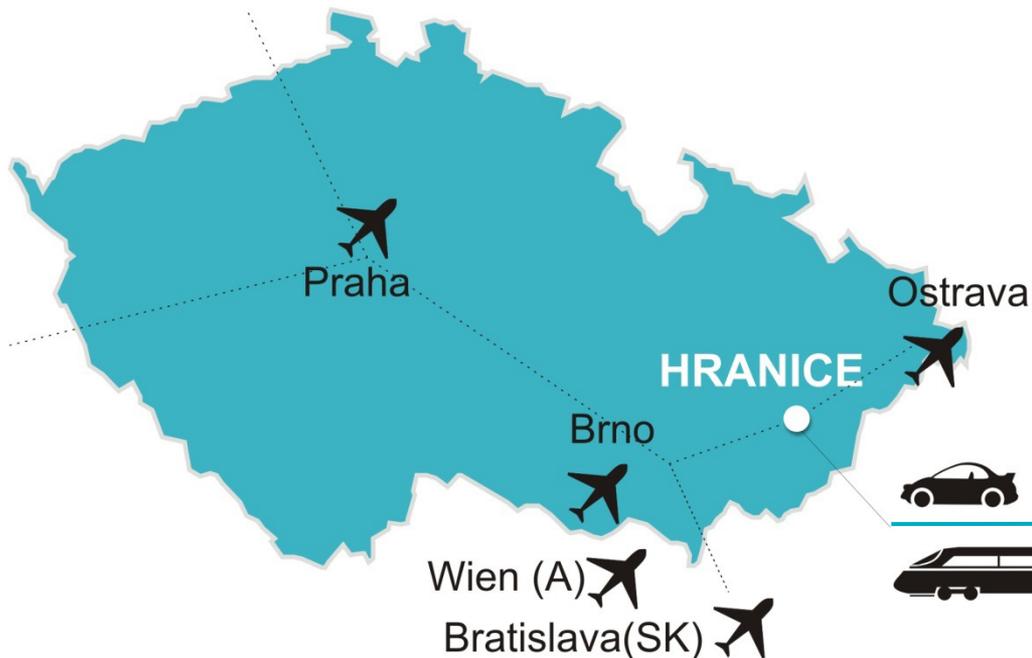




## Screw pumps GESS-CZ

# GESS-CZ

Producer of screw pumps and screw turbines for small hydropower plants



49°28'23,758"N 17°46'38,676"E

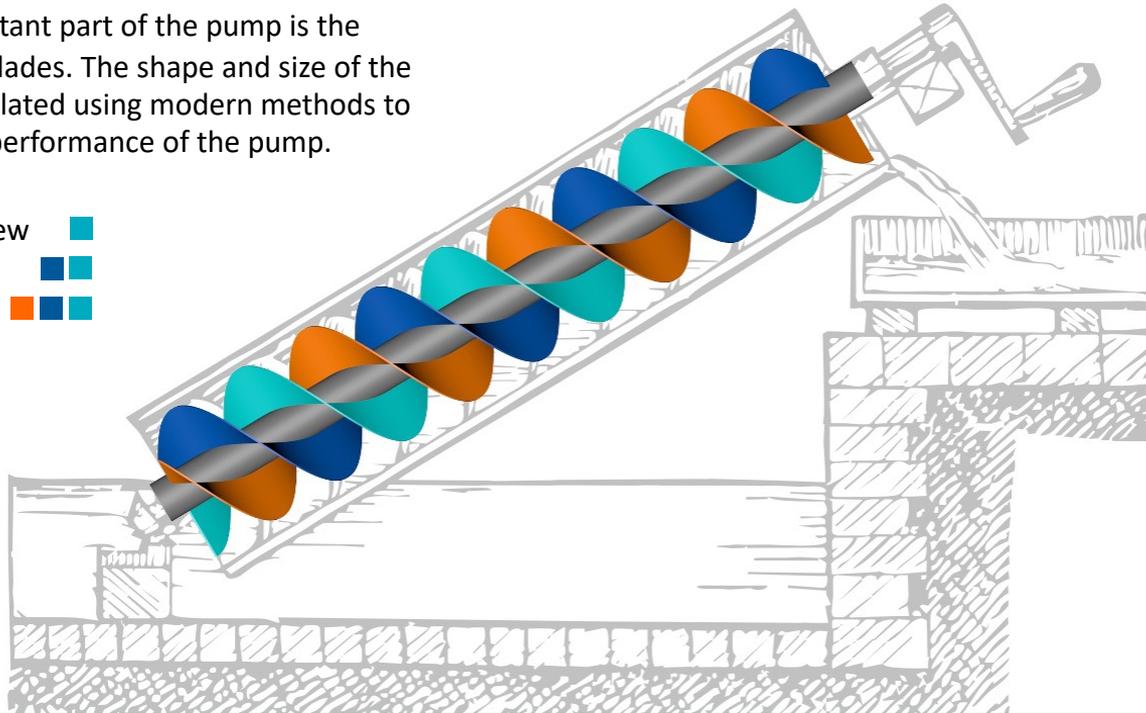


# 2000-year old invention

## The Archimedes screw

The most important part of the pump is the shaft with the blades. The shape and size of the blades are calculated using modern methods to optimise the performance of the pump.

- Single-flight screw 
- 2-flight screw  
- 3-flight screw   



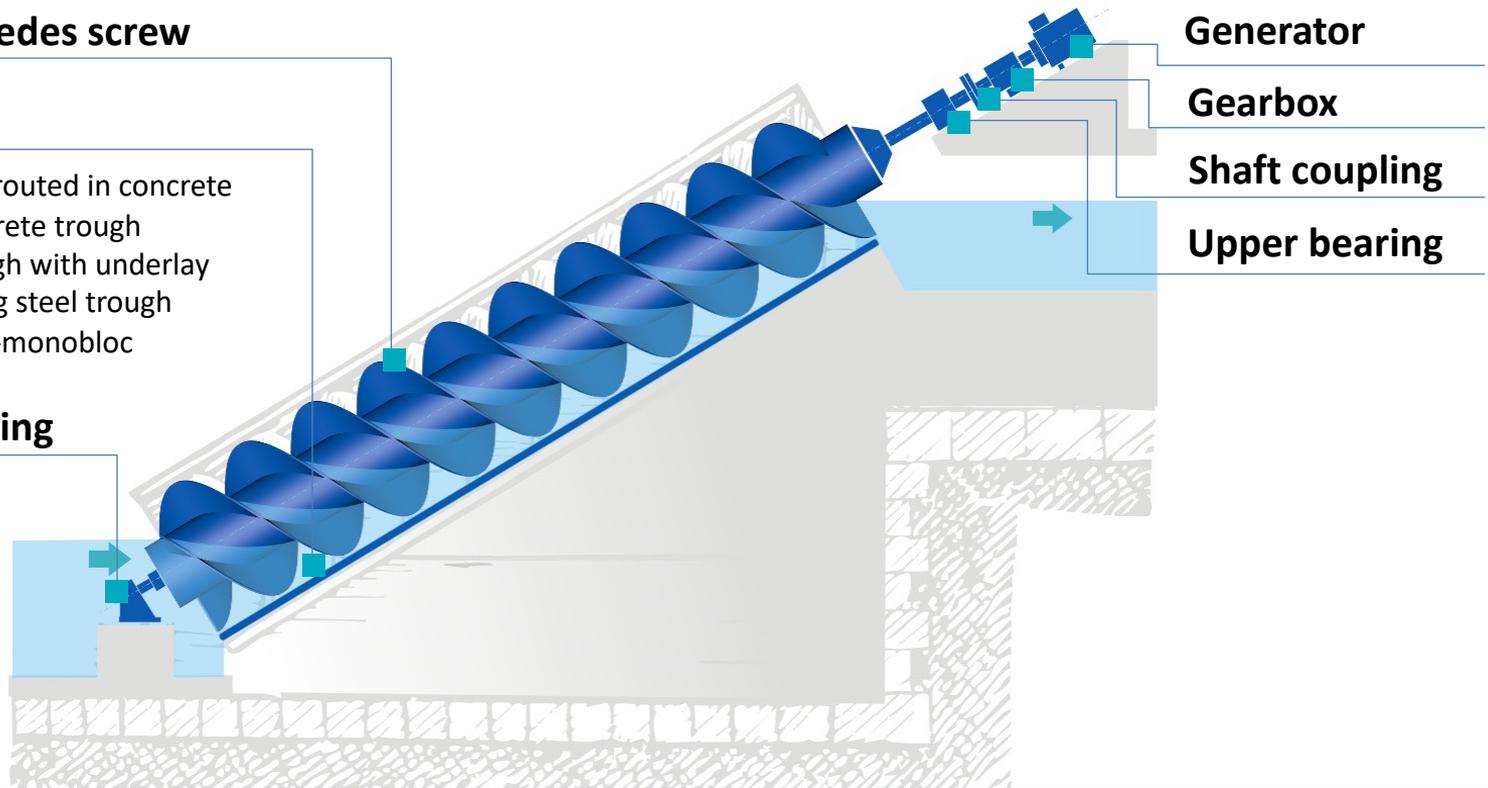
# Basic parts of the screw pump

## The Archimedes screw

### Trough

- Steel trough grouted in concrete
- Separate concrete trough
- Concrete trough with underlay
- Self-supporting steel trough
- Closed trough-monobloc

### Lower bearing



Generator

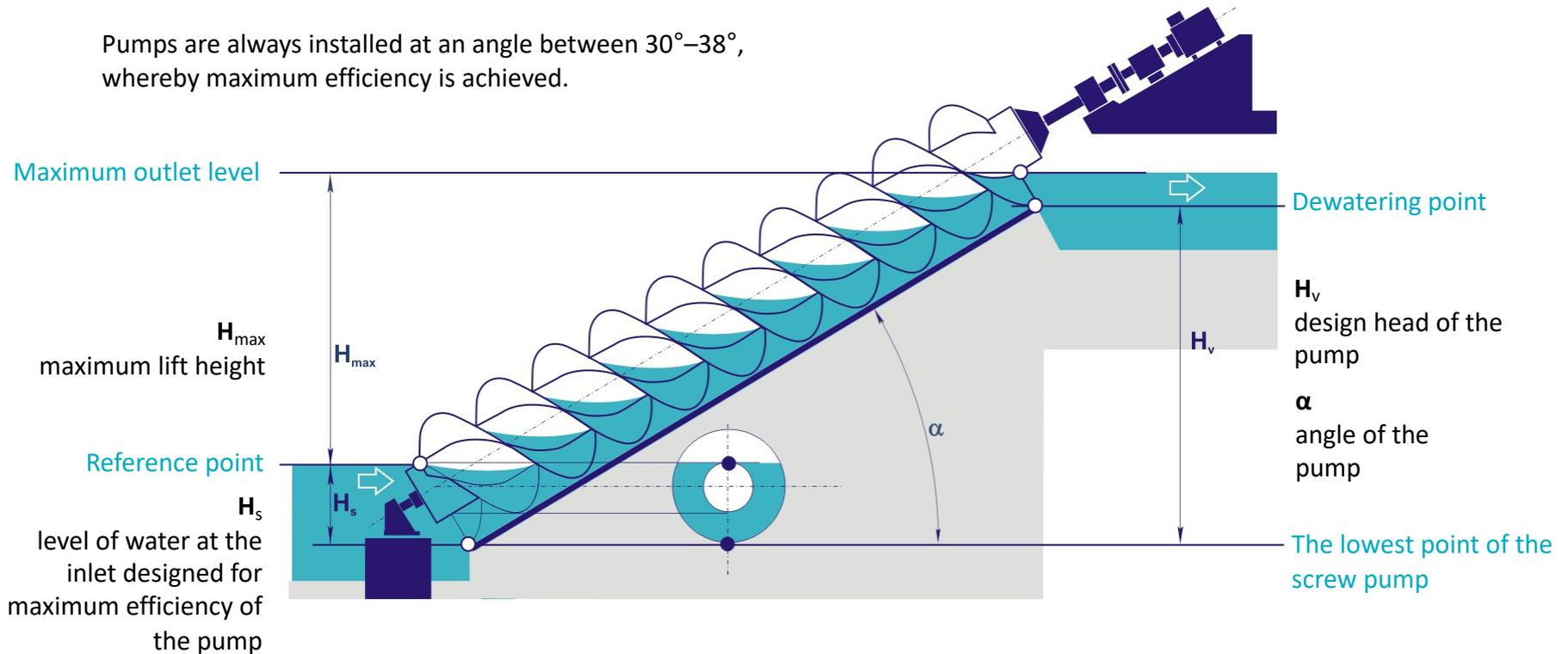
Gearbox

Shaft coupling

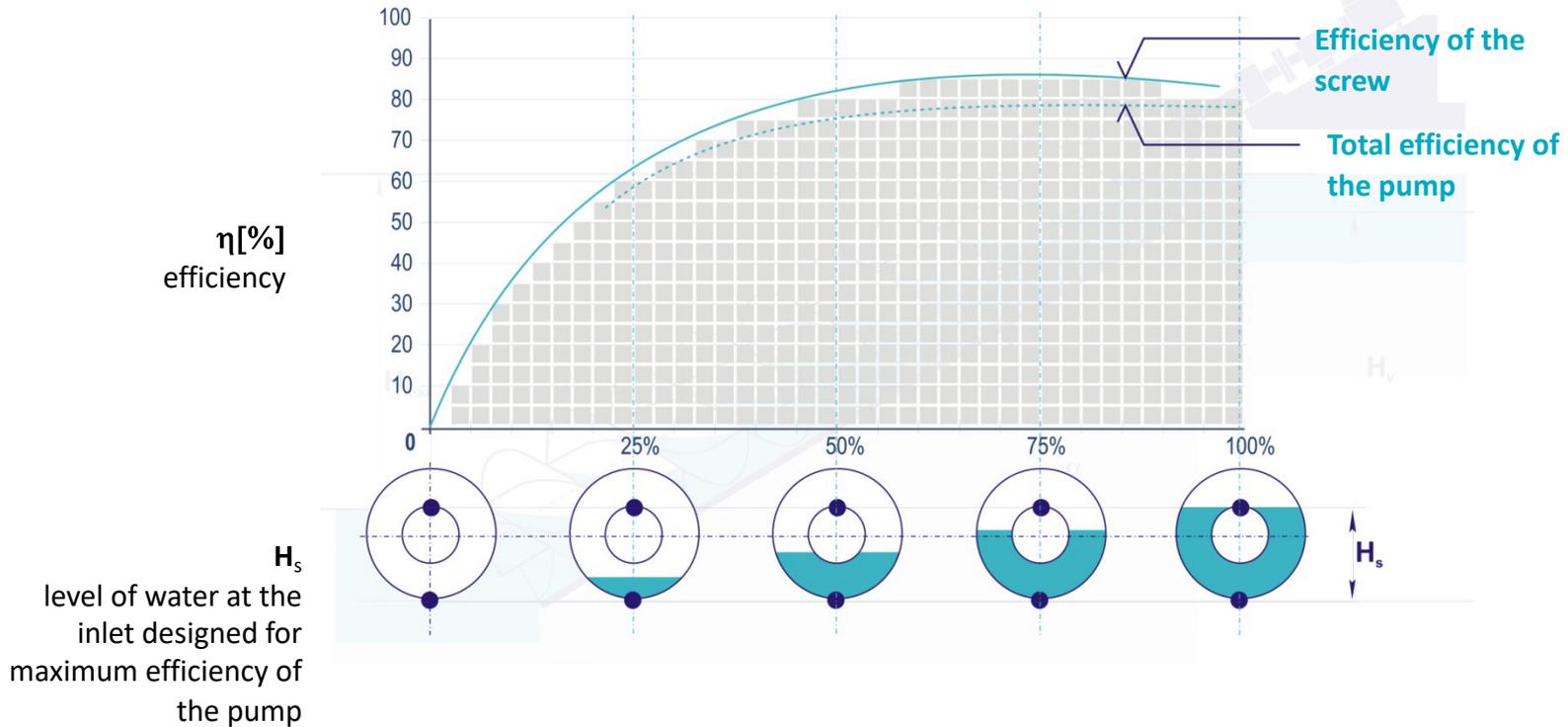
Upper bearing

# Diagram of basic parameters

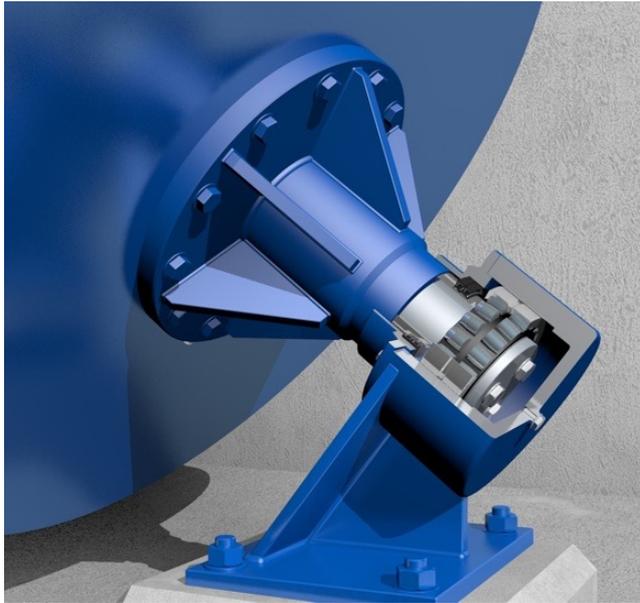
Pumps are always installed at an angle between 30°–38°, whereby maximum efficiency is achieved.



# Efficiency of the screw pump



# Lower bearing

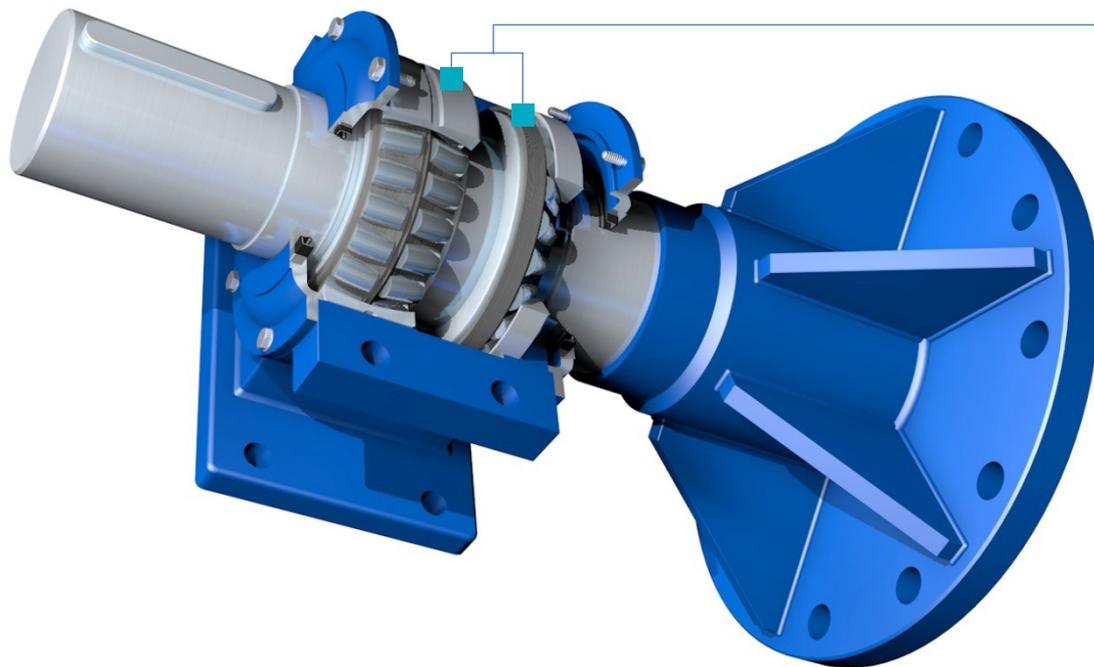


## Greasing

is achieved either through a permanent filling of oil (or other grease) or through a grease pump and stainless steel conduit piping down to the lower bearing.



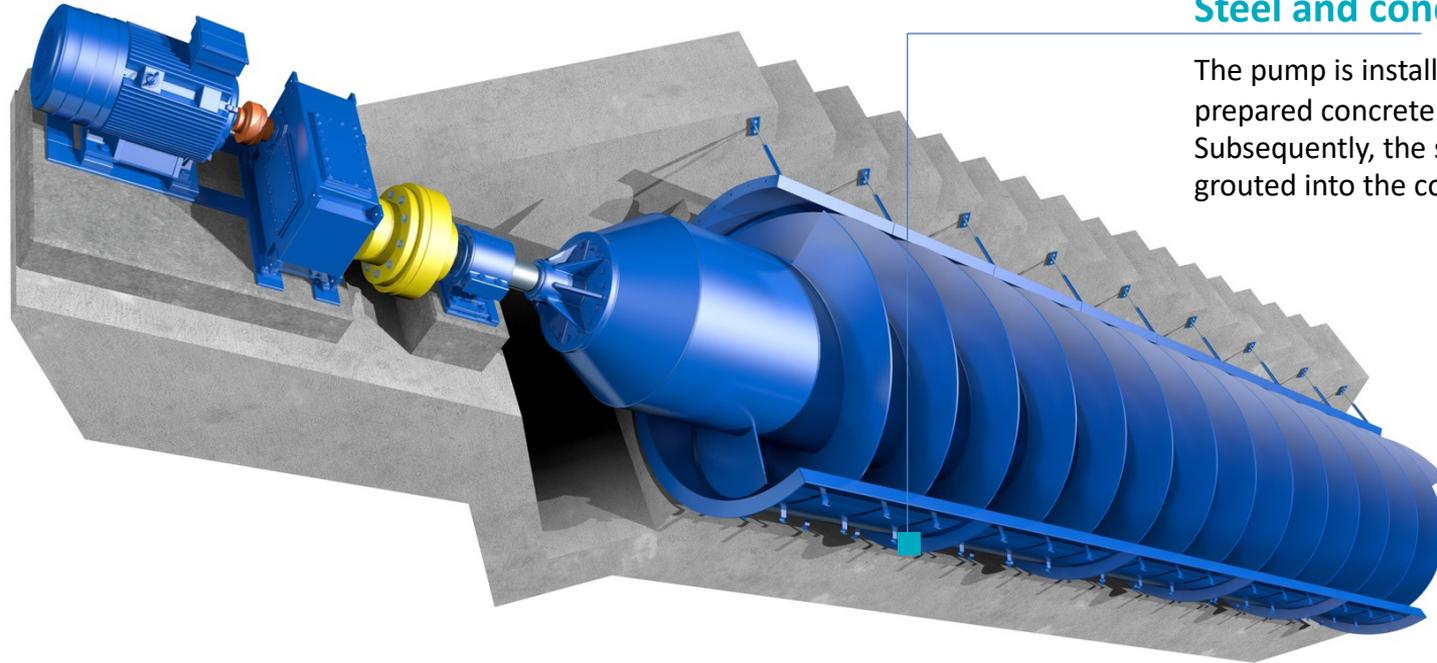
# Upper bearing



## 2 roller bearings

Designed according to the size of the pump and to cope with the relevant axial and radial forces.

# Steel trough grouted into a concrete base



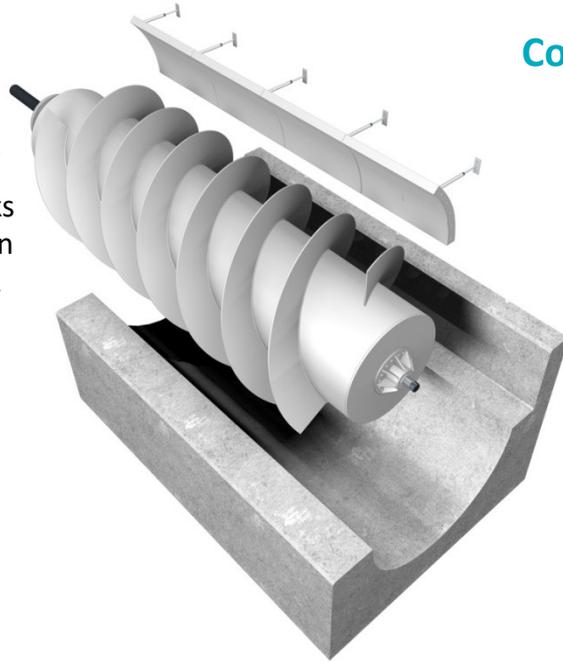
## Steel and concrete

The pump is installed into a partially prepared concrete trough. Subsequently, the steel trough is then grouted into the concrete base.

# Concrete trough-with or without steel underlay

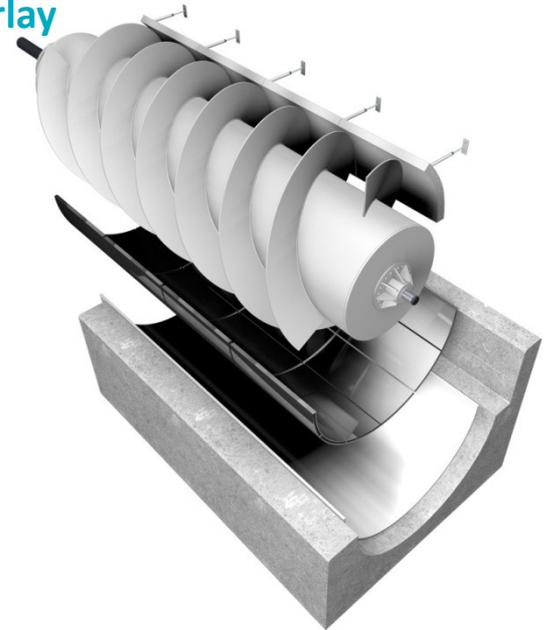
## Smooth concrete

The trough forms itself during operation thanks to additional stencils on the edge of the blades.



## Concrete with underlay

The screw pump is installed into a prepared concrete trough with steel tiles from either smolten basalt or stainless steel.



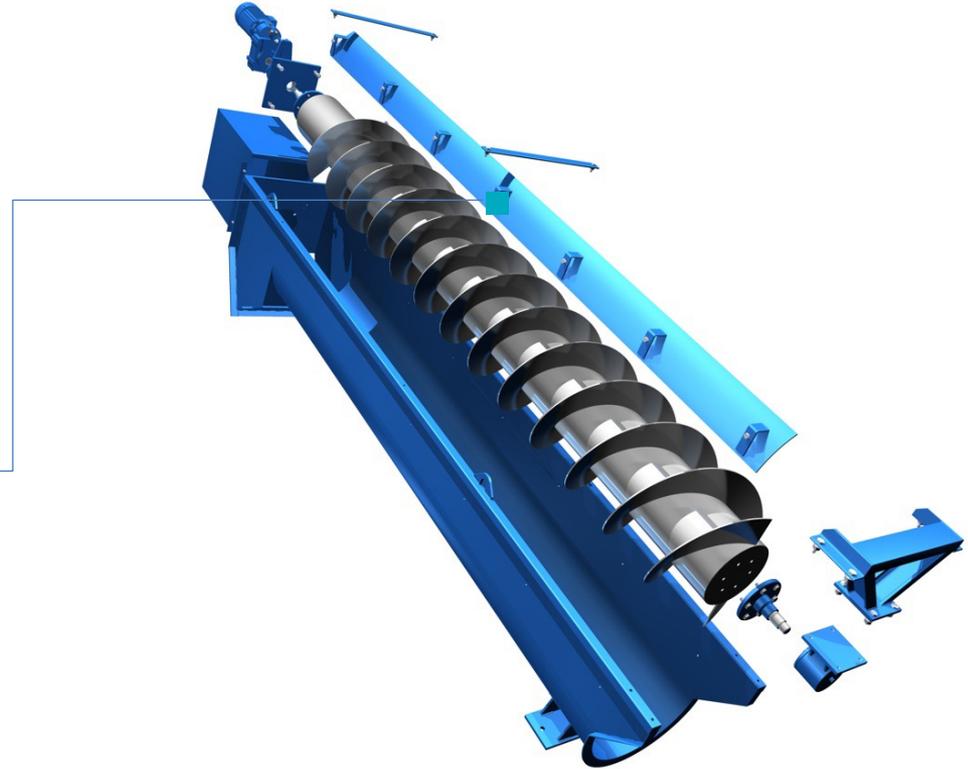
# Self-supporting concrete trough

## Compact

The compact design comes out of the factory as one piece. The screw, trough, bearings and drive unit are all assembled in a monobloc. This allows for a very high level of precision during assembly in the factory. The entire construction is then installed onto anchor screws on site.

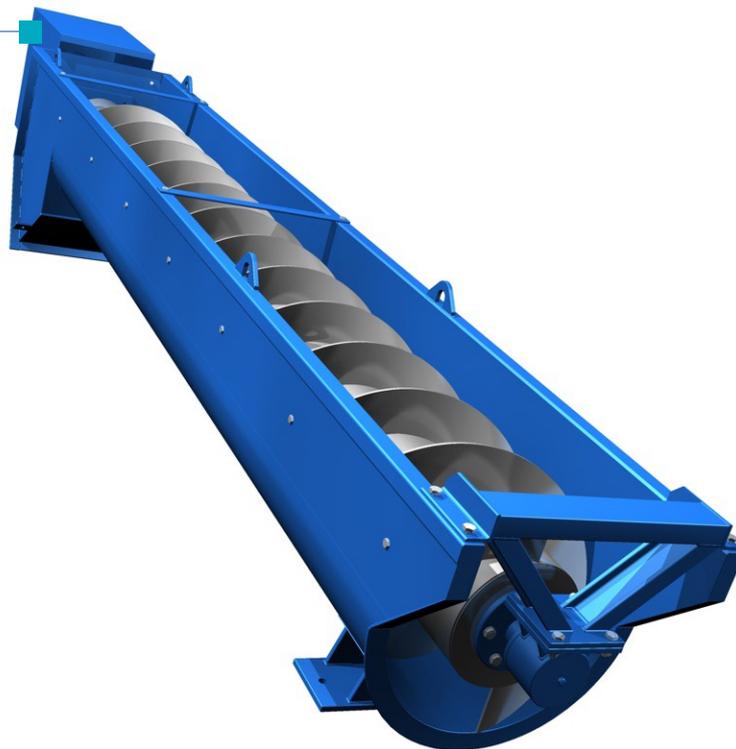
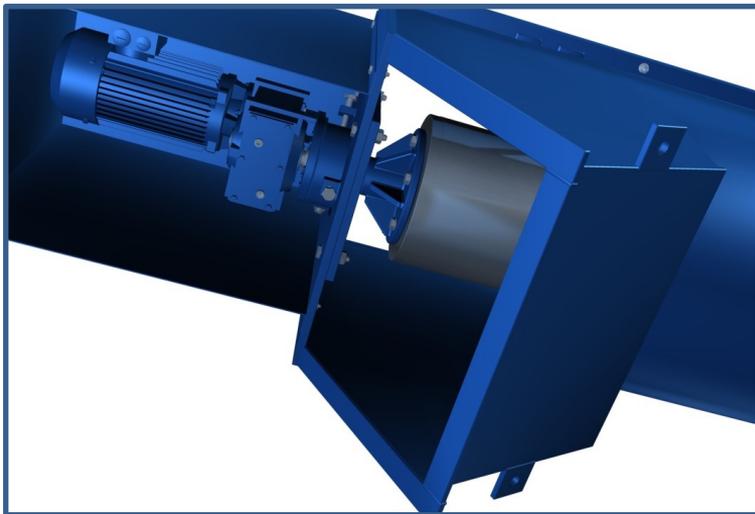
## Splash side plate

Both the self-supporting trough and groutable trough come equipped with a curved splash side plate on one side.



## Drive unit

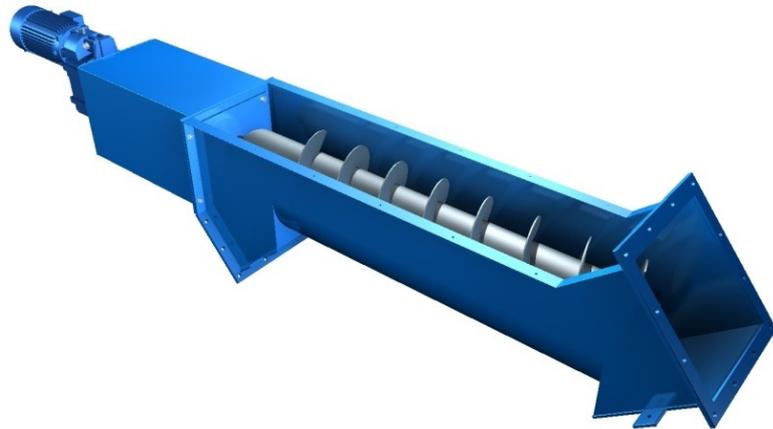
Directly connected to the screw. The gearbox cover provides protection from the outer environment.



# Monobloc SCL

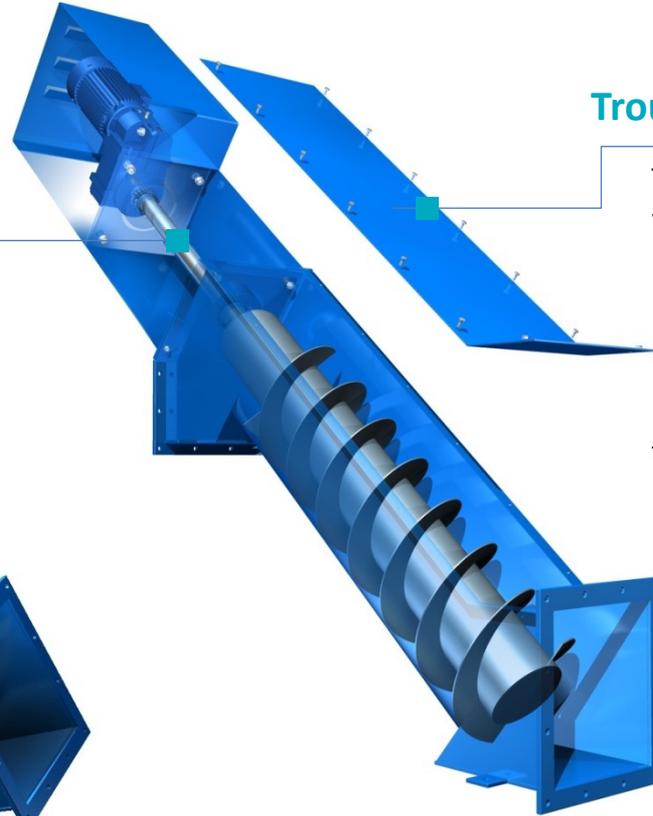
## with a loose-fitted screw

The SCL design accommodates for a loosely-fitted screw and does not require greasing of the lower bearing. The screw sits on two bearings in the upper part of the pump construction.



## Trough cover with tightening

The pump trough is equipped with a cover and rubber seals in order to ensure that no liquids manage to return to the inlet having entered the pump blades. The cover also reduces noise and serves as a safety feature.



# Technical data of the screw pumps we offer

Table of values for screws installed at 30°



Type of pump		SC 280	SC 410	SC 500	SC 600	SC 720	SC 880	SC 1050	SC 1280	SC 1550	Sc1850	SC 2250	SC 2500	SC 2800	Sc3000	SC 3300	SC 3500	SC 3800	
Max. lift head	$H_{\max}$	3,5	4,25	4,5	5,0	5,5	5,75	6,0	6,5	7,0	7,5	7,5	8,0	8,5	9,0	9,4	9,6	10,0	[m]
Inlet height	$H_s$	190	272	334	400	475	565	685	827	1030	1200	1415	1700	1900	2000	2200	2300	2500	[mm]
Outlet height	$H_v$	93	134	163	198	238	285	346	424	515	610	742	800	900	920	1000	1050	1100	[mm]
Useful output	$P_u$	0,3	1,2	2,0	3,3	5,7	10,2	16,2	28,7	48,1	80,9	125,1	165	225	282	369	433	549	[kW]
Max.output	$P_{\max}$	0,7	2,0	3,4	5,6	9,0	15	24	42	68	112	172	220	300	375	480	560	710	[kW]
Nominal flow	$Q_{\max}$	10	28	45	68	105	180	275	450	700	1 100	1 700	2 100	2 700	3 200	4 000	4 600	5 600	[l.s <sup>-1</sup> ]

# Technical data of the screw pumps we offer

Table of values for screws installed at 30°

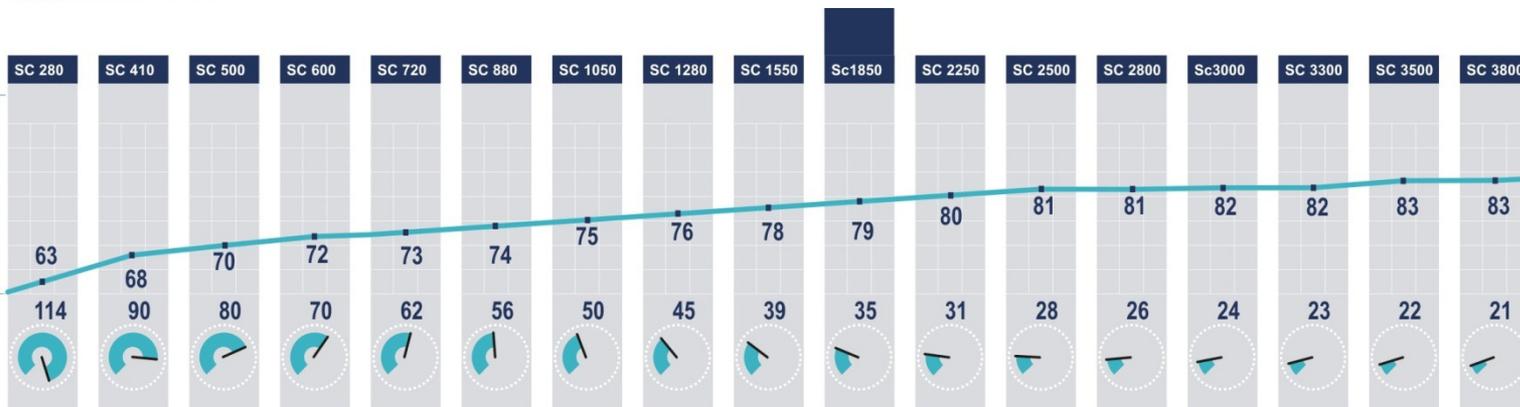


## Type of pump

Informative efficiency  $\eta$  [%]

Nominal flow

$n$  [ot.min<sup>-1</sup>]



# Advantages of screw pumps

- Capable of transporting both liquids and solids
- Work all year round irrespective of the source of liquids
- High efficiency with a sufficient amount of liquids
- Designed to work for a number of decades
- Simple maintenance
- Simple installation
- Low purchase and operating costs
- Do not harm fish

# References



ITALY ■ BULGARIA ■ IRAQ ■ RUSSIA ■ EGYPT ■ POLAND ■ LITHUANIA ■ SLOVAKIA

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**Thank you for your attention**



[www.gess.cz](http://www.gess.cz)