PLEUGER

Part of
FLACKS GROUP

PLEUGER Solutions for Renewable Industries

SUBMERSIBLE PUMP SOLUTIONS FROM THE RELIABILITY EXPERTS

Performance. Engineering. Design.

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

We also design, manufacture and supply a range of auxiliaries including piping, wellhead and centrilizers, sensors and solutions to prevent marine growth.

- 95+ years of experience, quality engineering from Germany
- Reliable, durable, very low maintenance
- Thousands of units installed worldwide
- 3,500 kW subsea motor design
- 6 MW design capability
- 24/7 customer service
- Dedicated after market and global support solutions

Our Advantages at a Glance

PLEUGER is a world leader in submersible motor pumps, marine propulsion systems and related services. We have been developing best-in-class pumping solutions for over 90 years, serving the Oil & Gas, Water, Mining, Chemical, Petrochemical, Marine & Offshore industries. Our products are designed and hand built at our Centre of Excellence in Hamburg, Germany.

PLEUGER products are fully backed with reliable through-life service and support, anywhere on the planet. Global sales and support facilities are served from 5 regional offices, backed by a network of accredited service partners. This gives our customers peace of mind that a PLEUGER specialist is always nearby.

Specialist motors and pumps, built for reliability and used worldwide for:

- Sea Water Lift Pumps
- Ballast and Deballast Pumps
- Fire Extinguishing Systems
- Emergency Drainage
- Booster Systems
- Process Pumps
- Service Water and Bilge Pumps

Engineering expertise and specialist advice from the reliability experts

As leading experts for reliability in submersible pump and motor systems, our design and engineering teams are often called upon to solve some of today's toughest challenges.

From retrofitting new solutions to subsea oil storage facilities in the North Sea, system analysis and improvements for various offshore platform applications; to potable water distribution across some of the most barren desert on the planet; PLEUGER's expertise has been paramount in increasing reliability, or upgrading efficiency and performance; while at the same time reducing long-term operating cost for the customer.

Our Engineering department is on hand to help you with your engineering challenges, including feasibility studies, design proposals for new installations, or plans to remodel, expand or upgrade existing submersible pumping systems.

PLEUGER. Reliable. Always.

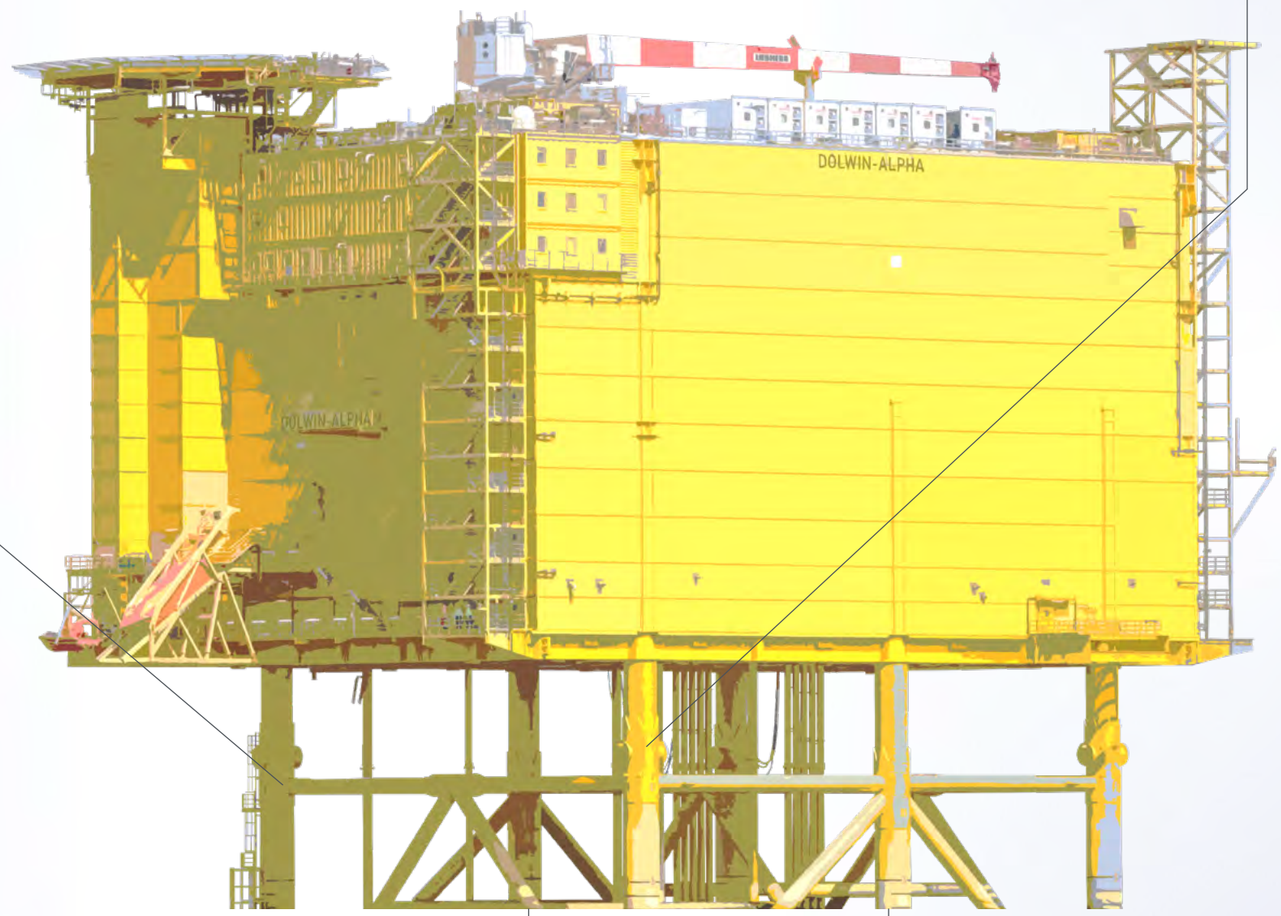
OFFSHORE WIND APPLICATIONS

High performance pumps and motors, used in a range of offshore applications. Reliability makes PLEUGER a leading name in offshore submersible pump solutions.

Designed to perform for decades, PLEUGER pumps offer economic, reliable and safe pump solutions for seawater lift and fire water applications. Installed in external or integrated hull caissons, our pumps give assurance of safety and reliablility throughout operation.

PLEUGER offers solutions for the industries that drive a higher renewable energy penetration and provide cost-competitive electricity beyond fossil but natural resources for the energy of tomorrow.

Firefighting & Drain Caisson Pumps



Seawater Lift Pumps
Jockey Pumps

Hull-ballast and de-ballast Pumps
Water Injection Pumps

Bottom Intake Pumps for low submergence depth

Cooling water Pumps
Booster Pumps

Recent projects

USA Sunrise Wind

Supply of 18” PLEUGER pumps with 16” PLEUGER motors for offshore wind farm

Denmark / Horns Rev B

Supply of 8” & 6” PLEUGER motor-pumps for offshore wind farm

Germany / DolWin Alpha

Supply of 20” PLEUGER pumps with 16” PLEUGER motors for offshore wind farm for HVDC DolWin1, with an 800 MW direct current link to the power grid on the German mainland

Germany / BorWin Alpha

Supply of 18” PLEUGER pumps with 12” PLEUGER motors for offshore wind farm

Germany / DolWin Beta

Supply of 15” PLEUGER pumps with 12” PLEUGER motors for offshore wind farm

Germany / Global Tech 1

Supply of 10“PLEUGER pumps for an offshore wind farm

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PUMP SYSTEMS AND COMPONENTS

PLEUGER offers a wide range of pump system components including installation, piping, control and monitoring equipment. Designed and built using high-grade materials such as Super Duplex stainless steel, PLEUGER solutions are engineered to maximise both performance and reliability throughout the pump system.

Installation

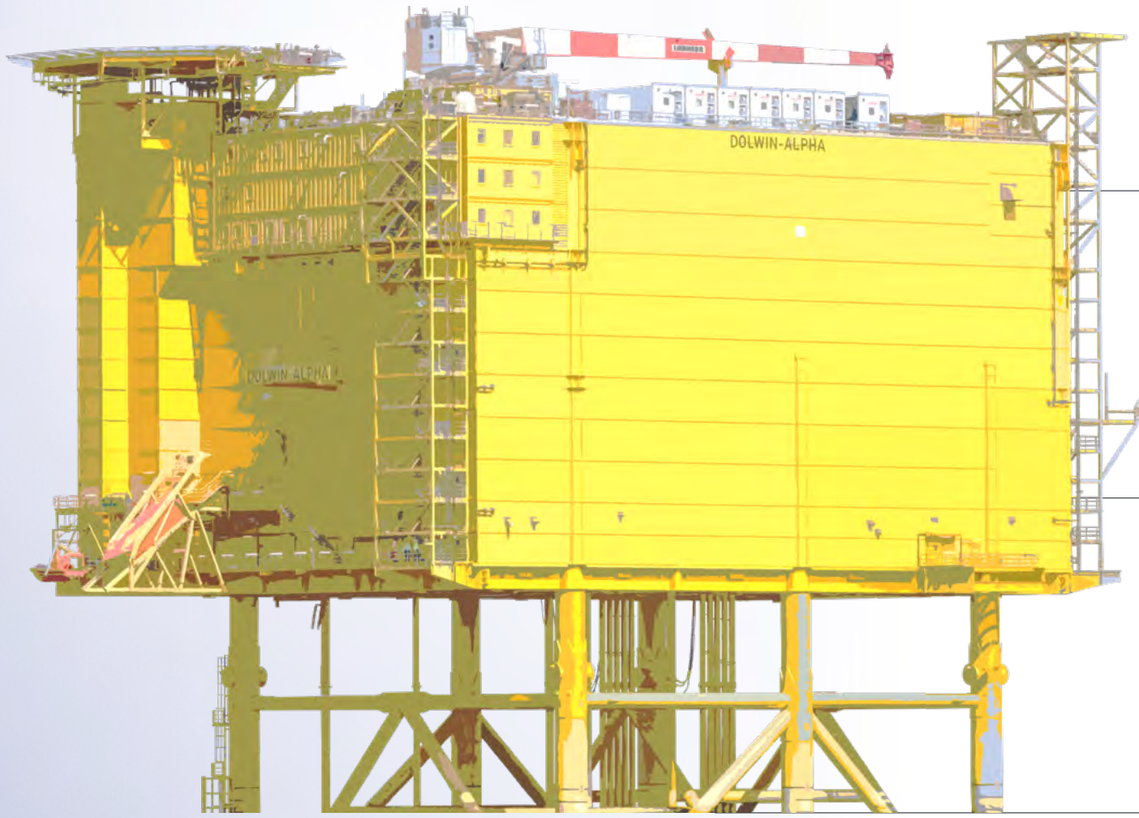
- Tools
- Piping
- Valves
- Service
- Protection system
- Corrosion protection
- Antifouling

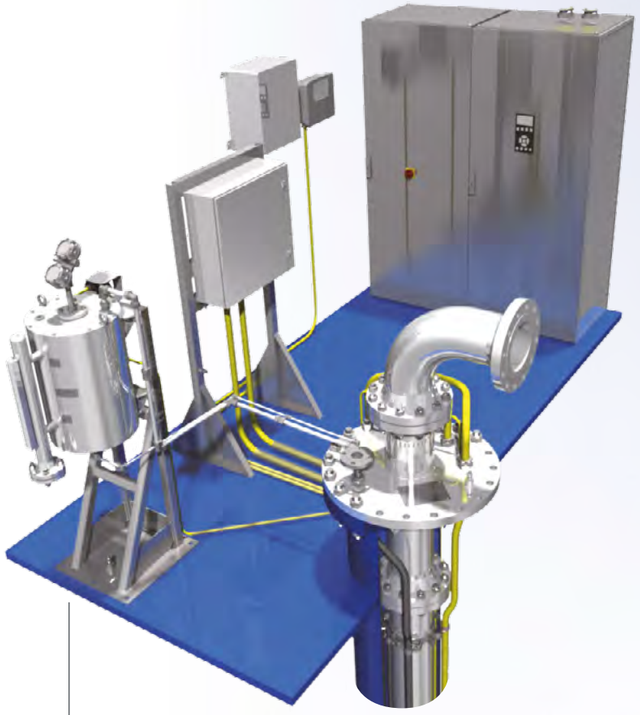
Monitoring

- Temperature sensors
- Vibration sensors
- Conductivity sensors
- Leakage detection

Power control

- Starting and control systems





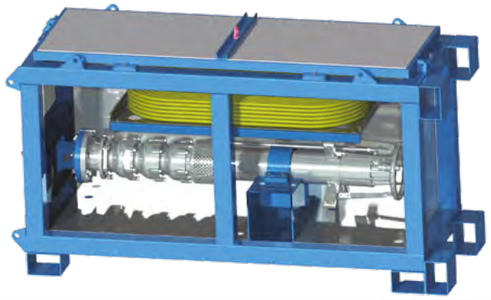
Fully equipped discharge head

Corrosion protection system

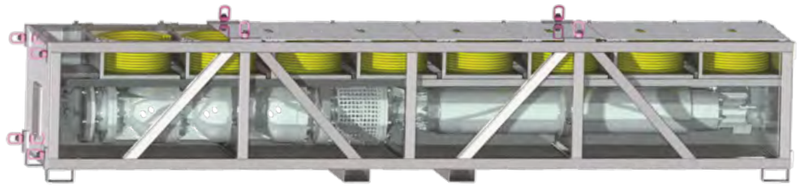
TRANSPORTATION EQUIPMENT

PLEUGER can manufacture special equipment for transport, storage, difficult installation or extreme operating conditions.

Skids, containers and trolleys for transportation, storage or installation built by PLEUGER to ensure maximum safety. These can be built in stainless or powder coated steel to suit the application.



Protective shrouds can be custom designed and built for heavy duty applications. Suction/cooling shrouds improve cooling, water level management or special fluid handling.



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PLEUGER TECHNOLOGY ADVANTAGE

Our high performing, ulta-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.

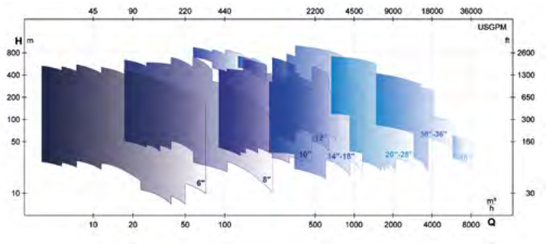
PLEUGER proprietary enhancements include our custom-polymer bearings and wear rings. These are designed for for heavy duty operation of up to 300kN axial thrust. Launched in 2013, they have been proven to be highly durable and ultra-low maintenance, ensuring these high wear component last significantly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

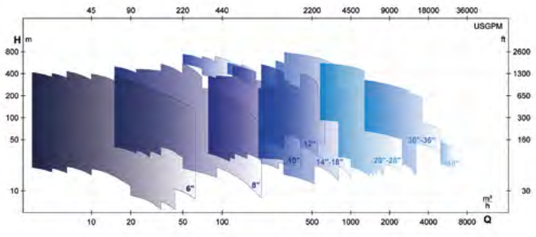
The 4” to 40” diameter standardised pump range is designed for ultra-low maintenance and durability, featuring a best-in-class service life of 25+ years. Packed with technologies and proven innovations that enhance safety, durability and relaibility; readily available to rapidly deploy anywhere in the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

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 consuption 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.



Radial & semi-axial impeller working ranges (60 Hz)



Radial & semi-axial impeller working ranges (50 Hz)

- ✓ **Reliability - built by the reliabilty 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**

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 propietary 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.

ABS · Achilles FPAL Member · Aramco 9COM Approved · ATEX Ex · IP68 · norsok standard · GL · CE · DIN · EAC · Hydraulic Institute Proud Member · ISO · NEMA · CSA

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)
- Highest grade of sand protection extending the lifetime of wear parts
- Water-filled motors as standard

SUBMERSIBLE MOTOR TECHNOLOGY EXPERTS

Our ultra-reliabile, highly efficient motors are developed at our HQ in Hamburg, Germany.

We can design for a broad power range, built to operate with high efficiency and customized corrosion protection.

Technical Specification:

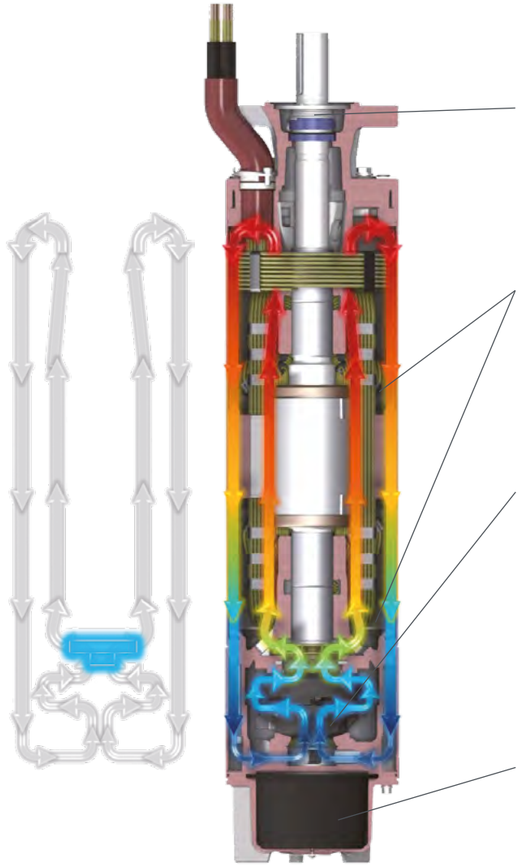
- Water-Filled Motors as Standard
- Environmentally friendly MF15ECO motor filling on request
- Oil-Filled Motors on request
- Sizes: 6 inch to 50 inch
- Power Output: 0.37 kW to 5 MW (0.5 HP to 6,700 HP)
- 230V to 6.6kV (11kV on request)
- 3PH - 50Hz & 60Hz
- 2 pole (standard) to 12 pole available
- Suitable for VFD operation
- -25°C to +100°C

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

PLEUGER MOTOR COOLING

Submersible motors with internal forced cooling systems (I – Design)

The internal cooling system is manufactured with a highly efficient cooling impeller. The impeller is customized for each motor size and provides an efficient cooling circulation. The design ensures sufficient thermal motor reserves and minimizes energy losses, even under tough operating conditions.



Mechanical seals in different materials and design for maximum service life

Motor windings with PE2+PA insulation for optimized winding lifetime

Thrust bearings made of high performance polymer for highest axial thrust loads. Fundamentally important component to ensure reliability and extraordinary lifetime of motor – developed by PLEUGER inhouse

Breather diaphragm in different elastomer materials for perfect pressure & volume compensation

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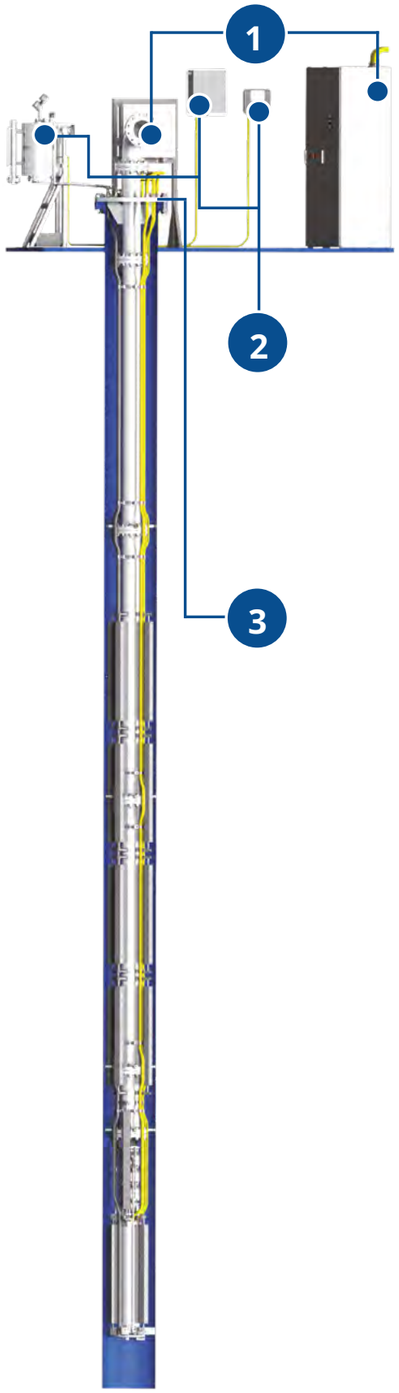
PLEUGER EQUIPMENT



1. Power Control	Junction boxes	Junction boxes for signal and power cable connections (on stands or wall mounted), also customized for all zones of explosion prevention and protection
	Starting systems	Different electrical systems for starting and operating, like Frequency converter, soft starter etc
2. Monitoring	Temperature Monitoring	Temperature sensors inside the motor to monitor motor internal temperature
	Vibration monitoring	Submerged sensors to monitor vibration behavior of motor and pump
	Leakage Detection	Liquid reservoir on top deck with level monitoring or leakage detection through conductivity sensor inside the motor
3. Installation	Riser Pipes	Full Riser Pipe Systems including cable clamps, centralizer, installation tools, etc.
	Wellhead	Customized Wellhead designs with cable penetration, back-flow connection, air-release connection, elbow, etc.
	Valves	Air valves, vacuum breaker, multiple check and ball valve types
	Centralizer	Different designs for submersible unit and riser pipe protection during installation
	Corrosion Control and Antifouling	Isolating equipment, active anode systems or passive anode systems for submersible units, riser pipe and caisson protection
	Anti fouling equipment	Anti-fouling system to protect the units against marine growth
	Installation Tools	Supporting clamp, horseshoe, mounting flanges, slings, shackles
	Transportation Skids	Special tailor-made skids for transportation and storing of submersible pump equipment
	Service	Comprehensive service support for installation, commissioning and maintenance as well as high-level technical consulting services from design phase through operation.

AFTERMARKET SERVICES

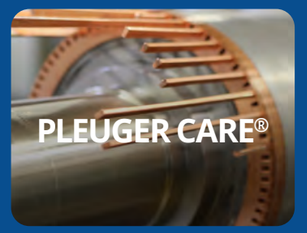
Dedicated service and solutions from the submersible pump and motor reliability experts.

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

- **International field service team**
- **Installation planning andon-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®

EXTENDED WARRANTY · **SPARES INVENTORY & STOCKING** · **PLANNED MAINTENANCE PROGRAMMES** · **PRIORITY TECHNICAL SUPPORT** · **RAPID FIELD SERVICE SUPPORT**

pleugerindustries.com/aftermarket

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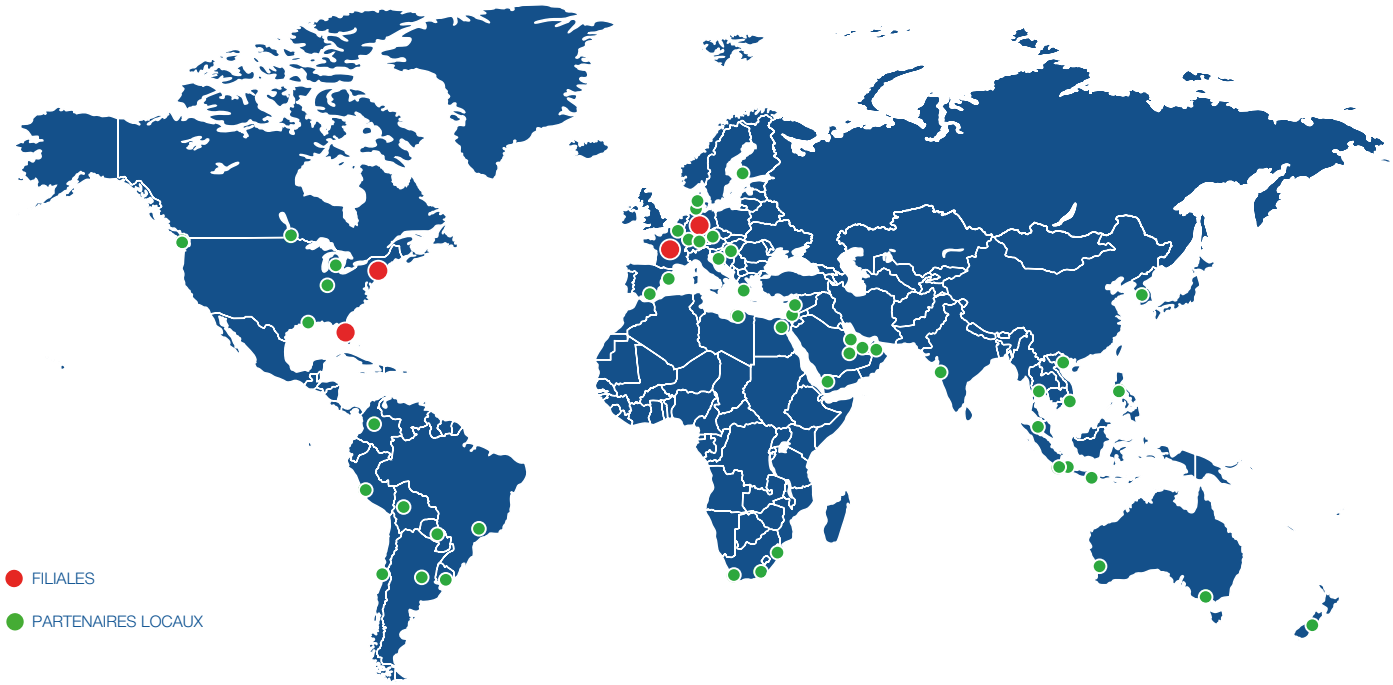
VENTES, SERVICE ET ASSISTANCE DANS LE MONDE ENTIER



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LES EXPERTS EN FIABILITÉ

PLEUGER conçoit, fabrique et entretient des moteurs et des pompes immergés, des propulseurs et des pompes à piston. Notre matériel est reconnu dans le monde entier pour sa fiabilité absolue et sa longévité exceptionnelle dans les secteurs de l'énergie, de l'exploitation minière, de l'eau, du traitement industriel, du pétrole et du gaz.
Nos produits fonctionnent dans certains des environnements les plus difficiles et les plus rudes. Les ingénieurs de Pleuger trouvent des solutions à certains des défis les plus difficiles et sont reconnus dans le monde entier comme des experts en fiabilité.

PLEUGER LLC

1450 Brickell Avenue
Suite 1900 Miami 33131, Florida USA
miami@pleugerindustries.com

PLEUGER Industries GmbH

Friedrich-Ebert-Damm 105
22047 Hamburg
Germany

Tel: +49 (0) 40 69 689 770
hamburg@pleugerindustries.com
Spare Parts Tel. 49 (0) 40 69 689 200
spareparts@pleugerindustries.com

PLEUGER USA

3240 Winsted Rd
Torrington, CT 06790
United States of America

Tel: +1 860 482 8345
Pleugerusa@pleugerdindustries.com

PLEUGER INDUSTRIES FRANCE

21, Rue de la Mouchetière Parc d'activités
d'Ingré, F – 45140 Saint-Jean de la Ruelle
France

Tel: +33 (0) 2 38 70 84 00
orleans@pleugerindustries.com

PLEUGER
Part of
FLACKS GROUP

www.pleugerindustries.com

Made in Germany