



PUMPS

**PREMIUM PUMPING
TECHNOLOGY FOR THE
OFFSHORE INDUSTRY**

IIoT ENABLED PUMP SOLUTIONS

ANDRITZ

ENGINEERED SUCCESS



Water



Pulp & Paper



Food & Beverages



Mining & Minerals



Power

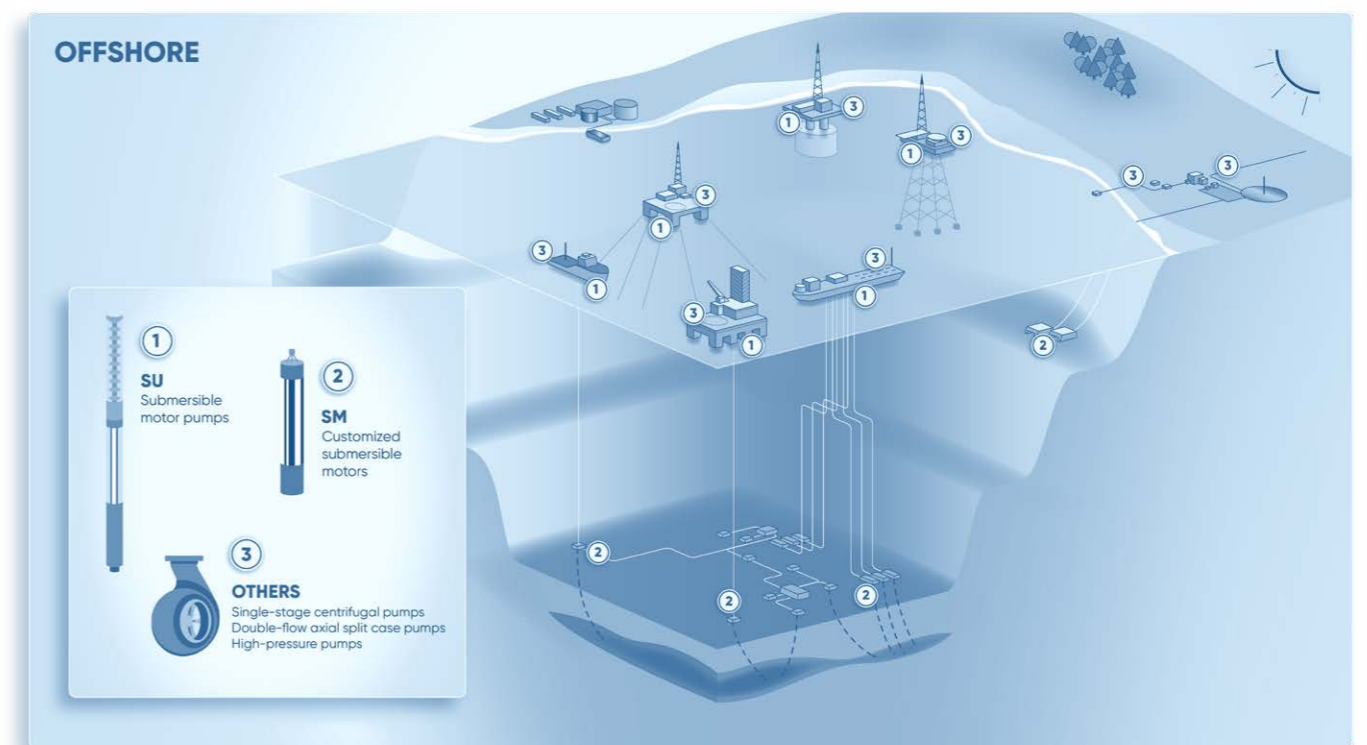


Other Industries



ANDRITZ in the offshore industry

Are you looking for safe and effective solutions in water management on rigs and ships? For many years ANDRITZ has been active in the offshore industry, mainly for applications in seawater lift. For subsea applications, ANDRITZ offers customized solutions for submersible motors. Specific material selection and motor rating guarantee an ideal adaptation to almost all possible applications. Thus, ANDRITZ pumps and motors achieve maximum service life under severest conditions. They are characterized by an unlimited application range thanks to a simple and flexible pump installation as well as minimal operating costs due to zero maintenance offering excellent efficiencies. Furthermore, there are low investment costs as no pump room is required to install the pumps.



Tailor-made pumping solutions

Are you looking for safe and effective solutions in water management on rigs and ships?



SUBMERSIBLE MOTOR PUMPS FOR SEA WATER LIFT

- Minimal operating costs
 - Completely maintenance-free pumps offering excellent efficiency
- Unlimited application range
 - Simple and flexible pump installation
- Low investment costs
 - No pump room is required to install the pumps

APPLICATION AREA ON RIGS AND SHIPS

- Bilge and ballast pumps
- Boiler feed pumps
- Booster pumps
- Drill water pumps
- Emergency fire pumps
- Fire fighting pumps
- Foam/deluge pumps
- General service/fire pumps
- Hot water circulating pumps
- Leg jetting pumps
- Sea water lift pumps
- Submersible raw water pumps
- Submersible preload pumps

THE ADVANTAGES AT A GLANCE

- Solutions for the most extreme operating conditions
- Long service life
- High operational reliability
- High-quality material designs
- Maintenance-free solutions
- High efficiency
- Low investment costs

Single-flow submersible motor pumps

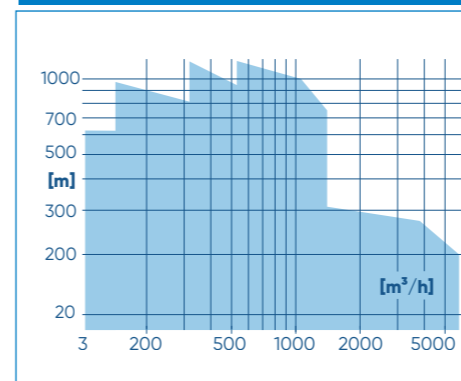
ANDRITZ multi-stage, single-flow submersible motor pumps are designed to transport clean, slightly contaminated and abrasive raw water as well as mineral, sea, industrial, mine and cooling water. ANDRITZ submersible motor pumps are characterized by zero main-

tenance, a long service life, high-operating reliability and an innovative modular shaft technology (MST). Equipped with MST-Technology, the pump cannot only be flexibly adapted to changing pumping conditions, but is furthermore also saving storage costs.

PRODUCT FACTS*

- Flow rate up to 6,000 m³/h
- Head up to 1,500 m
- Pressure up to 150 bar
- Temperature up to 75° C

*These values are guidelines and may differ depending on project requirements



Submersible motors

ANDRITZ water-filled and water-cooled submersible motors are designed for a consistently strong performance at high temperatures, special voltages and in extreme conditions. They are the ideal drives for submersible deep well pumps, bottom intake pumps and seawater lift pumps. ANDRITZ submersible motors are equipped with an innovative modular cooling technology (MCT), enhancing durability and also being the most efficient means of cooling submersible motors. Optimized cooling circulation featuring specially designed cooling channels ensures that the heat is absorbed where it is generated. Interior permanent magnet motors (IPM) are the premium class submersible motors with highest efficiencies over a wide performance range.

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Split case pumps

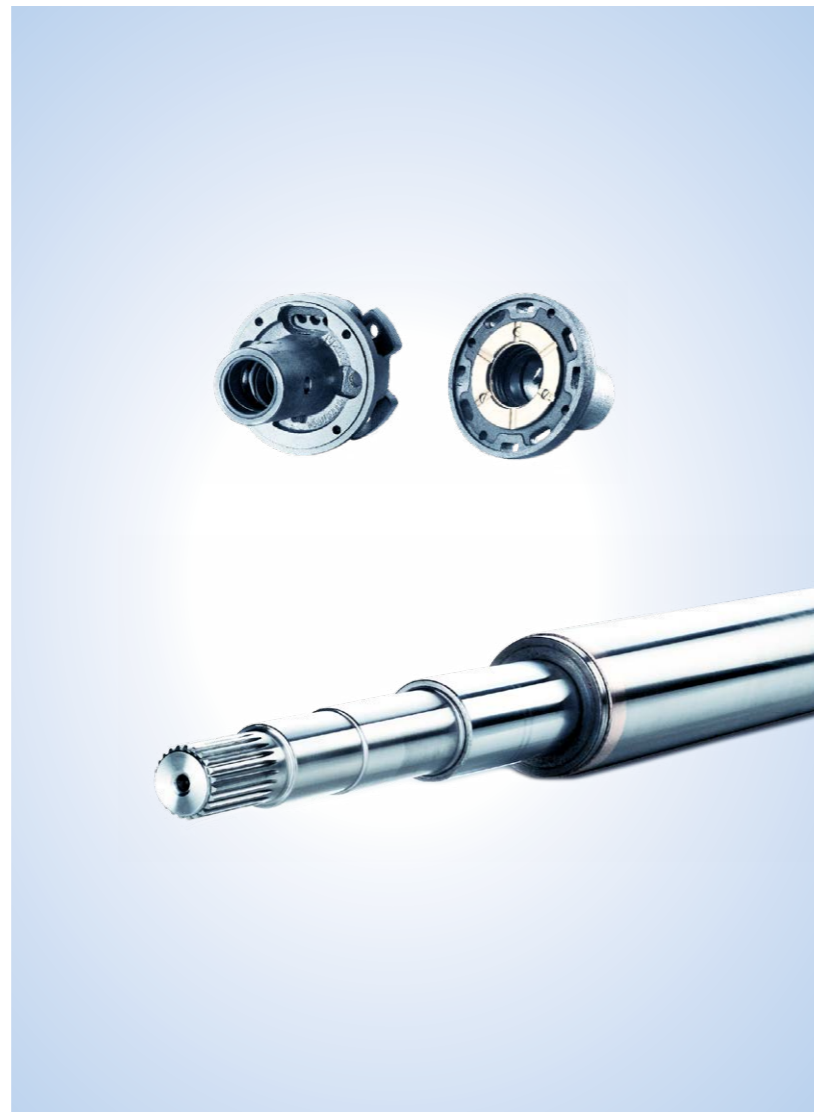
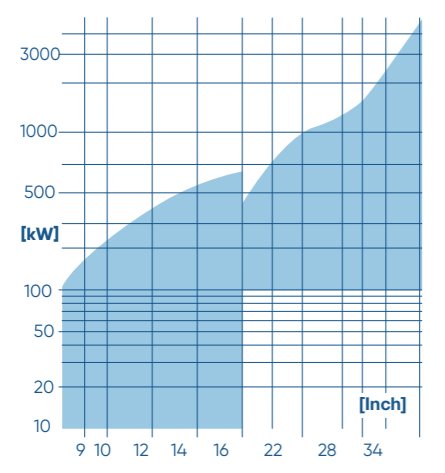
ANDRITZ split case pumps meet the highest customer demands in terms of efficiency, long service life, maintenance-friendliness, and economy. With efficiencies of over 90%, these split case pumps help to save valuable energy. All pumps are fitted with a double-flow radial impeller which achieves very favorable NPSH

values. Due to the double-flow axial split case design, maintenance is fast and easy. Designed with a double-flow radial impeller and in-line casing, the pump can be horizontally or vertically installed (with horizontal installation, the motor can be placed on the left or right).

PRODUCT FACTS*

- Power up to 5,000 kW
- Voltage up to 14,000 V
- Speed up to 3600 rpm
- Temperature up to 75° C

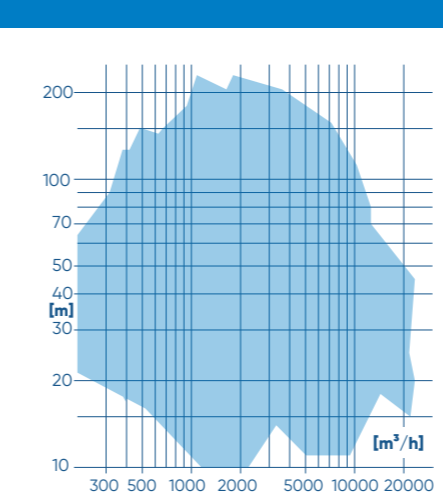
*These values are guidelines and may differ depending on project requirements



PRODUCT FACTS*

- Flow rate up to 40,000 m³/h
- Head up to 250 m
- Pressure up to 25 bar
- Highest efficiency
- Temperature up to 80° C

*These values are guidelines and may differ depending on project requirements



High-pressure pumps

ANDRITZ multi-stage, high-pressure pumps meet the highest customer requirements in terms of efficiency, service life, serviceability and economy. Numerous horizontal and vertical models allow for efficient build-

ing designs. A variety of material and sealing versions guarantee optimal adaptability to the medium. Different hydraulic systems for each pump size enable a selection at the best efficiency point.

Single-stage centrifugal pumps

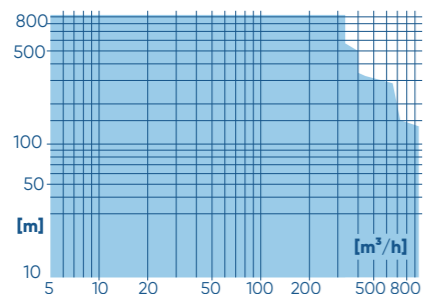
ANDRITZ single-stage centrifugal pumps with closed, semi-open, or open impeller are also available in highly wear-resistant design. They are characterized by robustness, maintenance-friendliness, and economic efficiency. Various material combinations

guarantee long product life cycles and excellent efficiencies. A modular system ensures high availability, enables the use of proven components and reduces the number of spare parts to be held in stock.

PRODUCT FACTS*

- Flow rate up to 850 m³/h
- Head up to 630 m
- Pressure up to 63 bar

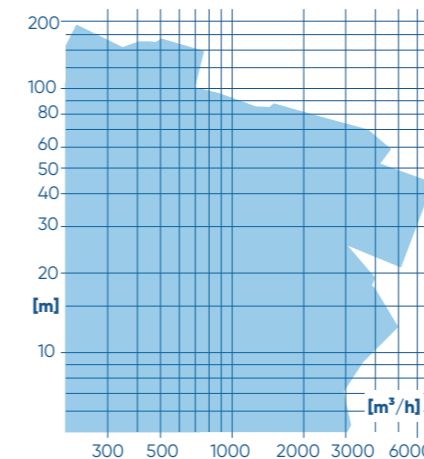
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PRODUCT FACTS*

- Highly wear-resistant design
- Flow rate up to 9,000 m³/h
- Head up to 190 m
- Pressure up to 40 bar
- Efficiency up to 90%

*These values are guidelines and may differ depending on project requirements



Always a flow ahead - Research and development

Our affiliate ASTROE enjoys an internationally renowned reputation for its hydraulic developments and investigations. The high efficiency of the ANDRITZ pump series is ensured by Computational Fluid Dynamic (CFD) calculations and extensive testing carried out in our company owned laboratory.

Continuously increasing demands by customers in our operating industries emphasize the significance of R&D in the constant optimization of products and services. Today, efficiency, flexibility, and reliability over an extended lifetime are the major challenges of the market.

Our commitment to research and development forms the basis for our advances in hydraulic machine manufacturing. With ASTROE, center for hydraulic engineering and laboratory, we have an internationally renowned institute for hydraulic development work at our disposal. We are currently developing and testing our pumps and

turbines at five locations in Austria, Germany, Switzerland, and China. Our test stands are among the most accurate in the world. By networking these research and development centers, we provide a continuous transfer of know-how within the ANDRITZ GROUP for the benefit of our customers. The main tools for R&D are numerical simulation methods as well as experimental measurements in the laboratory and on site. State-of-the-art equipment, highly precise measuring instruments as well as the latest simulation technologies, and powerful software form the basis of the high technical quality of the pumps from ANDRITZ.



Smart Pumps

ANDRITZ has launched its IIoT activities already back in 2005 and its basic activities in the automation sector began as early as 1984. Now, the company has combined its innovative, industrial IoT solutions, which are field proven in many reference plants, under the technology brand "Metris - Foresee digitally". Metris technologies include latest state-of-the-art Industrial IoT solutions (IIoT) as well as any kind of smart digital services. These can be fully tailored to individual customer requirements and unite our clients' physical and digital worlds.

With regard to IIoT solutions for pumps, ANDRITZ has set a key focus on ensuring continuous and sustainable operational reliability and performance of pumps and plants ever since. ANDRITZ delivers highly sophisticated condition monitoring solutions for pumps. These solutions can be standard software packages or tailored to specific customer request. Special sensors are installed at the pump for this purpose and take measurements continuously. All data can be analyzed within the software or exported to various file formats. Limits and alert notifications with a traffic light system approach are also provided. The data is stored in an ANDRITZ Metris database. Metris cloud's data are accessible by both the client and ANDRITZ condition monitoring experts, which enables 24/7 service for the customer. Finally, ANDRITZ also provides optimization modules for pumps in plants or pumping stations as

well as remote control options for locally installed platforms.

Thus, ANDRITZ is taking pump and plant operations to the next level. By monitoring an intuitive human-machine interface of the control system that is equipped with groundbreaking digital and visual technology, highly efficient workflows make the future calculable and enable proactive action through the analysis of data. Thereby, ANDRITZ IIoT technologies become the basis for Internet of People (IoP) solutions by connecting our customers' specialists among each other as well with ANDRITZ experts. This value-adding interrelation results not only in a professional preparation of the collected data improving the plant's performance, but moreover enables our customers to practice successfully applied business intelligence.

IoP

ANDRITZ connects people through VR, AR, OPP, IDEAS and many other tools. ANDRITZ IoP reduces costs and risks for our clients, while at the same time sustainably supporting and developing their valuable workforce.

Greater efficiency for a competitive edge - Pumps service

Find out more about
ANDRITZ pumps service



Optimization / Modernization / Operating reliability

The conditions of your plant have changed, but your pumps are still operating as previously and therefore, wasting energy? Would you like to optimize your system to reduce costs? With ANDRITZ, you will have a competent partner for these and numerous other services at your side.

Service and maintenance have a long tradition at ANDRITZ and complement the product portfolio. The century-long expertise is reflected not only in a service portfolio with innovative solutions and advanced products that can be optimally adapted to the respective customer needs, but also in a specially trained staff. ANDRITZ has specialized in the servicing of pumps to achieve improved efficiencies and adaptations to changed operating points of the installed pumps. A large potential for savings can already be achieved by improving the efficiency of 20 percent of the installed pumps. Our service team provides prompt, professional, and reliable assistance – also for other manufacturers' products. Book our service package and you can be sure of the best operating reliability for your systems in the long term. We conduct an

expert assessment together with you, thus creating transparency and making an optimum solution possible that is tailored to your needs. After examining your plant, we determine its savings potential and realize it by improving the efficiency of the pumps installed. Additionally, this individual solution lowers your maintenance costs. You do not have to think about personnel, nor about maintenance schedules or utilities. Assembly is conducted according to defined schedules and with assistance from our trained personnel.

AN OVERVIEW OF OUR SERVICES

- Supply of original spare parts
- Deployment of trained personnel
- Installation and start-up
- Inspection
- Repairs, overhauls, maintenance
- Machine assessment by an expert for early fault detection
- Consulting and modernization
- Performance and vibration measurement
- Fault and damage analyses
- Feasibility studies
- Energy consulting for pumps and systems
- Preparation of maintenance schedules
- Service and maintenance agreements
- Automation and Electrical Power Systems
- Electronic equipment
- Training







INNOVATION SINCE 1852

The internationally renowned ANDRITZ GROUP has been building pumps for more than 170 years. We offer innovative and targeted solutions with pumps and complete pumping stations. Our longstanding experience in hydraulic machine manufacturing and complete process know-how form the basis of the high standard of ANDRITZ pump engineering. Our quality and high-efficiency products as well as our understanding of customer requirements have made us a preferred partner for pumping solutions worldwide. ANDRITZ offers everything from a single source – from development work, model tests, engineering design, manufacture and project management, to after-sales service and training. We also perform complete start-up on site and guarantee our customers the best support. Our declared goal is your complete satisfaction. See for yourself!

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