236 | 8,6 | 1067 | 9,5 |
| 2300 | 1635 | 7,5 | 1349 | 8,6 | 1167 | 9,5 |
| 2400 | 1848 | 8,8 | 1521 | 10,0 | 1314 | 10,8 |
| 2500 | 2010 | 8,8 | 1645 | 10,0 | 1426 | 10,8 |
| 2600 | 2153 | 8,8 | 1774 | 10,0 | 1531 | 10,8 |
| 2700 | 2421 | 9,2 | 1995 | 10,6 | 1728 | 11,4 |
| 2800 | 2640 | 9,2 | 2172 | 10,6 | 1875 | 11,4 |
| 2900 | 2860 | 9,2 | 2354 | 10,6 | 2029 | 11,4 |
| 3000 | 3065 | 9,2 | 2525 | 10,6 | 2179 | 11,4 |

Close to our customers



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