



PLEUGER INDUSTRIES

PLEUGER Solutions
for the Mining Industry

PLEUGER INDUSTRIES

Since 1929, Pleuger Industries have developed and manufactured pumping solutions to the mining industry's highest standards. We guarantee that our submersible motor 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 engine, 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 specialized in built-for-purpose products that continue to draw upon his pioneering designs.

PLEUGER solutions are used throughout the world in water supply systems, offshore and seawater desalination plants, mining, refineries and district heating systems. Thousands of ships and platforms use PLEUGER pumps and manoeuvring systems to increase safety, performance and efficiency.

PLEUGER products perform even in the most extreme and harshest of environments. That's why the PLEUGER brand is renowned worldwide for quality and reliability.

SUBMERSIBLE PUMP SOLUTIONS FROM THE RELIABILITY EXPERTS

Performance. Engineering. Design.

PLEUGER has supplied thousands of specialist submersible pumps and motors to the mining industry globally. Recognised as some of the most reliable, efficient and durable units you can buy, PLEUGER solutions are proven for performance and durability for mining applications.

PLEUGER products are designed and hand built at our Centre of Excellence in Hamburg, Germany. Our sales and support facilities are located throughout the world, and backed by a network of accredited service partners to ensure a specialist is always on hand and nearby.

Our advantages at a glance

- 90+ years of experience, quality engineering from Germany
- Reliable, durable, very low maintenance solutions
- Thousands of units installed worldwide
- 6 MW (8,046 HP) design capability
- 24/7 customer service
- Dedicated after market and global support solutions

PLEUGER. Reliable. Always.

RELIABLE PUMPS AT EVERY ANGLE

Inclined and deep well pumping and drainage in open-pit mines

Pleuger's inclined pumping systems are a cost-effective alternative to vertical turbine pumps. As they do not need shaft support structures or operating buildings, our systems significantly reduce overall project costs. Mount our versatile units at angles of up to 90° on slope rail systems and intake caissons.

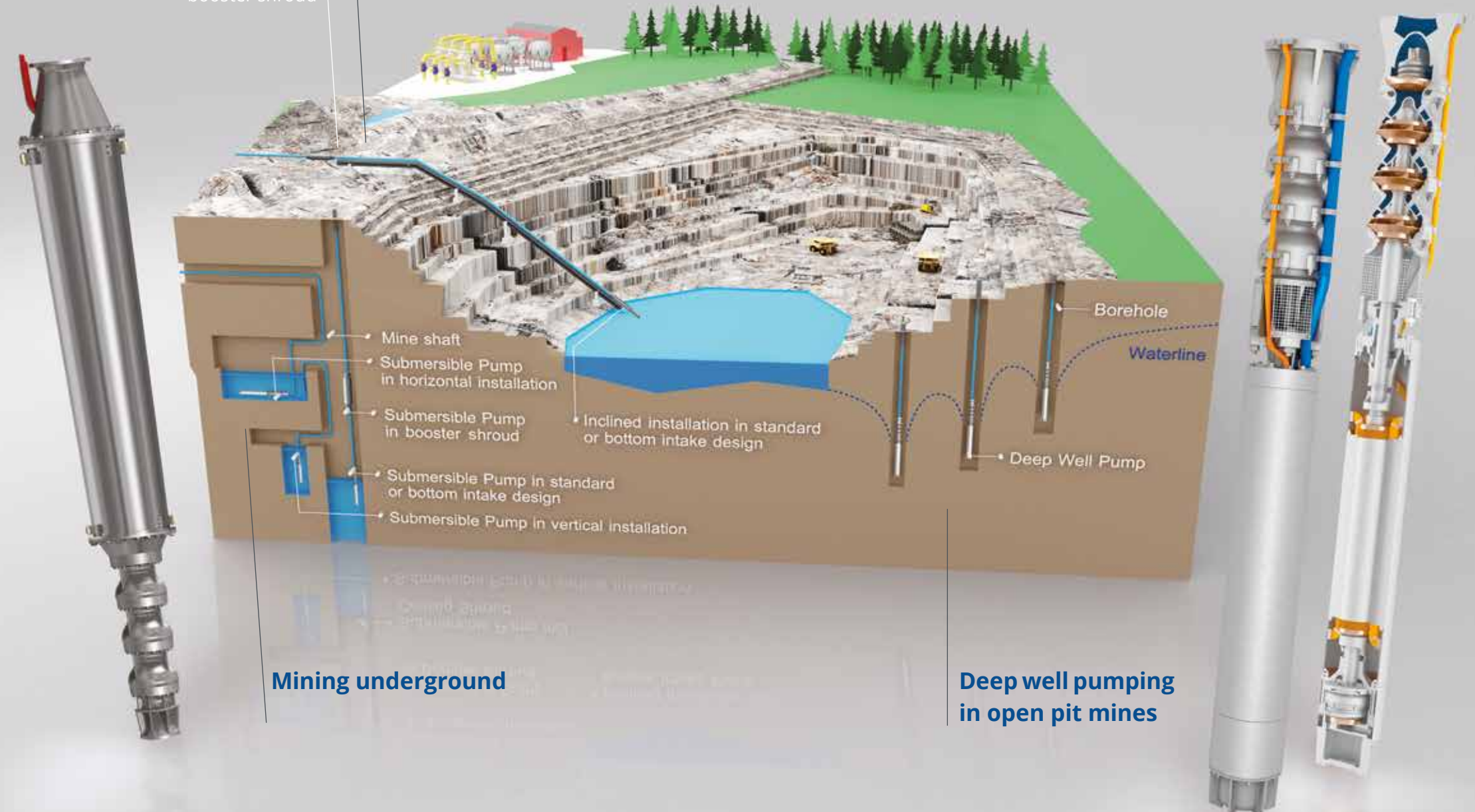
Open-pit drainage in demanding environments needs reliable and robust pump units that are resistant to corrosion. Pleuger's submersible pumps offer a broad operating range including slim designs for small well diameters, and they are ideal for significantly lowering water tables.

Technology features

- Flood-resistant motor design
- Ultra-low maintenance submersible units
- Install in vertical or horizontal positions
- Standard and bottom intake designs
- Delivery heads up to 800m (2,625 ft)
- Flows up to 8,000m³/h (35,225 USGPM)

Inclined pumping
in open pit mines

Submersible Pump in
booster shroud



Mining underground

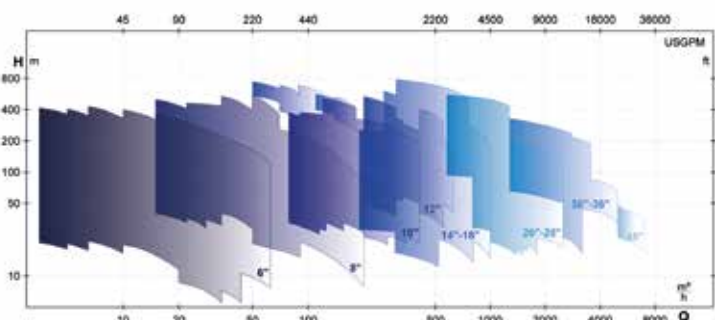
Deep well pumping
in open pit mines

RELIABILITY IN HARSH ENVIRONMENTS

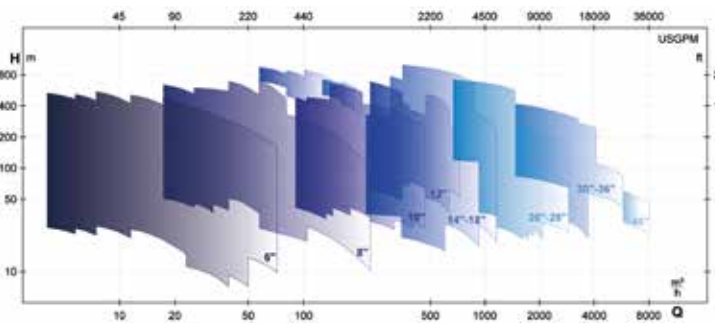
We specialize in the design and development of custom pump units for harsh environments within the mining sector.

PLEUGER's best-in-class single and multistage submersible pumps are reliable, efficient and durable. Our designs offer significant benefits for mining pump applications, such as dewatering, water transfer and water supply:

- Reliable operation, even under extreme conditions
- Heavy-duty capacity in harsh environments
- Cost-effective lifecycle
- Ultra-low maintenance requirements
- Broad grades of materials, from Super Duplex stainless steel to bronze and cast iron
- Explosion-proof
- Space-saving installation in wells
- Flood- and freezeproof
- Efficient motors and pump solutions
- Reduced noise and vibration
- Optional installation accessories



Working ranges of our submersible pumps (50 Hz)

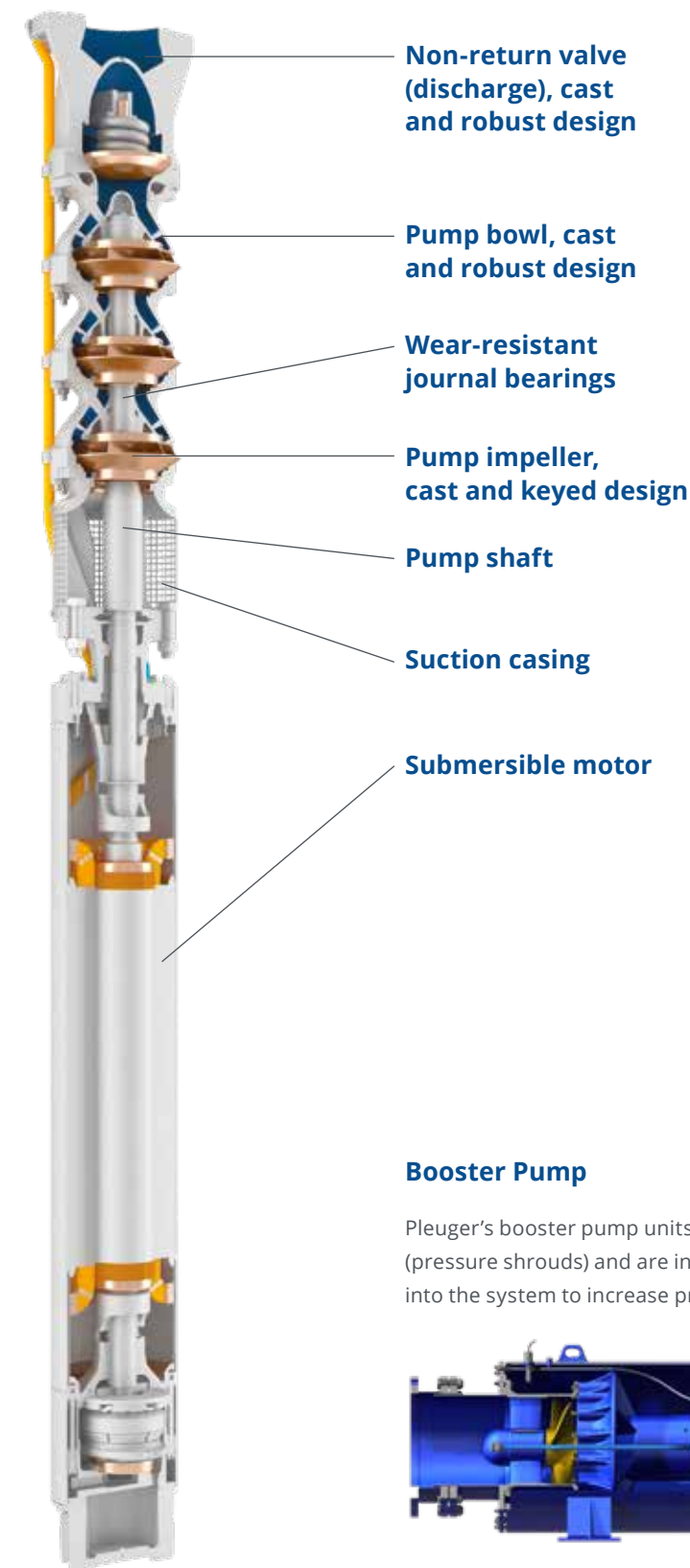


Working ranges of our submersible pumps (60 Hz)

SUBMERSIBLE PUMP TYPES

Deep well pumps

PLEUGER deep well centrifugal pumps are single-stage and multi-stage. Use them together with water-filled (standard) or oil-filled motors (custom). The motor is assembled between the suction area and the hydraulics. Motor sizes are available from 4" up to 50".



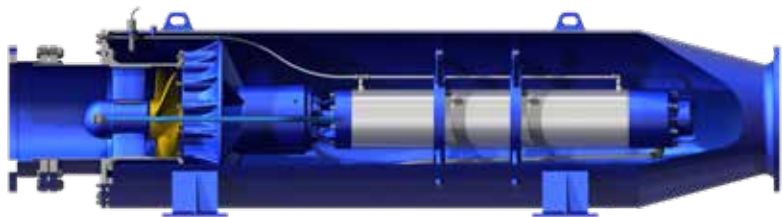
Bottom intake pumps

These centrifugal pumps can be single or multi-stage, and are used in combination with our water-filled motors. The motor is placed above the pump, with the intake located in the pump's lower section, enabling the pump to operate at the shallowest water levels. The pumps can be designed for vertical or inclined installations, according to your needs.



Booster Pump

Pleuger's booster pump units are equipped with booster casings (pressure shrouds) and are integrated horizontally or vertically into the system to increase pressure in the pipeline networks.



MINING SOLUTIONS WORLDWIDE



Wülfrath, Germany: Inclined installation of our submersible pumps, used for limestone mining.



Lausitz, Germany: The opencast mines produce 60 million tons (66 million US tons) of lignite per year.

WE SUPPORT CUSTOMERS ACROSS THE WORLD

- Australia

Bosnia and Herzegovina

Canada

Equatorial Guinea

Estonia

France

Germany

Ghana

India

Italy

Jamaica

Jordan

Kyrgyzstan

Madagascar

Mauritania

Morocco

New Caledonia
- New Zealand

Niger

Papua New Guinea

Peru

Russia

Saudi Arabia

Singapore

South Africa

Spain

Tanzania

Tunisia

Turkey

United Kingdom

United States of America

Uzbekistan

Zimbabwe



Northern Chile: The Copper mine at Collahuasi is situated at an altitude of 4000 m (13,123 ft). Long-term capacity reaches around 500,000 tons (551,156 US tons) per year.



Northern Niger: Uranium mining has a production capacity of 3000 tons (3,307 US tons) per year.



Western Australia: Operations at the Christmas Creek iron ore mine are combined with mining activities at Cloudbreak.

Pleuger in the Press

"Pleuger gets things flowing at Collahuasi"
Mining Magazine

"The German pump manufacturer has decades of experience in designing pump units for the special requirements of the mining sector"
World Pumps

"Collahuasis pump supplier brought Pleuger Industries into play because the German pump manufacturer has decades of experience in designing pump units"
Global Mining Review

"Pleuger's engineers have acquired their expertise in various customizing projects around the globe"
The Mining Review Zambia

PLEUGER TECHNOLOGY ADVANTAGE

Our high performing, ultra-low maintenance pumps are recognised worldwide as some of the most reliable and durable available today, with a design lifetime exceeding 25 years.

Built on a heritage of 90+ years expertise, our engineers are always investigating how new technologies, materials and approaches can enhance what we do, to maximise performance and reliability, and minimize energy consumption.

PLEUGER proprietary enhancements include our custom-polymer bearings and wear rings. These are designed for heavy duty operation of up to 300kN axial thrust. Launched in 2013, they have been proven to be highly durable and ultra-low maintenance, ensuring these high wear component last significantly longer than standard materials.

Our high performance motors are rewindable, reducing maintenance costs. Our pumps are fitted with a custom breather diaphragm to compensate internal and external pressures, extending the lifetime of the mechanical seal and O-ring.

The 4" to 40" diameter standardised pump range is designed for ultra-low maintenance and durability, featuring a best-in-class service life of 25+ years. Packed with technologies and proven innovations that enhance safety, durability and reliability; readily available to rapidly deploy anywhere in the world.

- ✓ **Reliability - built by the reliability experts**
- ✓ **Ease of maintenance - market leading**
- ✓ **Life Cycle Cost reduced**
- ✓ **Space-saving installation in caisson**
- ✓ **Low noise and vibrations**
- ✓ **Explosion Proof (ATEX certified)**
- ✓ **Safe from flooding and freezing**
- ✓ **Proven technologies**
- ✓ **Global aftermarket support**

Pumps with Permanent Magnet Motors are available in the 6" - 8" range and are fitted with VFD capabilities. They are designed for even greater efficiencies, capable of reducing energy consumption by 14 percentage points when compared to other options.

PLEUGER engineered-to-order solutions can be up to 50" diameter and engineered to specific performance capabilities with material options based on application.



OUR ULTRA-LOW
MAINTENANCE PUMPS
HAVE A DESIGN
LIFETIME OF
25+ YEARS

PLEUGER CUSTOM COMPONENTS



Non-return valve
Spring loaded, avoid backflow of water from the pipeline after the pump is switched off



Non-return flap
Used on larger pumps to avoid backflow of water from the pipeline after the pump is switched off



Radial bearings and rings
Custom polymer bearings ensure durability, reliability and ultra-low maintenance cycles



Heavy-duty thrust bearings
Made from proprietary high performance polymer for highest axial thrust loads (up to 300kN), ensures reliability and extraordinary lifetime of motor - developed inhouse by PLEUGER

Further enhancements include our pump bowl flanged design, which changes the traditional screwed housing to a flange bolt arrangement, for far greater durability and wear resistance.

Features

- Design lifetime 25+ years
- Ultra-low maintenance
- Sizes: 6 inch to 50 inch
- Standardized & Engineered to Order
- Rewindable motor
- Pump bowl flanged design

Performance

- Flows to: 8,000 m³/h / 26,417 gpm
- -25°C to +100°C
- 230V to 6.6kV (11kV on request)
- 2 pole (standard) to 12 pole available

Robust casing materials

- Zinc free bronze (up to 15°C)
- NiAlBz (up to 30°C)
- Stainless Steel 316 (up to 30°C Sea Water)
- Duplex (up to 40°C Sea Water)
- Super-Duplex (above 40° Sea Water)
- Water-filled motors as standard



SPECIALIST MOTOR TECHNOLOGIES

High efficiency submersible electric motors, with customized corrosion protection and extended power ranges.

PLEUGER's unique motor designs are manufactured to the highest quality standards in our Centre of Excellence in Germany.

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



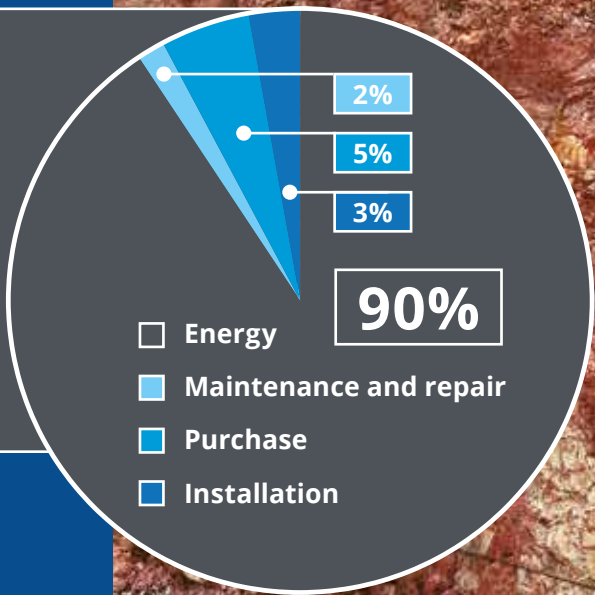
Lifecycle cost solutions

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

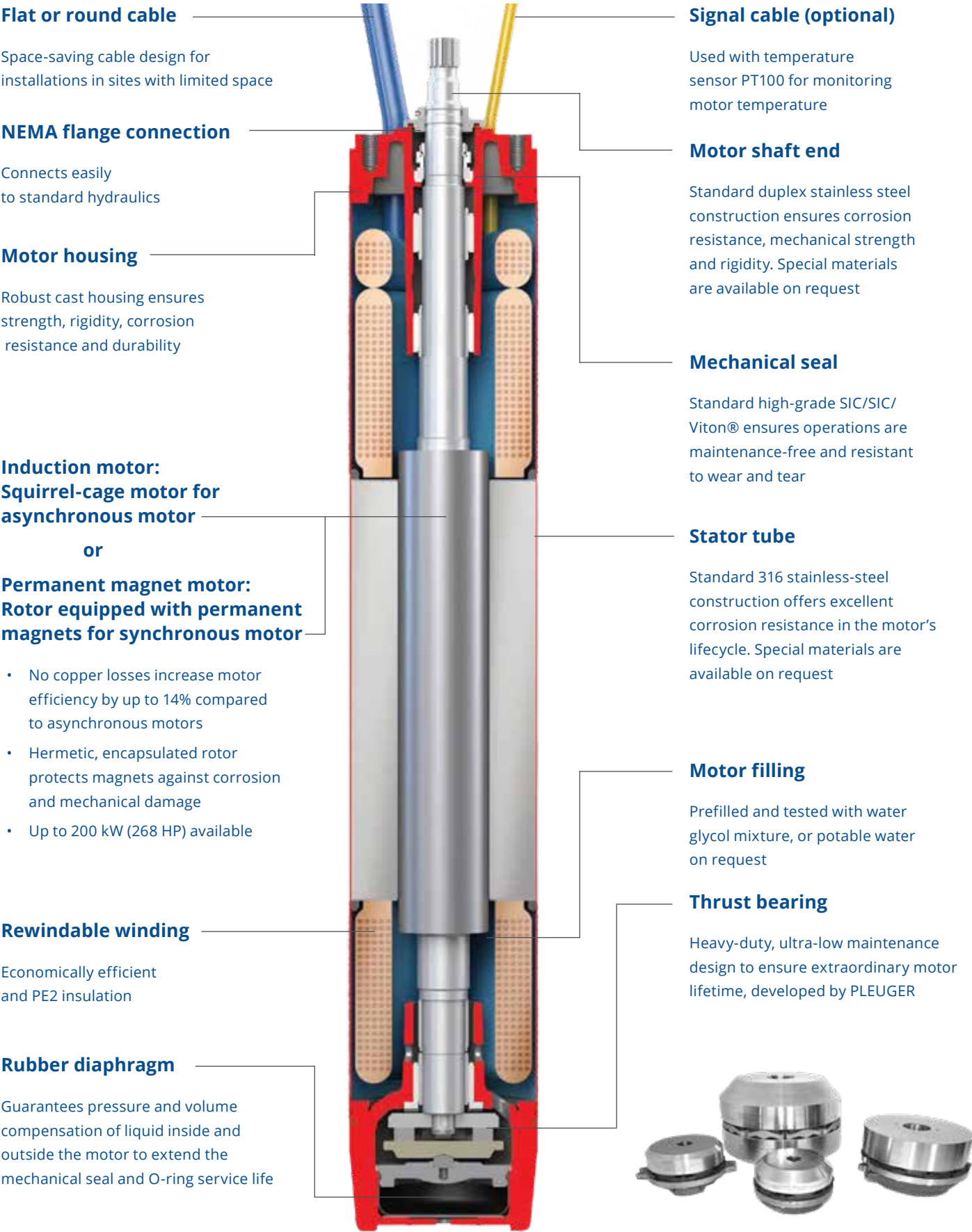
PLEUGER has created an extensive suite of solutions to provide unprecedented value and cost savings to customers throughout the lifespan of the pumping system.

These solutions account for all facets of the life-cycle, including capital and operating costs.

PLEUGER's Permanent Magnet Motor technology (PMM) and high efficiency hydraulics are driving down the cost of owning and operating pumps.



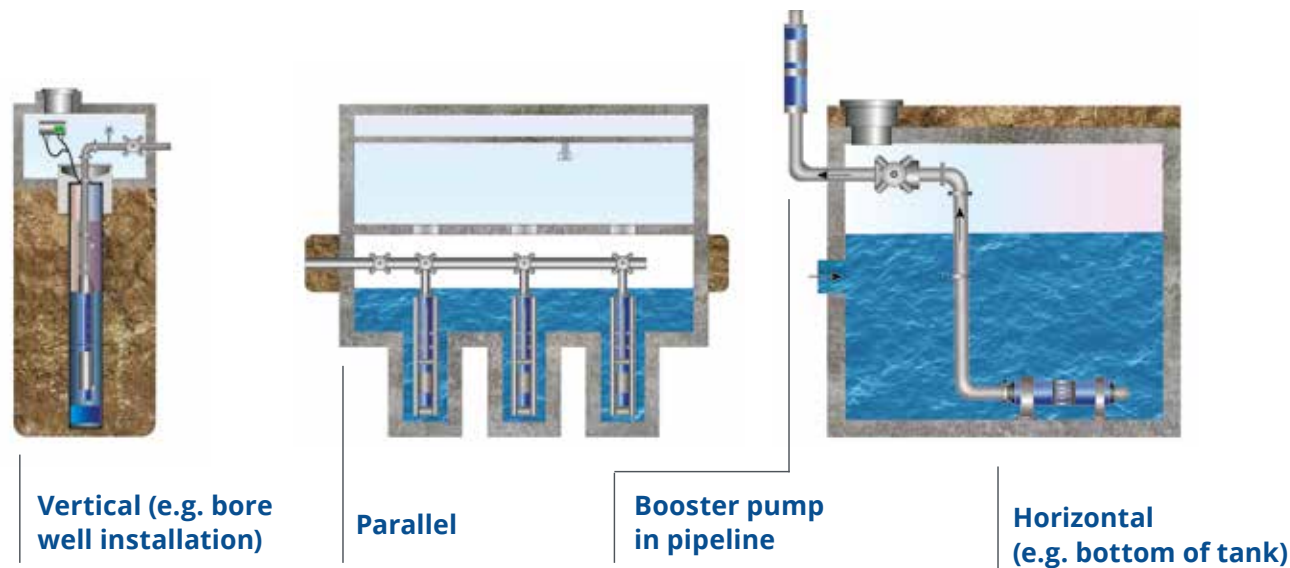
ROBUST MOTOR DESIGN TO MINIMIZE LIFECYCLE COSTS



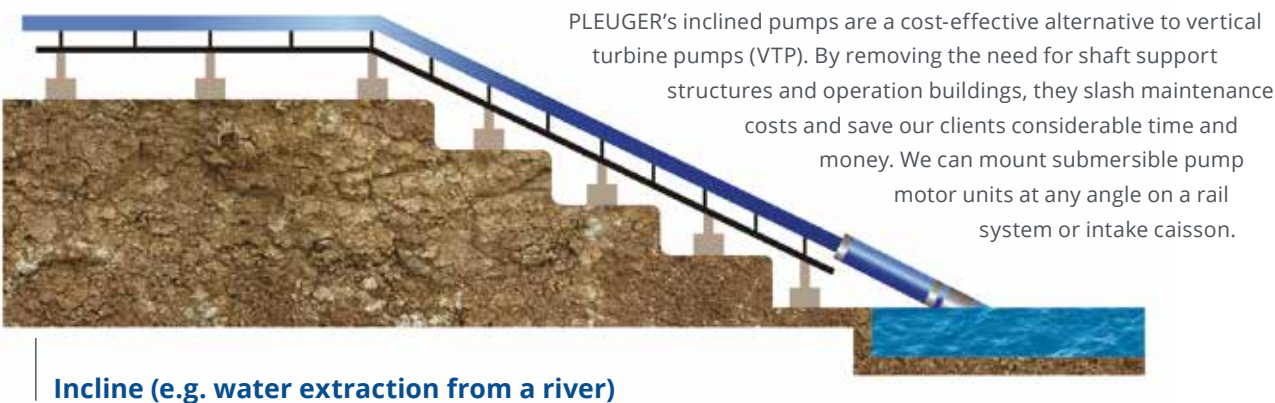
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PUMP INSTALLATION OPTIONS

With various installation options, PLEUGER's pump units are the ideal solution



Inclined pumps for processing and cooling water applications



PLEUGER TEST SOLUTIONS

PLEUGER's comprehensive test capabilities on our manufacturing sites in Germany and France feature custom designed test stands. All our products undergo stringent testing and quality control to ensure reliability before we pack and dispatch. Production is carried out on-site from the first planning sketches to our final quality tests - as is has been since 1951.

TEST FACILITIES

1 test-stand for submersible pumps, horizontal installation:

Maximum capacity:	40,000 m³/h (176,115 USGPM)
Maximum head:	60 m (197 ft)

5 test-stands for submersible pumps, vertical installation:

Maximum capacity:	4,500 m³/h (19,813 USGPM)
Maximum head:	600 m (1,968 ft)

1 test-stand for Plunger pumps and centrifugal pumps:

Maximum capacity:	1,200 m³/h (5,283 USGPM)
Maximum head:	4,000 m (13,123 ft)

1 test-stand for centrifugal pumps:

Maximum capacity:	8,600 m³/h (37,865 USGPM)
Maximum head:	160 m (525 ft)

AFTERMARKET SERVICES

Dedicated service and solutions from the submersible pump and motor reliability experts.

A comprehensive range of through-life service and support solutions available globally and designed to fit your needs.



- International field service team
- Installation planning and on-site support at customer sites
- Project management
- Installation supervision to start-up and commissioning
- Specialist Transportation



- Advanced design & modelling
- Customer system analysis
- Pump integration into systems
- Site inspections
- Solutions engineers on-site
- Test capabilities / facilities



- New products & capital projects
- Operations & systems



- Care Agreements
- Spare parts & Kitting
- Repairs & Overhauls
- Upgrades
- Customer training

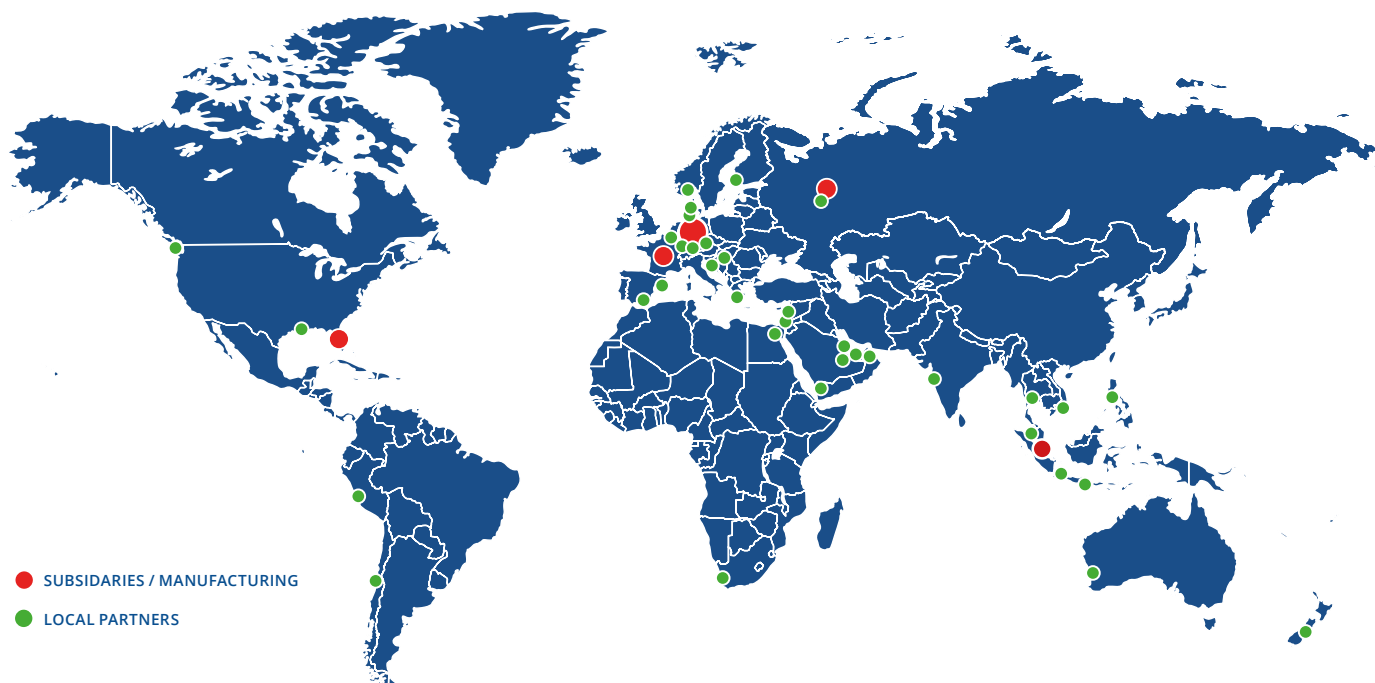
PLEUGER CARE®



pleugerindustries.com/aftermarket

PLEUGER. Reliable. Always.

WORLDWIDE SALES, SERVICE AND SUPPORT



THE RELIABILITY EXPERTS

PLEUGER designs, manufactures and services submersible motors, pumps, thrusters and plunger pumps. Renowned worldwide for absolute reliability and outstanding longevity throughout the energy, mining, water, industrial processing and oil & gas industries.

Our products perform in some of the most challenging and harshest of environments. PLEUGER engineers find solutions to some of the toughest challenges and are trusted across the globe as the reliability experts.

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