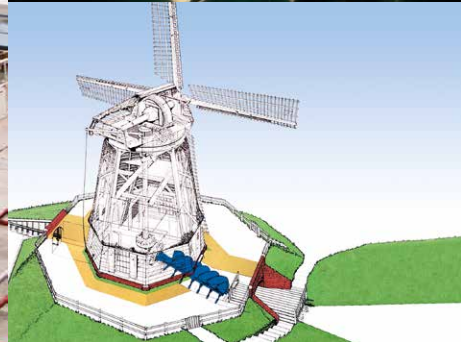




Archimedean Screw Pump



Spaans Babcock

Design



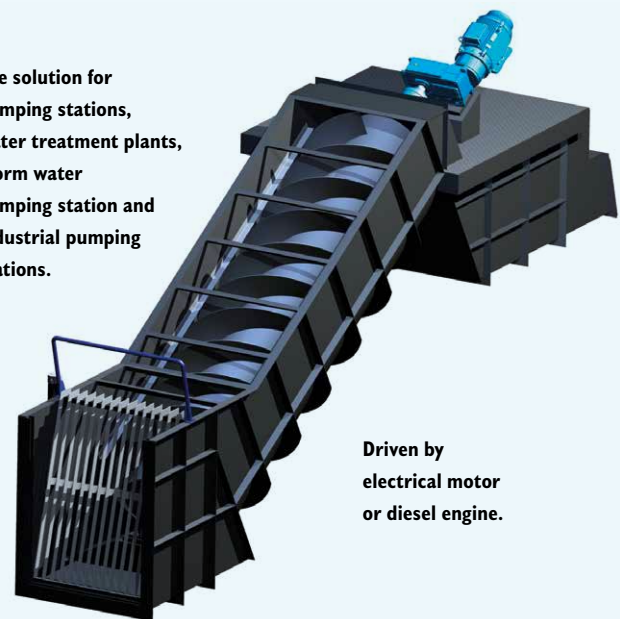
For more than 125 years Spaans Babcock has been known for being the world's largest high quality heavy duty Screw Pump and Screw Turbine manufacturer. The head office and modern factory is based in The Netherlands. Other products in the portfolio are Screens and Aerators for water & waste water treatment plants. Spaans Babcock operates worldwide through a network of subsidiaries, agents and distributors. The more than 2000 years old technology of the screw pump and the proven robustness is constantly improved and perfected by Spaans Babcock. The Spaans Babcock screw pump is probably the most efficient technology for low head with long lifetime and minimal operating costs.

Through our years of experience, we can provide our customers with durable, reliable and individual solutions and an environmentally friendly product.

Facts

- Made in The Netherlands
- 35,000 installed screws worldwide
- Extreme Environmentally and Maintenance friendly
- Capacities: up to 11,000 l/s
- Head: up to 12m per stage
- Inclination: 22° to 40°
- Diameter: up to 5 m
- Material: on request (St37, SS etc)
- High Efficiency design

The solution for pumping stations, water treatment plants, storm water pumping station and industrial pumping stations.



Driven by electrical motor or diesel engine.

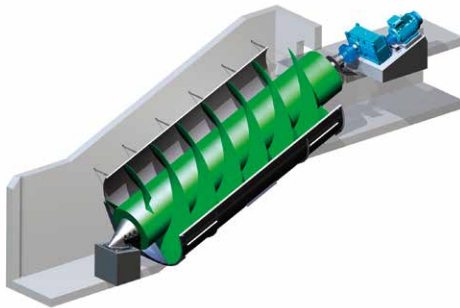
Applications

- Waste water treatment plant:
 - Influent water
 - Intermediate pumping
 - Effluent water
 - Return activated sludge (RAS)
- Irrigation PS
- Drainage PS
- Storm water PS
- Industrial process water
- Horizontal flushing pump
- Art, Amusement and white water park
- Fish friendly pumping stations



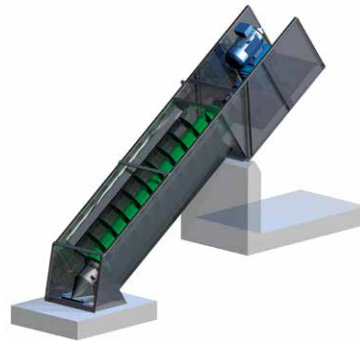
Steel trough

Utilising a steel trough, the lifetime of the trough will be extended compared to a concrete trough. This concept will ensure a perfect fit of the screw in the trough which gives a maximum efficiency. The steel trough is preassembled in our factory.



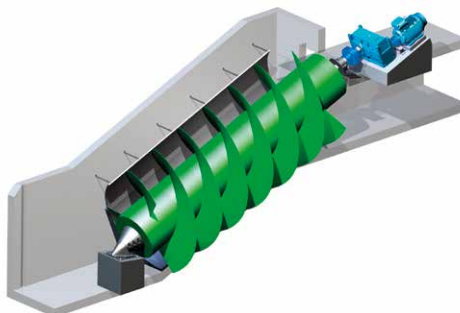
Compact & Semi Compact type

The compact type has a self supporting trough with integrated drive unit. The semi compact type has the drive unit in a machine room. It is a very simple installation and with low civil costs. The complete unit is preassembled in our factory.



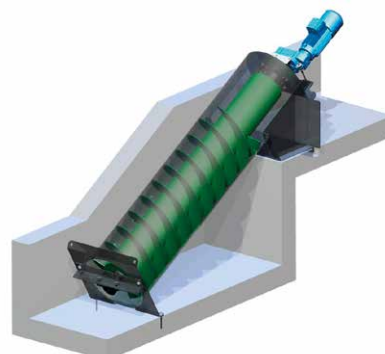
Concrete trough

For this type the concrete trough will be screeded in by the screw pump itself.



Tube Screw

Similar advantages as the compact type but fully enclosed and preassembled in our factory.





Advantages

Advantages:

- **Reduced operational costs**
- **Increased asset availability**
- **Minimized maintenance costs**
- **Schedule maintenance at convenient times**

1 Lifetime

The Spaans Babcock Screw Pump is robust, extremely reliable and has a long life time.

The Spaans Babcock Screw Pump consists of only a few wear parts. The low rotation speed results in extremely low wear and very low maintenance costs. A lifetime exceeding 30 years is not an exception, whereas the efficiency stays constant over the years.

2 Low Head

The Screw Pump is especially suitable for low heads. This may go up to 12 m for a single stage, or 24 m for a two stage installation.

3 Gentle operation

Due to the low speed a gentle pumping process occurs, which has no impact on sedimentation or Flocculation and facilitates the ability of the clarification of waste water.

4 Costs

The Screw Pump does not need any grease pump for lubrication of the bottom bearing due to our ECO-bearing which reduces the operational costs (electricity, material and maintenance) and improves the efficiency. The ECO-Bearing, an original design of Spaans Babcock, is a proven technology for more than a decade.

5 Free passage

Large solid particles, such as plastic, wood or small stones, can pass through the Screw Pump, without having any effect on the Screw Pump or its efficiency.

Therefore the intake screen can be positioned after the screw pump rather than before it.

6 Maintenance

The Spaans Babcock screw pump requires little maintenance and doesn't need highly skilled operators.

7 Fish and Environment friendly

Several tests have demonstrated the fish friendliness of the Screw Pump.

The Screw Pump can also be used as a fish ladder by pumping the fish.

The use of our ECO bearing ensures no grease will enter the water.

8 High Efficiency

The Spaans Babcock screw pumps have high efficiencies.

The graph illustrates the flat efficiency curve for a wide operational range. This results in significant energy cost savings and even more in combination with frequency drive which facilitates a smooth operation.



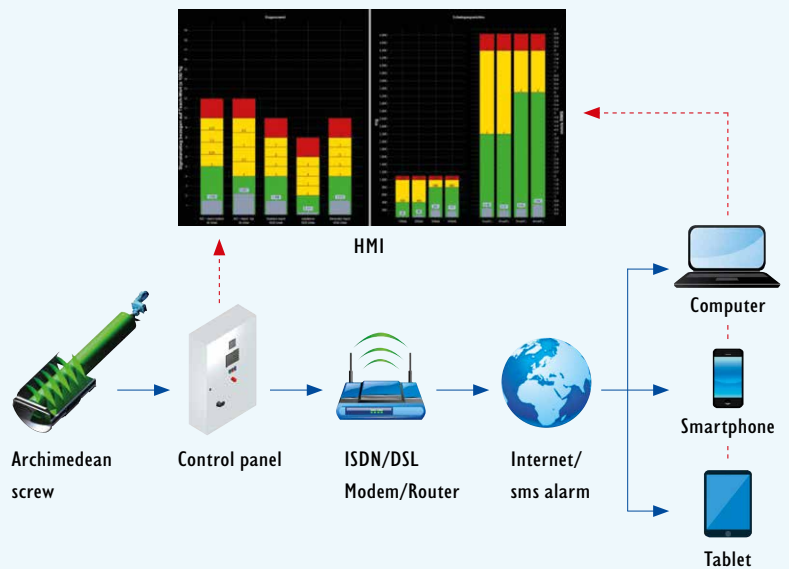
9 Cleaning

Cleaning of the screw pump is not needed.
The machine is self-cleaning.
Dirt does not cause a loss of efficiency.

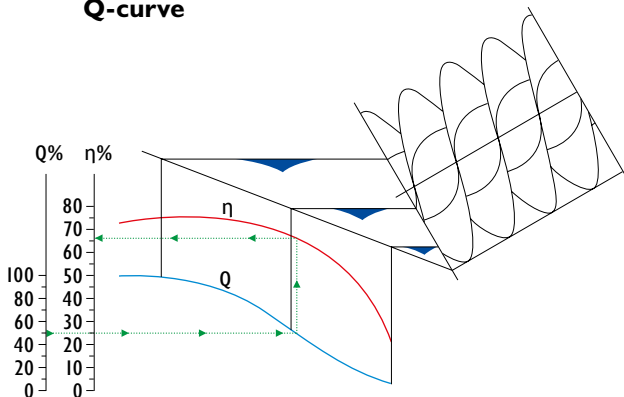
Condition Monitoring (CM)

To improve the up-time of the machine
Spaans Babcock can offer a reliable condition monitoring system which is also suitable for low speed. This CM system gives the actual information about the status of the bearings of the screw and the drive unit. Beside continuous monitoring, Spaans Babcock has also possibilities for non-continuous monitoring.

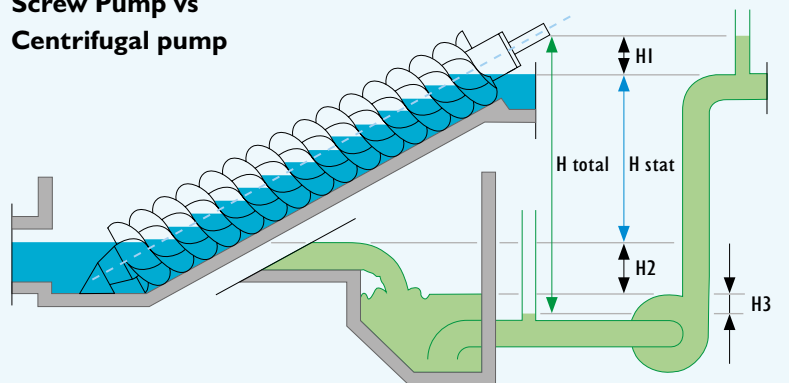
Remote Monitoring diagram



Q-curve



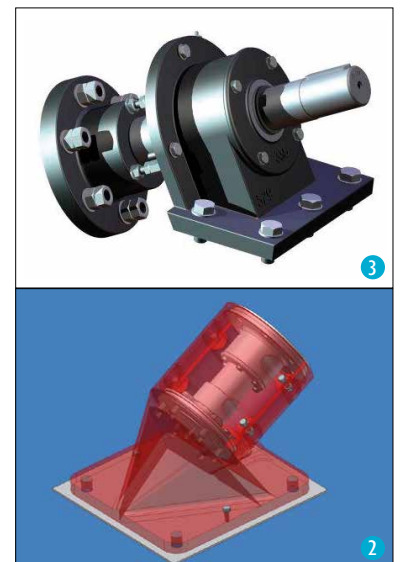
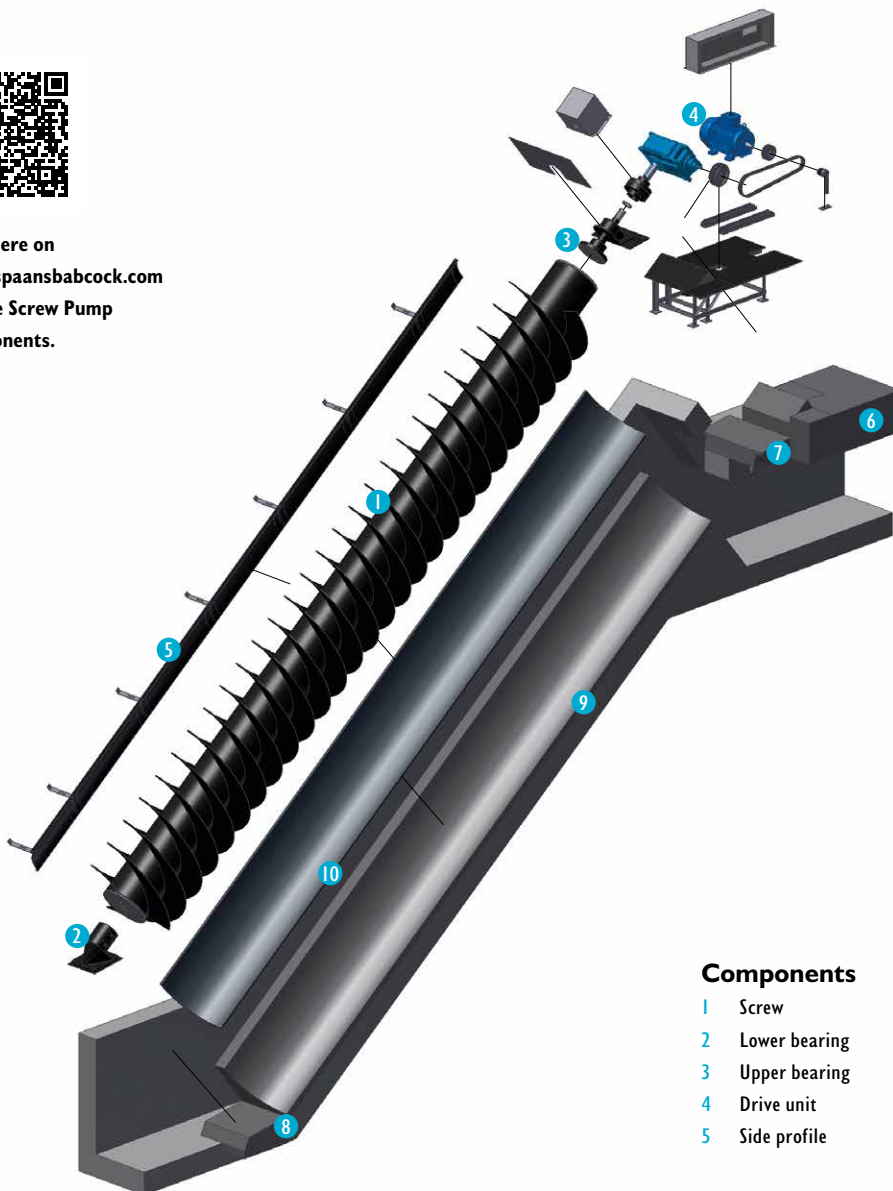
Screw Pump vs Centrifugal pump



Design Parameters

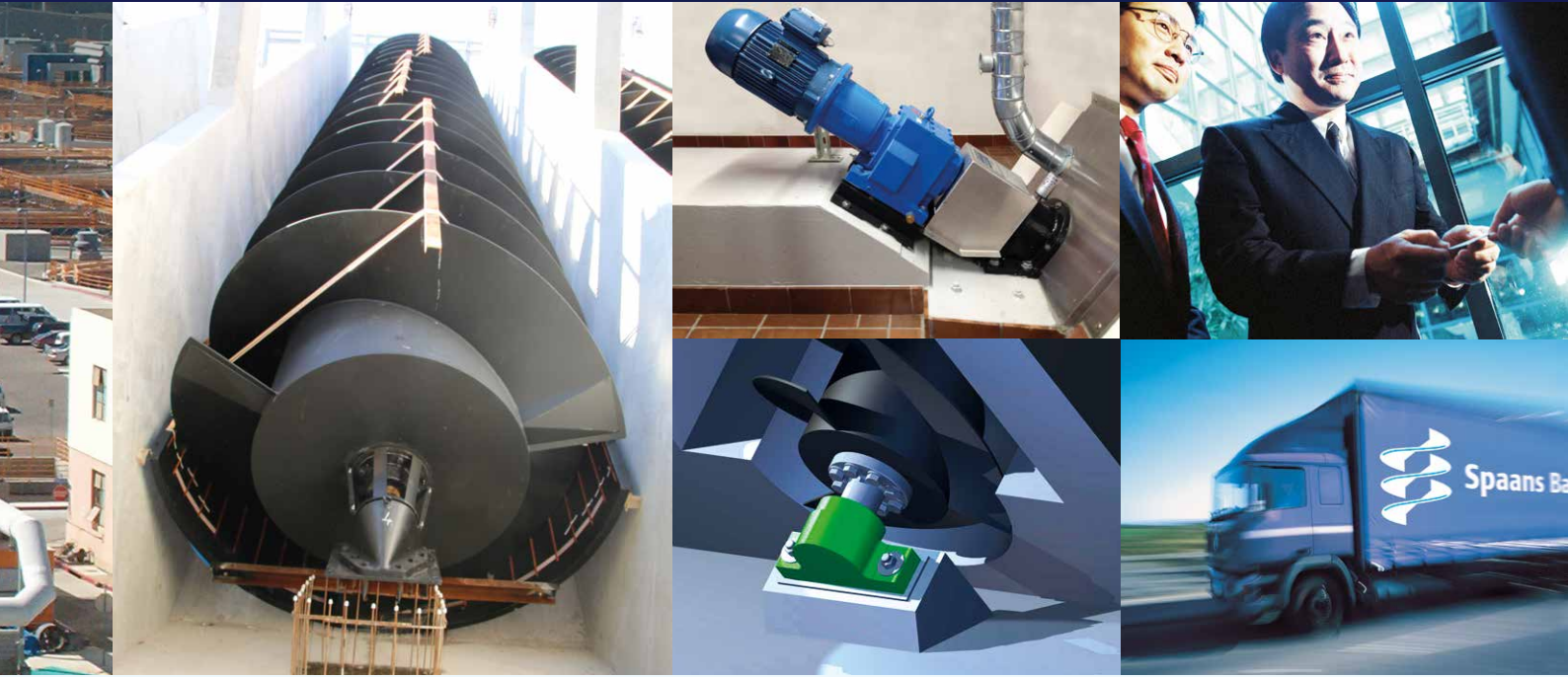


View here on
www.spaansbabcock.com
 for the Screw Pump
 components.

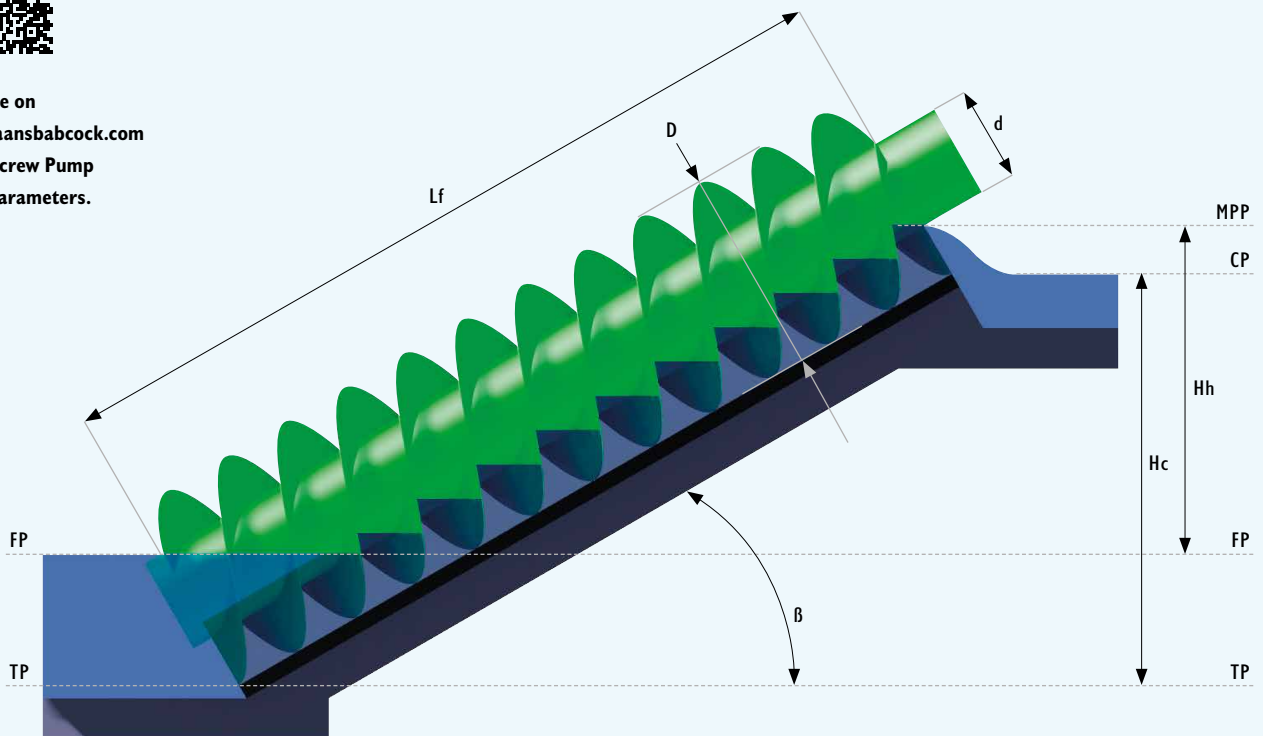


Components

- | | | | |
|---|---------------|----|---------------------------------------|
| 1 | Screw | 6 | Concrete foundation for drive unit |
| 2 | Lower bearing | 7 | Concrete foundation for upper bearing |
| 3 | Upper bearing | 8 | Concrete foundation for lower bearing |
| 4 | Drive unit | 9 | Rough formed trough |
| 5 | Side profile | 10 | Final screed |



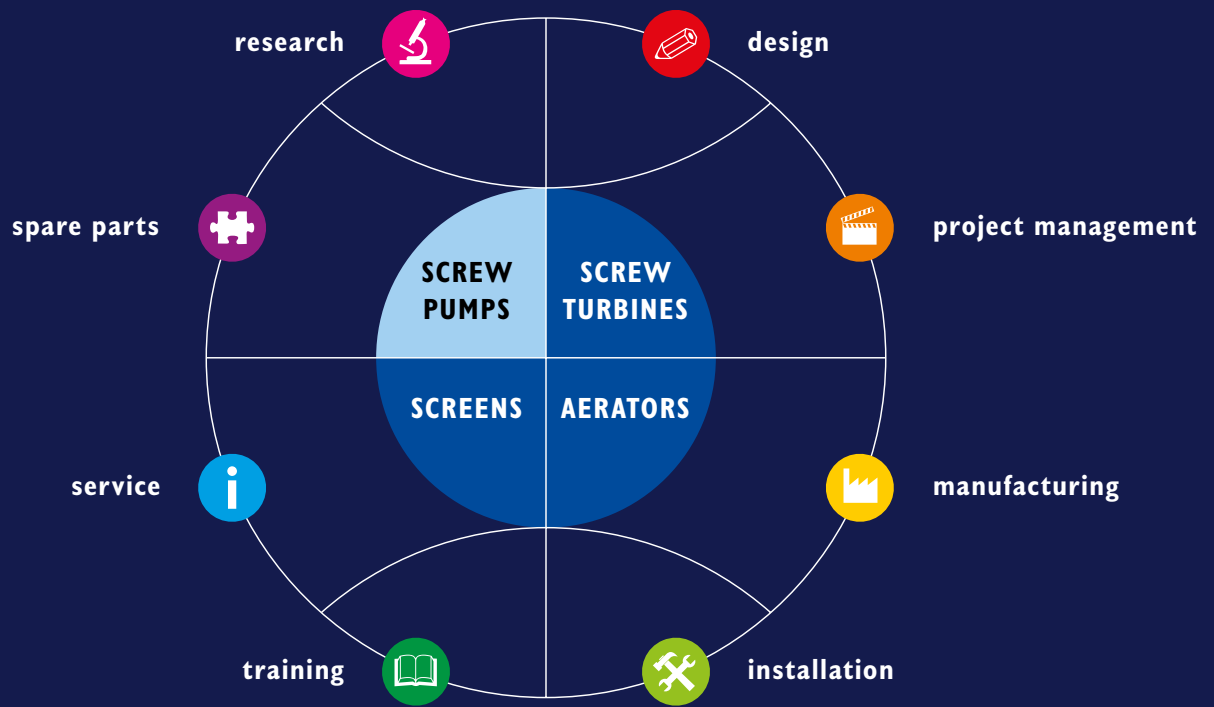
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 design parameters.



List of abbreviations

- TP Touch point: capacity 0%
- FP Filling point: capacity 100%
- CP Chute point: invert of trough at outlet
- MPP Maximum pumping point
- Lf Blade length

- D Diameter screw pump
- d Diameter centre tube
- β Angle of inclination
- Hh Effective lift
- Hc CP - TP



Spaans Babcock bv - Head office and production facilities

P.O. Box 79 - 8560 AB Balk - The Netherlands | Meerweg 26 - 8561 AV Balk - The Netherlands | www.spaansbabcock.com

T +31 (0)514 60 82 82 | F +31 (0)514 60 44 85 | info@spaansbabcock.com