

An aerial photograph of the Chicago skyline, featuring numerous skyscrapers and modern buildings. The Chicago River flows through the city, with a prominent dam structure in the foreground. Several boats are visible on the water, and a highway bridge crosses the river. The sky is clear and blue.

PLEUGER INDUSTRIES

Pleuger Solutions for
the Water Industries

PLEUGER INDUSTRIES

Since 1929, Pleuger Industries have developed and manufactured pumping solutions to the water industry's highest standards. We guarantee that our submersible motor pumps, reciprocating pumps and marine propulsion systems perform safely and efficiently, even under extreme conditions.

When Friedrich Wilhelm Pleuger patented his first submersible pump 90 years ago, it broke new ground. The water-filled motor, which could pump water from great depths and narrow wells, was used in the construction of the Berlin subway in the 1920s. Pleuger's Hamburg-based company has since specialised in built-for-purpose products that continue to draw upon his pioneering designs.

Companies worldwide use Pleuger's submersible pumps in multiple applications within the water, marine & offshore, oil & gas and mining industries. Thousands of ships and platforms apply Pleuger Industries' pumps and manoeuvring systems. Whatever your request, we deliver cost-effective solutions that minimise risk and optimise return over an operation's lifecycle.



Our best-known pump is a landmark attraction in Hamburg: The stunning Alster Fountain. Our permanent magnet motor is both economically and ecologically friendly, and as it can jet water to a height of over 60 m, it never trades performance for efficiency.

OUR COMMITMENT TO ENGINEERING AND DESIGN IN THE WATER INDUSTRY

The Pleuger name can be found in water suppliers, offshore and seawater desalination plants, refineries and district heating systems. Our 90-year history has taught us that every project has its particular features, and our team of experienced engineers listen to every need.

Integrity, respect and teamwork drive our offer at every stage of development. Our insistence on smart investments into research and personnel makes us a dependable business partner for all project demands. Pleuger's Centre of Excellence at our Hamburg headquarters devotes time to all divisions of the company, fostering an atmosphere of collaboration. Such communication ensures that our end-to-end offer keeps lifecycle costs low and value high. Pleuger guarantees a thorough after-sales service with our network of global partners, meaning we can come to you, wherever you are based.

We are also dedicated to environmental sustainability. Our permanent magnet motors increase efficiency up to 14% points, reducing CO2 emissions. After we fitted the Alster Fountain with this technology, we cut Hamburg's annual electricity costs by around 10,000 euros.

- 90+ years of experience
- Worldwide reach
- Quality engineering from Germany
- Sustainable, durable and maintenance-free solutions
- 6 MW (8,046 HP) design capability
- Committed aftercare

A BOOST TO URBAN AND MUNICIPAL WATER SUPPLIES

Water is a basic need for public health and safety, and yet many countries cannot adequately provide water to their human settlements. The World Health Organization notes that economic losses due to inadequate water and sanitation cost \$260 billion per year. These issues make water supply a crucial strategic challenge for community leaders.

Pleuger Industries has extensive knowledge in this sector and is a leading provider of submersible pumps for water supply. The French metropolis of Montpellier already uses Pleuger-developed deep well pumps to supply drinking water to its 400,000 citizens.

We guarantee a safe and cost-effective water supply through pumps designed to withstand time and wear. Choose from our broad range of bore well pumps, bottom intake pumps and booster pumps – available in standard and customised designs.

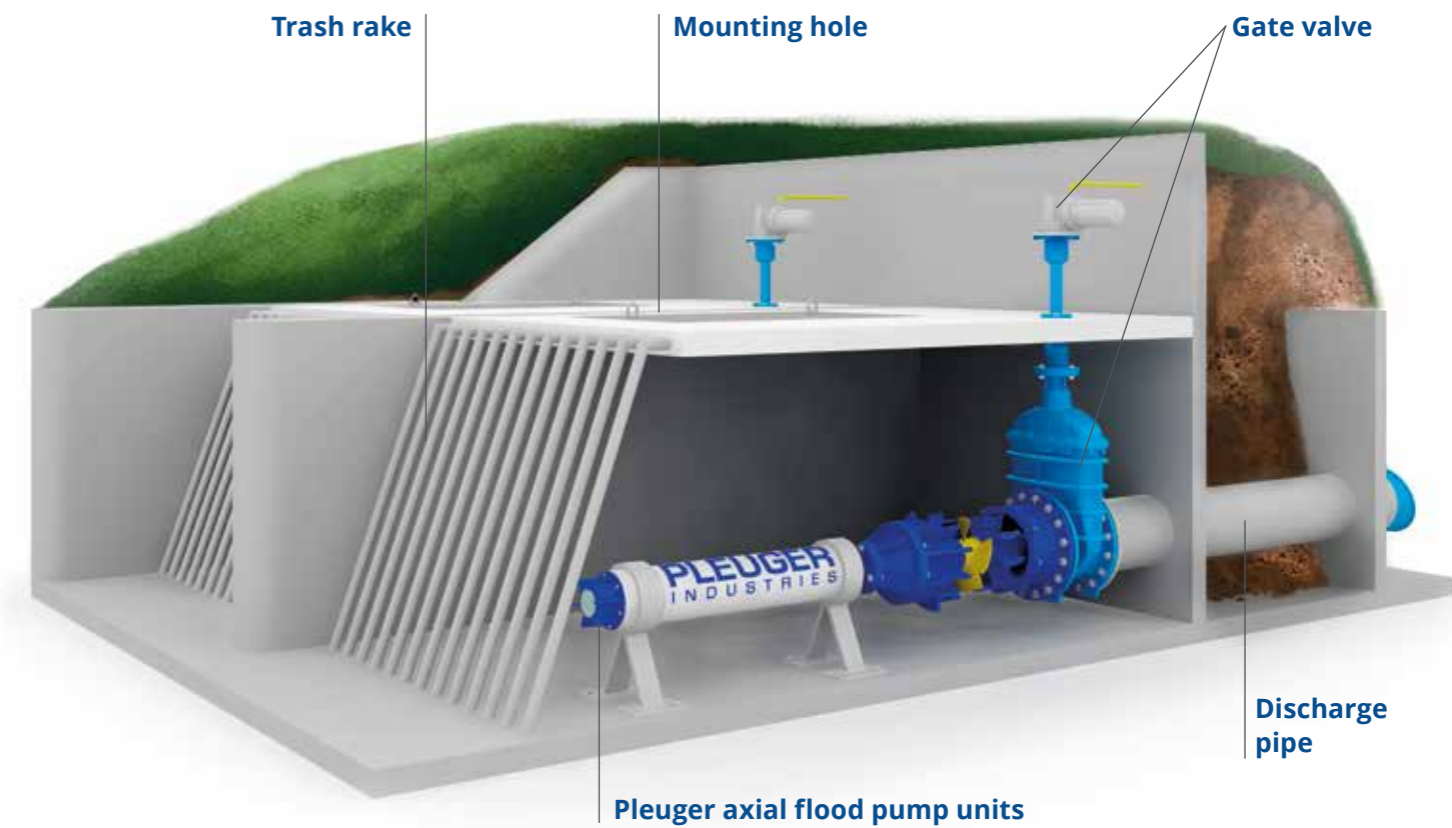


FIRST DEFENCE AGAINST FLOODING

Floods are some of the most common and devastating natural hazards, especially for communities in coastal and low-lying regions. Recent changes in rainfall patterns make protection against flooding a key concern for many at-risk communities.

Pleuger Industries' pumps play a central role in flood protection and drainage in projects across the globe. We offer both standard and engineered pumping station units that meet your specifications. Choose from our single- or multi-stage pumps with axial hydraulic designs and water-filled motors, which pump large volumes of water at low pressure.

We maintain the highest standards for environmental protection and ensure that our solutions leave the landscape untouched.



A typical pumping station with horizontal Pleuger flood pump units

Main advantages:

- Cost-effective and maintenance-free
- Durable and reliable
- Environmentally friendly design
- Flood-proof
- Flow rates from 100 m³/h to 90,000 m³/h (440 to 396,258 USGPM)

Applications

- Coastal protection
- Flood protection
- Lowland drainage
- Dry docks
- River-flow control
- Cooling and process water
- Agricultural irrigation

EFFICIENT TOOLS FOR AGRICULTURAL IRRIGATION AND DRAINAGE

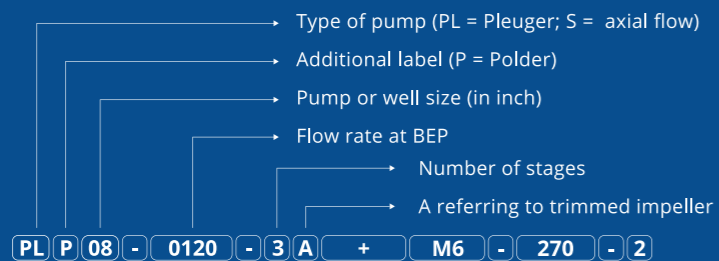
As worldwide competition for water escalates, the economic draws of irrigation are clear. However, the processes can be costly, labour-intensive and damaging to the environment, especially when companies use unsuitable tools.

The key to irrigation efficiency is fit-for-purpose equipment. Our durable pumps are specially designed for narrow deep wells, which make them the smart solution for irrigation and drainage. Pleuger's permanent magnet motor is up to 14% points more efficient than conventional induction motors. Since 90% of a submersible motor pump's lifecycle costs are directly related to power consumption, our technology saves agricultural companies energy, time and money.

Applications

- Irrigating farms
- Irrigating recreation sites
- Drainage of various sites

The ID-Codes on each of Pleuger's submersible pumps help you select a unit for your specifications:



Please note: No trim for axial flow impellers

Motor type and size (here: 6 inch)
 Length of lamination (here: 270 mm/10.36 inch)
 Number of poles (here: 2)



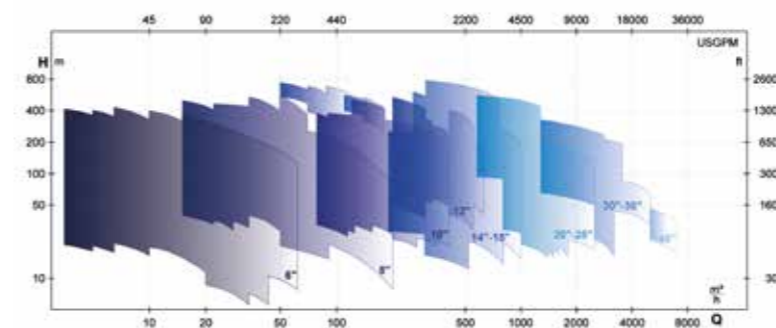
PLEUGER INDUSTRIES' SUBMERSIBLE PUMP SOLUTIONS

Our pumps come in sizes from 4" to 40". Pleuger's single- and multi-stage pumps fit every specification, and the water industry recognises them as reliable, efficient and durable units.

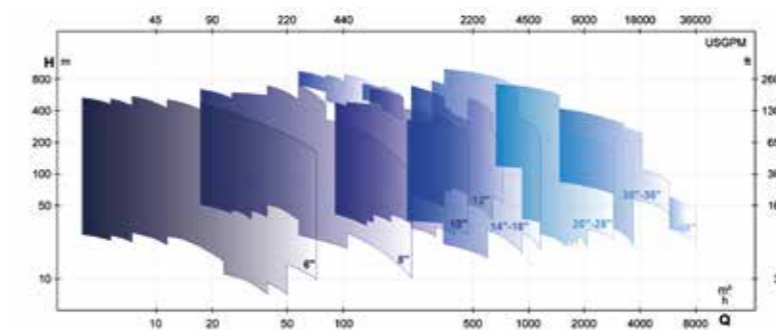
Pleuger's engineers tirelessly work to design pumps that perform reliably and safely across a range of water applications. To ensure that our offer fits every need we use a variety of materials, from cast iron, bronze and NiAlBz, to stainless steel 316 and super duplex stainless steel.

- Highly efficient motors and pump hydraulics
- Maintenance-free and reliable
- Cost-effective lifecycle
- Drinking water safe
- Space-efficient installation in wells
- Flood-proof
- Safe against freezing
- Reduced noise and vibration
- Range of material grades
- Optional installation accessories
- Optional permanent magnet motor (PMM) technology

Working ranges of PLEUGER submersible pumps (50 Hz), radial & semi-axial impeller

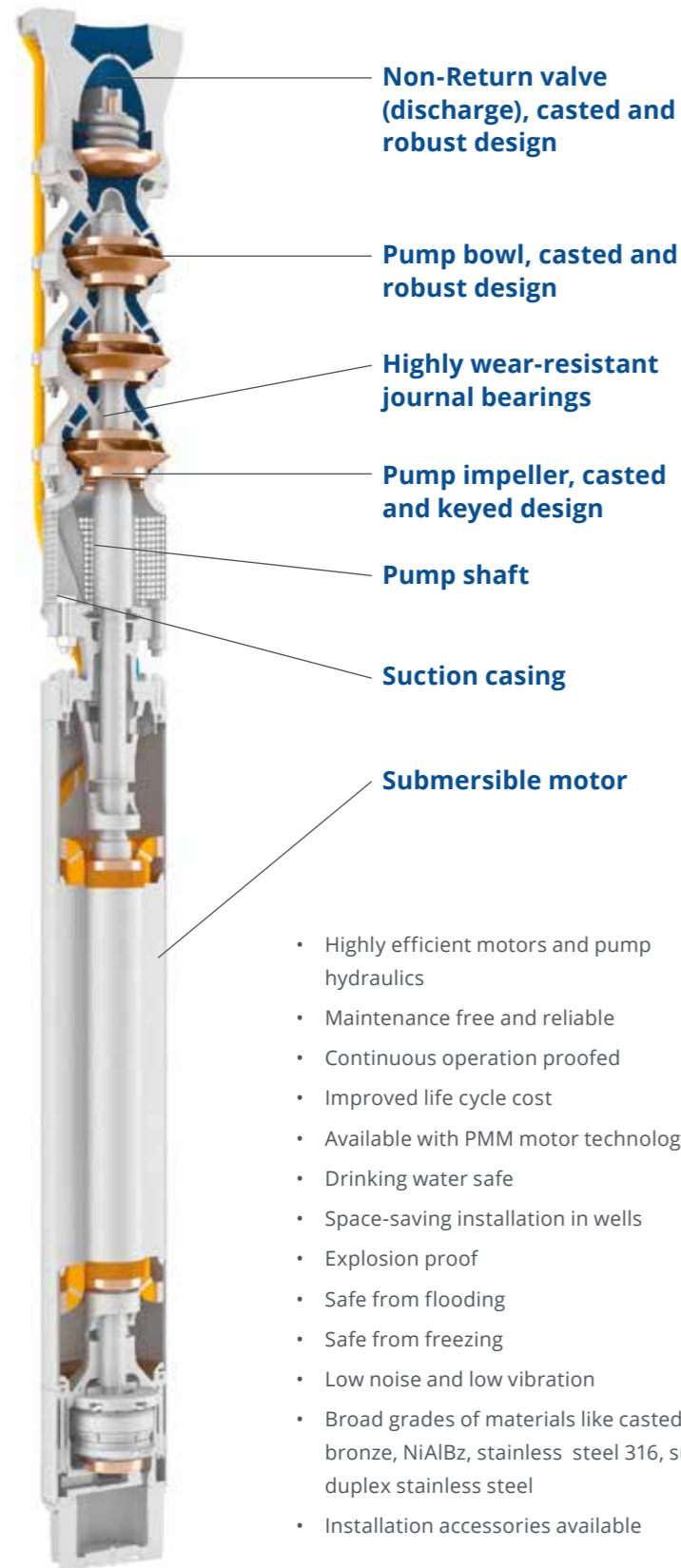


Working ranges of PLEUGER submersible pumps (60 Hz), radial & semi-axial impeller



DEEP WELL OR BORE WELL SUBMERSIBLE PUMP UNITS

Our single- and multi-stage centrifugal pumps use either standard water-filled motors or oil-filled motors on request. For these middle intake pump units, we assemble the suction in-between the motor (below) and the hydraulic (above). Motor sizes are available from 4" to 50".



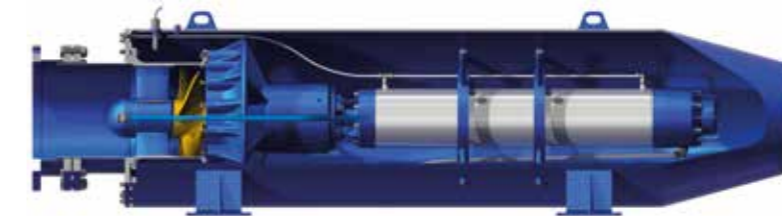
Bottom Intake Pump

Our single and multi-stage centrifugal bottom intake pumps use water-filled motors. We place the motor above the pump and the intake in the unit's lower part, so the pump continues to operate even when the water line reaches low levels. Use these pumps for vertical or inclined installation – we can customise any one of them to fit your specifications.



Booster Pump

The casings on our booster pump units double up as pressure shrouds. These can be integrated either horizontally or vertically into the pump system to increase pressure in the pipeline networks. Booster pumps come as standard or engineered units – call us for advice on the best solution for your project.

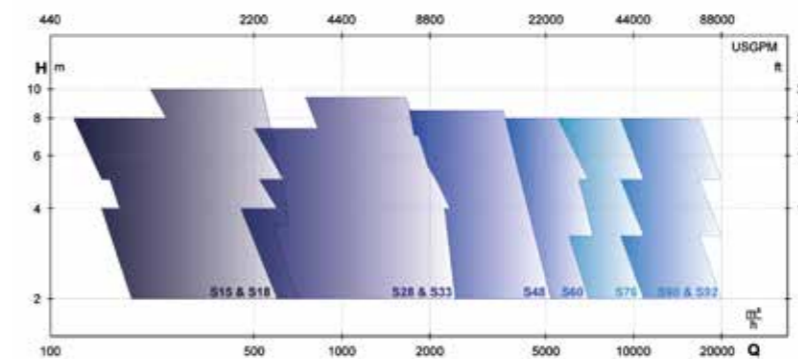


Flood Pump

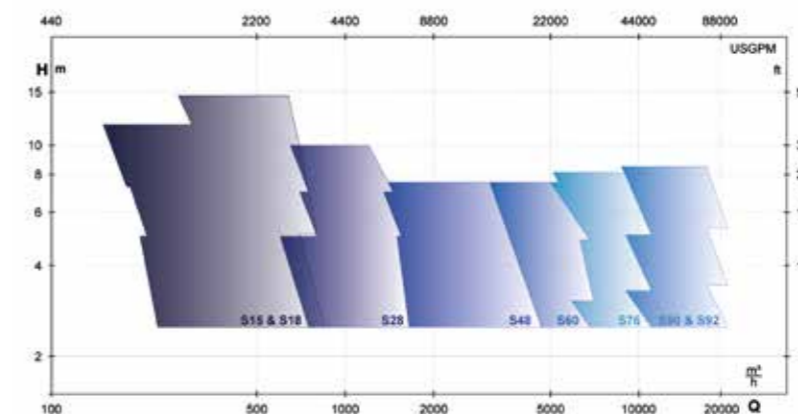
Our single- and multi-stage flood pumps operate with axial hydraulic designs and water-filled motors. These units are designed to process large volumes of water at low pressures. They can cover flow rates from 100 m³/h to 90,000 m³/h (440 USGPM to 396,258 USGPM).



Working ranges of PLEUGER submersible pumps (50 Hz), axial propeller



Working ranges of PLEUGER submersible pumps (60 Hz), axial propeller



A CORE COMPETENCE IN MOTOR TECHNOLOGY



Customized Engineered Motor Solutions

Pleuger is a well-known manufacturer of high-quality submersible motors with customized and engineered motor solutions. High efficiency, customized corrosion protection, an extended power range manufactured to the highest quality standards in Germany – that's what Pleuger's unique motor design is known for.

Technical Specifications:

- Water-filled motors as standard
- Oil-filled motors on request
- Sizes: 4 to 50 inch
- Power output: 0.37 kW to 5 MW (0.5 HP to 6,700 HP)
- 230V to 6.6kV
- 3PH - 50Hz & 60Hz
- 2 pole (standard) to 12 pole available
- Suitable for VFD operation
- Operating temperature up to 100°C (212°F)

Standards:

- Design Standards: ANSI / ASTM / DIN / ISO / Hydraulic Institute / CE marking / API 610
- Hydraulic Standards: ANSI/HI / EN ISO / API610 / NFPA20
- Electrical Standards: NEMA / IEC / IEEE
- Certifications: DNV GL / ABS / CSA / ATEX
- Approvals: ISO 9001

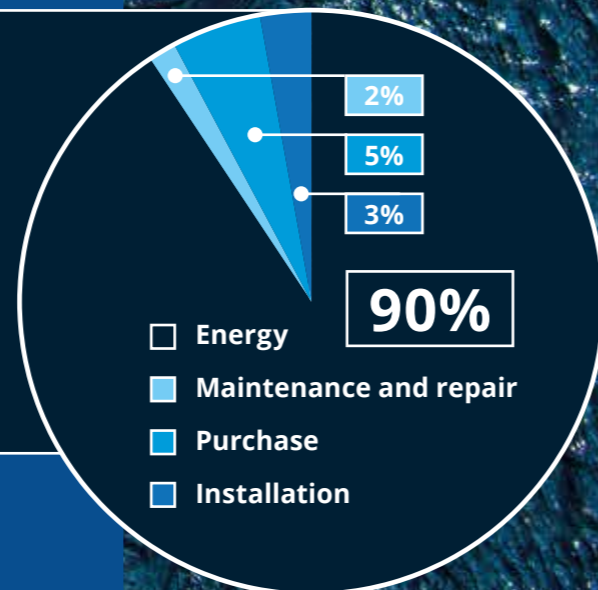
Life Cycle Cost Solutions

Typically, 90% of the total life cycle cost (LCC) of a pumping system is accumulated after the equipment is purchased and installed.

Pleuger has created an extensive suite of solutions to provide unprecedented value and cost savings to customers throughout the life span of the pumping system.

These solutions account for every facet of the life cycle, including capital and operating costs.

Perfect fit for our Permanent Magnet Motor technology (PMM) and highly efficient hydraulics



MOTOR FEATURES AND BENEFITS - ROBUST DESIGN TO MINIMIZE LIFE CYCLE COST

Flat or Round Cable

Space-saving cable design for installation with limited space

NEMA Flange Connection

Offers easy connection to standard hydraulics

Motor Housing

Robustly designed cast housing ensures reliable strength, stiffness, corrosion resistance and durability

Induction Motor: Squirrel Cage Rotor for Asynchronous Motor

or

Permanent Magnet Motor: Rotor equipped with Permanent Magnets for Synchronous Motor

- Up to 14 % points higher motor efficiency compared to asynchronous motors, mainly due to no copper losses
- Hermetic encapsulated rotor ensures protection of magnets against corrosion and mechanical damage
- Up to 200 kW (268 HP) available

Rewindable Winding

Provides maintenance cost savings, PE insulation as standard

Rubber Diaphragm

Guarantees pressure and volume compensation of liquid inside and outside the motor to extend mechanical seal and O-ring service life

Signal Cable (optional)

Used with temperature sensor PT100 for monitoring motor temperature

Motor Shaft End

Standard duplex stainless-steel construction provides the best combination of corrosion resistance, mechanical strength and stiffness. Special materials available on request

Mechanical Seal

High-grade SIC/SIC/Viton® as standard ensures wear resistance and maintenance-free operation

Stator Tube

Standard 316 stainless-steel construction offers excellent corrosion resistance over the service life. Special materials available on request

Motor Filling

Prefilled and tested with water/glycol mixture or potable water on request

Thrust Bearing

Heavy-duty, maintenance-free design to ensure extraordinary lifetime of motor, developed by Pleuger





DESALINATION - PUMPS FOR DRINKABLE WATER

The global demand for water is a critical environmental and social issue. The Food and Agriculture Organization estimates that nearly 2 billion people will not have enough drinking water by 2025. Much of this is due to freshwater shortages, environmental change, desertification and habitat destruction.

Desalination can generate enough potable water to support populations with either drinking water or service water. We are proud of our achievements in creating robust, energy-efficient pumps for offshore applications. Pleuger's borehole, beach well and booster pumps are reliable, cost-effective units for any organisation in the business of producing drinkable water.

Desalination pumps must also be able to withstand constant use. Our new Permanent Magnet Motors (PMM) use a water-filled motor and are durable, maintenance-free products that save considerable lifecycle costs.



GENERAL INDUSTRY

Industrial processes need reliable and uninterrupted water supplies – when pumps fail, production grinds to a halt. Pleuger's installations for the general industry are hardworking solutions that can withstand the stress and strain of constant use. Our submersible pumps need no maintenance, and they have a service life of 30+ years.

For every need, we have a solution. Our team researches and recommends materials to ensure resistance to corrosive or high-temperature water. We respond to challenges across the globe - whether designing special pumps for cooling or process applications in the metal, alloy or copper industry, our experienced engineers have the solution.

Examples for water process applications:

- Water supply
- Cooling water
- Processing plants
- Firefighting



HOT WATER APPLICATIONS AND GEOTHERMAL ENERGY

We can find geothermal energy in many places, from shallow ground to magma in the Earth's crust. Tapping these natural reservoirs of hot water enable us to save energy, heat buildings and grow greenhouse plants. To guarantee operation even in extreme conditions, our portfolio of submersible pumps for hot water applications use a range of high-grade materials. Our hot water submersible pumps are an efficient solution and have heated homes in the Netherlands, Slovenia and Iceland as part of district heating projects.

Applications

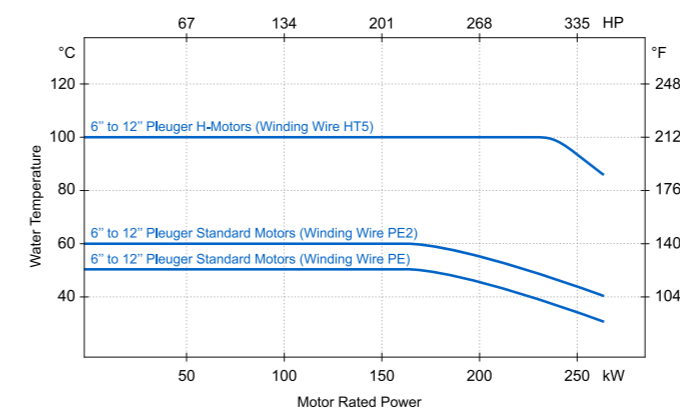
- District heating
- Geothermal energy
- All-weather greenhouse energy
- Cooling water and process pumps
- Thermal spas

Technical Data

- Up to 270 kW (362 HP) / 200 to 1000V / 3PH ~/ 50Hz or 60Hz / 2 pole
- Motor sizes 6" to 12"
- Starting method DOL, Star-Delta (on request)

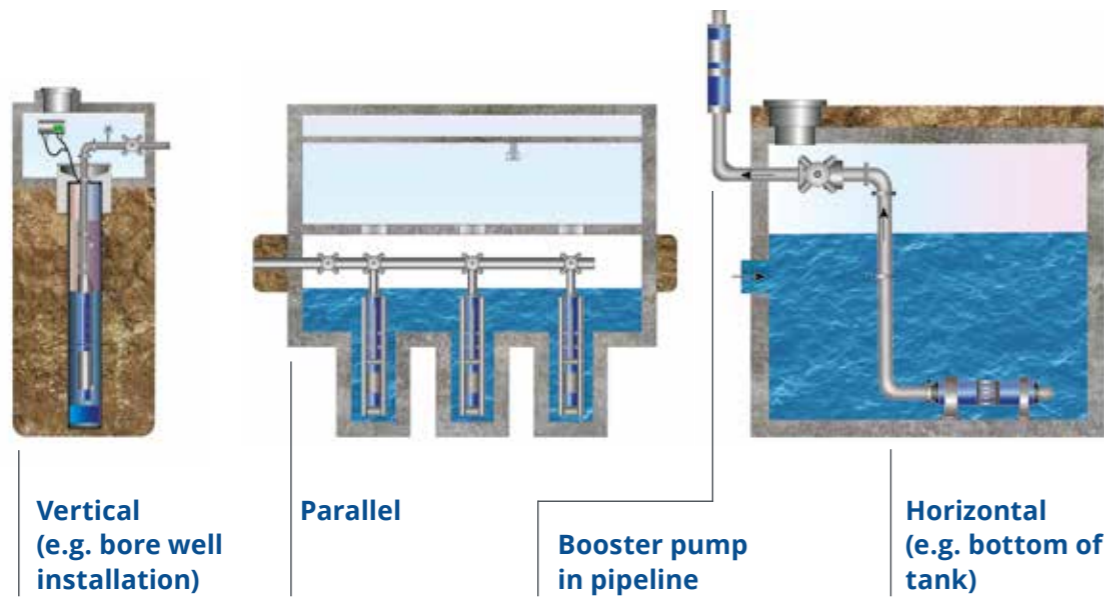
Features

- 235 kW (315 HP) up to 100°C (212°F) water temperature
- 270 kW (362 HP) up to 85°C (185°F) water temperature
- Rewindable submersible motor



INSTALLATION OPTIONS

With various installation options, Pleuger Industries' pump units are the ideal solution for almost any application in the water industry.



Vertical
(e.g. bore well installation)

Parallel

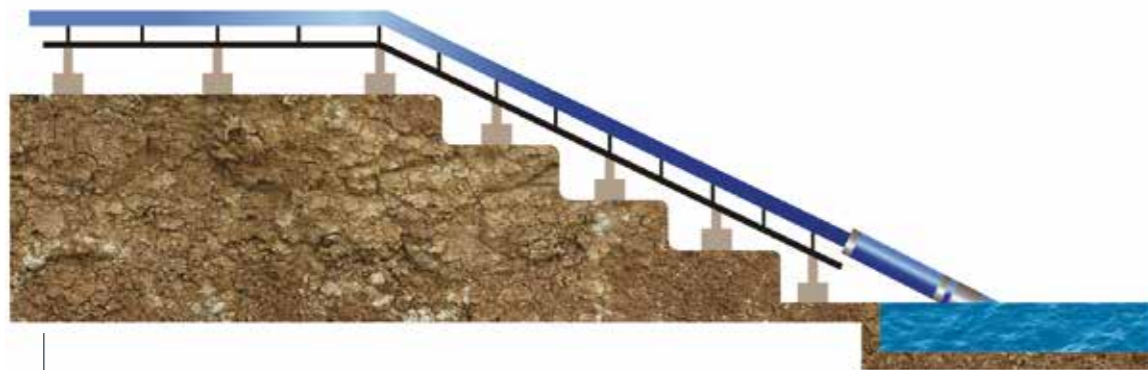
Booster pump
in pipeline

Horizontal
(e.g. bottom of tank)

Inclined pumps for processing and cooling water applications

Pleuger's inclined pumps are a cost-effective alternative to vertical turbine pumps (VTP). By removing the need for shaft support structures and operation buildings, they slash maintenance costs and save our

clients considerable time and money. We can mount submersible pump motor units at any angle on a rail system or intake caisson.



Incline
(e.g. water extraction from a river)

PLEUGER'S END-TO-END SOLUTIONS

Pleuger Industries have multiple factory buildings and test facilities in Hamburg, Germany. The detail we provide at every stage of our production is just one of the many reasons why our customers return to us time and time again. We are dedicated to meeting the test criteria for each unit in our product portfolio. Since 1951, we have carried out all our production onsite, from the first planning sketches to our final quality tests.

PLEUGER INDUSTRIES' SHOP FACILITIES

Size:

Site:	40,878 m ² (440,007 ft ²)
Workshop:	16,990 m ² (182,879 ft ²)
Offices:	4,026 m ² (43,336 ft ²)

Packing and dispatch facilities:

Packing facilities:	4.5 x 4.5 x 20 m (14.7 x 14.7 x 65.6 ft), up to 40 tonnes (44 US tonnes)
Dispatch facilities:	Road connection; rail and water in town

Building bay and crane data:

BAY DIMENSION	TYPE	NUMBER	CAPACITY OF CRANES	HEIGHT UNDER HOOK
20 metres (65.5 ft)	ABUS	2	20 tonnes (22 US tonnes)	6.50 m (21.3 ft) electr.
20 metres (65.5 ft)	ABUS	2	10 tonnes (11 US tonnes)	6.50 m (21.3 ft) electr.
16 metres (52.5 ft)	DEMAG	4	5 tonnes (5.5 US tonnes)	6.50 m (21.3 ft) electr.
16 metres (52.5 ft)	STAHL	1	16 tonnes (17.6 US tonnes)	6.50 m (21.3 ft) electr.

PLEUGER INDUSTRIES TEST FACILITIES

General voltage supply:

Voltage:	220 – 10,000 V at 50 Hz
	200 – 1,000 V at 60 Hz
Power supply:	1,500 kW (2,012 HP) at 50 Hz
	211 kW (283 HP) at 60 Hz

1 test-stand for submersible pumps, horizontal installation:

Maximum capacity:	40,000 m ³ /h (176,115 USGPM)
Maximum head:	60 m (197 ft)

1 test-stand for Plunger pumps and centrifugal pumps:

Maximum capacity:	1,200 m ³ /h (5,283 USGPM)
Maximum head:	4,000 m (13,123 ft)

4 test-stands for submersible pumps, vertical installation:

Maximum capacity:	4,500 m ³ /h (19,813 USGPM)
Maximum head:	600 m (1,968 ft)

1 test-stand for centrifugal pumps:

Maximum capacity:	8,600 m ³ /h (37,865 USGPM)
Maximum head:	160 m (525 ft)



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