



PUMPS

**DESIGNED TO
SAVE COSTS**

MST. MODULAR SHAFT TECHNOLOGY

ANDRITZ

ENGINEERED SUCCESS

ANDRITZ pumps for your industry



Water



Pulp and
paper



Food



Mining and
minerals



Power



Other
industries

ANDRITZ develops and manufactures high-quality custom tailored pumps for various industries. We supply pumps for different water and waste water applications. ANDRITZ pumps are operating successfully worldwide, for example in water resources management, waste water disposal, as well as large infrastructure projects for irrigation, desalination, and for drinking water and industrial water supplies.

Thousands of ANDRITZ submersible motors and pumps have been installed in mines around the world, working under severest conditions in water management and emergency drainage, including the largest submersible dewatering pumps in the world.

As plant and equipment supplier to the pulp and paper industry, ANDRITZ provides a complete pump program. Our product portfolio comprises medium-consistency pumps with an innovative fiber separation system, for example, as well as headbox pumps with efficiencies of over 90% and particularly low pulsation.

We also supply high-performance and reliable pumps for food applications such as proteins, dairy products, or beverages as well as a complete pump program for the entire sugar and starch industry. To round off the portfolio, ANDRITZ small hydropower plants and pumps used as turbines suitable for the private as well as the municipal sectors, and for industrial and commercial facilities ensure an economic and ecological independent power generation.

Designed to save costs

MST. MODULAR SHAFT TECHNOLOGY

The weakness of a continuous shaft is particularly evident from the viewpoint of operations, logistics, warehousing, maintenance, and lifecycle cost. For example, a pump with a continuous shaft can only be assembled and disassembled in numerous individual time-consuming steps – this is a job for experts and also a significant cost factor. And the cost of warehousing different spare parts should not be ignored either.

With MST – Modular Shaft Technology, ANDRITZ has defined an approach that is not only evolutionary in terms of technology, but revolutionary for the pump technology, especially regarding cost savings. Wherever highest demands are made on operating reliability, low maintenance, service life, efficiency, and above all on flexible delivery heads, pumps with MST – Modular Shaft Technology are the perfect solution. This means all areas of water procurement and water drainage, for example in deep wells and waterworks, in surface and underground mining, as well as in the oil industry.

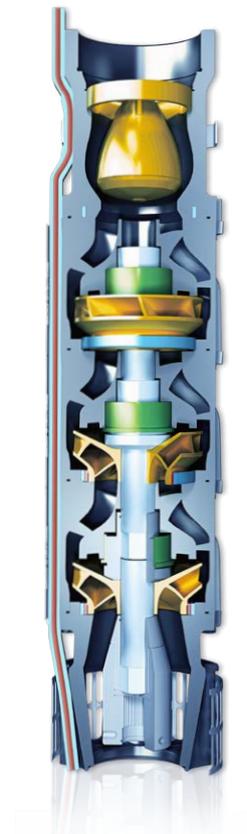
FIELDS OF APPLICATION

Water extraction and procurement in:

- Deep wells and waterworks
- Surface and underground mining
- Oil industry

FACTS

- Well diameter: 8" – 14" (inch)
- Pump connection (discharge side): DN100 – DN200 or 4" – 8" (inch)
- Flow rate: up to 500 m³/h (2,200 US gpm)
- Head: up to 700 m (2,300 ft)
- Pressure: up to 100 bar (1,500 psi)
- Speed: up to 3600 rpm
- Materials: Grey cast iron, bronze, stainless steel

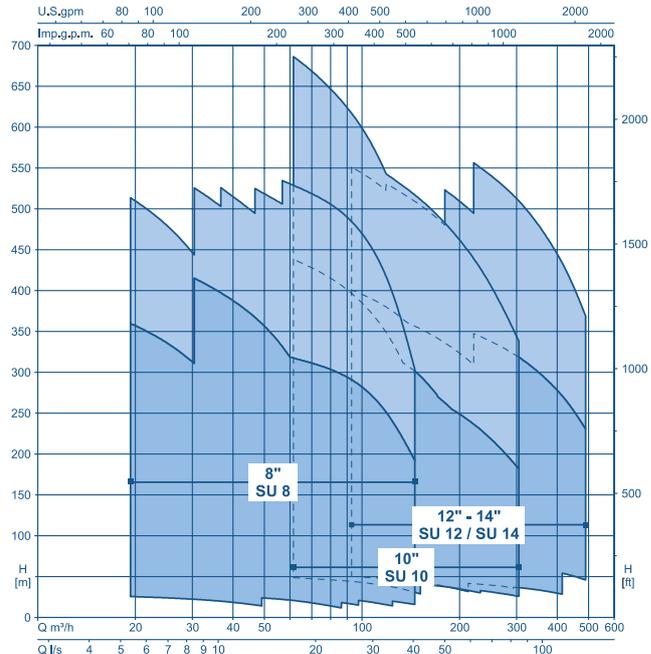


MST.

Modular Shaft Technology

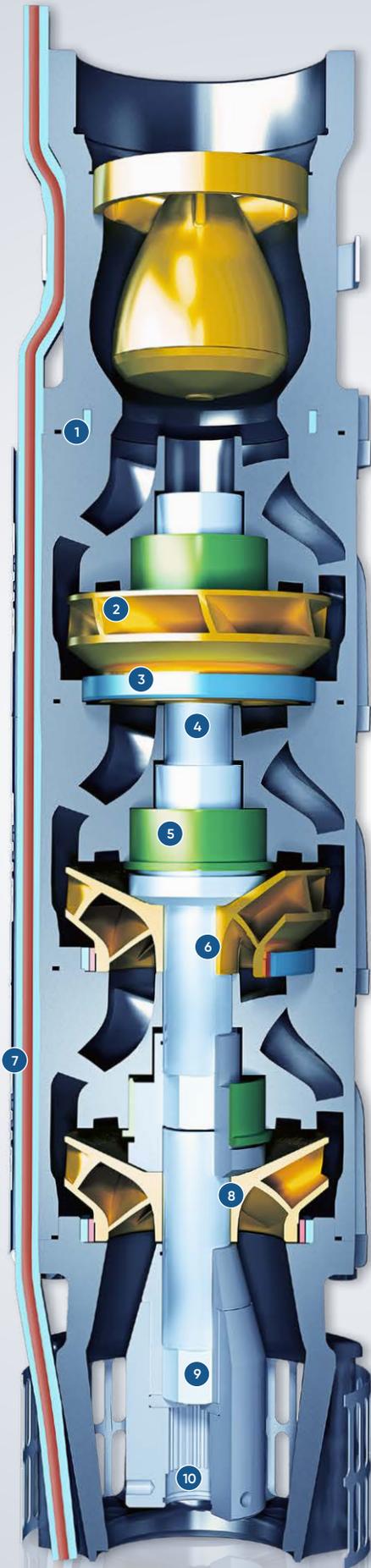
A MODULAR SHAFT DESIGNED ACCORDING TO THE MODULAR PRINCIPLE WITH NUMEROUS TECHNICAL AND ECONOMIC ADVANTAGES:

- Highly integrated components according to QFD (Quality Function Deployment): plug-in unit and interstage casing
- The non-positive connection between impeller and shaft for optimum true running
- The shaft of high-quality material resistant to corrosion and abrasion
- The large shaft diameter for higher transferable duty
- The hexagon for a secure and symmetric power transmission without notch effect and for high torque transmission
- The incremental combined radial and axial bearing optimizes quiet running and guarantees long service life
- An additional tap bore in the shaft shank facilitates assembly and disassembly



ANDRITZ modular shaft technology means a flexible adaptation to changing pumping conditions (changes in the head) by increasing or reducing the number of stages. Simple installation and removal of individual impellers (horizontally or vertically) help to save time and costs. Since no special tools are necessary for assembly/ disassembly, the times for assembly and disassembly are short, which leads to reduced maintenance costs.

Additionally, standardized components provide high availability and short delivery periods. So in future, operators need only stock stages for adaptation, modification or exchanging resulting in lower investment, training and warehousing costs. All components are designed for heavy-duty conditions guaranteeing the longest service life.



- 1 SINGLE-THREAD INTERSTAGE CASING**
 Advantage: high operational reliability, easy to adapt to changing delivery conditions, fast assembly and disassembly.
- 2 OPTIMIZED HYDRAULICS**
 Advantage: high efficiencies guarantee low energy costs. Exact adaptation of duty possible by means of reduced diameters.
- 3 WEAR RINGS/THRUST RINGS**
 Advantage: protects the impeller and casing against wear.
- 4 LARGE SHAFT DIAMETER**
 Advantage: higher transferable duty.
- 5 INCREMENTAL BEARING**
 Advantage: quiet running guarantees extremely long service life.
- 6 MODULAR UNIT**
 Advantage: smaller number of parts due to modular impeller design. Adapts easily to changing delivery conditions, fast assembly and disassembly.
- 7 CABLE PROTECTION ELEMENT**
 Advantage: fast assembly and disassembly.
- 8 NON-POSITIVE CONNECTION BETWEEN IMPELLER AND SHAFT**
 Advantage: guarantees optimum true running.
- 9 HEXAGON**
 Advantage: secure and symmetric power transmission without notch effect, high torque transmission.
- 10 STANDARDIZED COUPLINGS**
 Advantage: maximum flexibility in selection of motors.

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 and turbines from ANDRITZ.



Greater efficiency for a competitive edge - 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 165 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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