



PUMPS

**INDIVIDUAL HYDRAULIC
DIMENSIONING FOR SPECIFIC
OUTPUT CHARACTERISTICS**

VERTICAL VOLUTE PUMPS

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.

Customized premium pump technology

For over 165 years, ANDRITZ has been a byword for designing and manufacturing customized pump solutions at the highest level. Our engineered pumps are operating in various industrial applications successfully all over the world. They offer robustness and wear resistance, and fulfill highest customer expectations in terms of efficiency, life cycle, maintenance friendliness, and economic efficiency. The high standard of ANDRITZ centrifugal pumps is based on decades of experience in designing hydraulic machines and extensive know-how. In the interests of our customers, we set no limits on size and flow rate in the development and manufacture of customer-specific pumps. Experienced experts assist our customers with planning, development, installation, start-up and after-sales service. Engineering, design, material selection and manufacturing all run according to defined standards. The processes are transparent and can be adapted to individual needs. Our goals at ANDRITZ are to provide first-class products and service to secure sustained customer satisfaction.

ANDRITZ VERTICAL VOLUTE PUMPS

operate in a wide range of industrial applications. In the water sector, they function as water transport pumps for irrigation, drainage, and water supply pumps for drinking and industrial water suppliers. Additionally, they can be used as cooling water pumps for thermal power stations and as seawater intake pumps for desalination plants.

FIELDS OF APPLICATION

- Cooling water pumps for power stations
- Fresh water and seawater transport for irrigation and drainage
- Drinking and industrial water supplies
- Seawater intake pumps

PRODUCT FACTS*:

- Design with metal or concrete volute casing, with or without guide vane mechanism
- Impeller radial or semi-axial
- Flow rate up to 100 m³/sec
- Head up to 250 m
- Output up to 140 MW
- Highest efficiency

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



Vertical volute pump

PRODUCT BENEFITS

- Individual hydraulic dimensioning and design of the volute casing for specific output characteristics
- Optimum flow achieved in the volute thanks to individual shaping
- IIoT ready

MATERIAL COMBINATIONS

Thus, these pumps can transport many different media. Depending on the medium concerned, the choice of material and suitable finishing are the determining factors for functioning and stability of the pump. Different materials are used depending on the service conditions and customer requirements: cast iron, cast steel, non-alloyed and low-alloyed steel grades, stainless CrNi steel grades, duplex and super duplex steel grades.

VOLUTE CASING

The hydraulic dimensioning and design of the volute casing depends on the specific output characteristics. Optimum flow is achieved in the volute thanks to its individual shaping, thus also achieving a high level of efficiency. The volute casing is manufactured as a concrete or metal volute. The metal volute is a welded structure consisting of several segments and can be embedded in concrete as an option. This design is used primarily for larger delivery heads if a solution with a concrete volute is no longer feasible due to strength requirements.

IMPELLER SHAPES

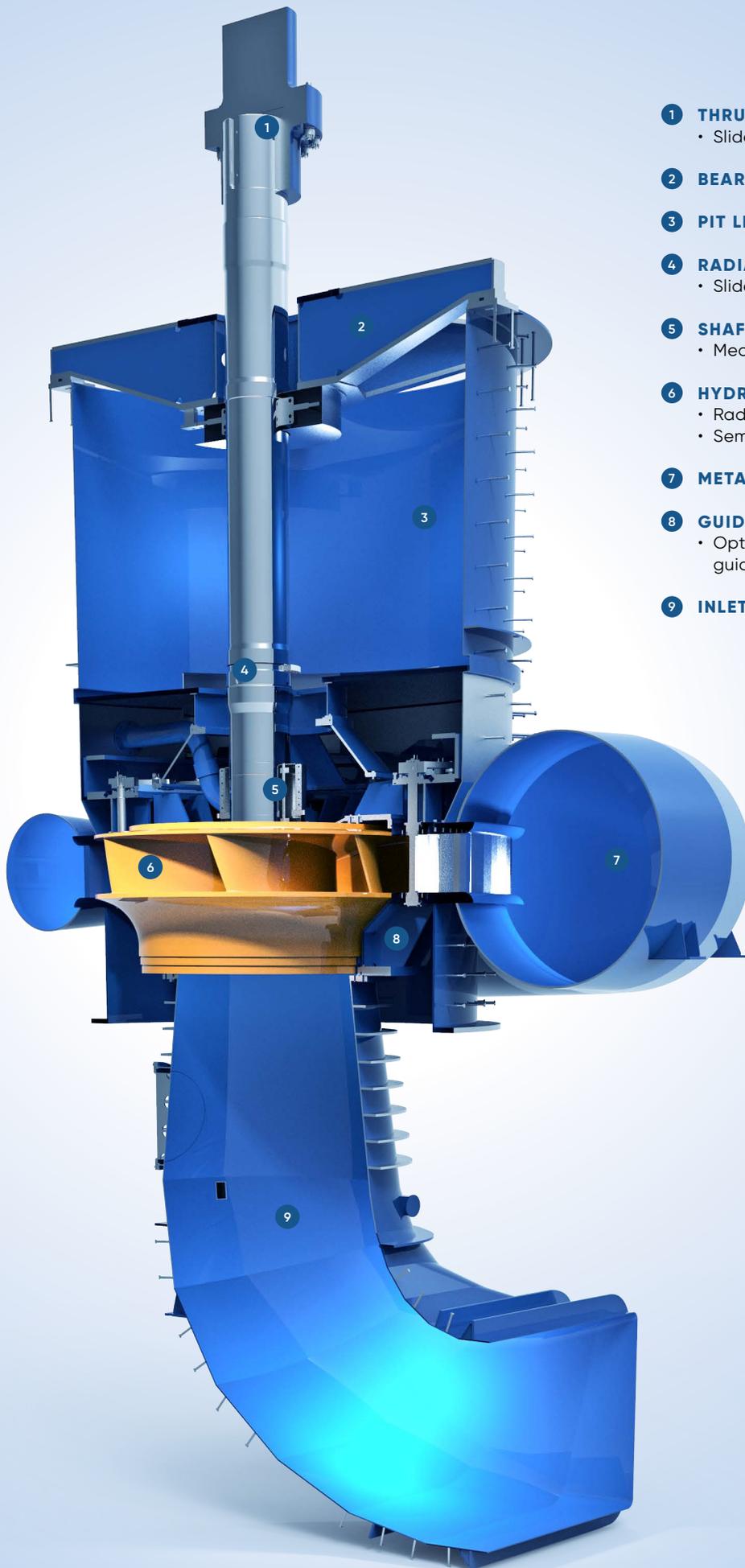
ANDRITZ offers a complete program of impeller shapes for all combinations of delivery rates and heads, according to specific speeds. By varying the trailing

edge, high-precision adjustments can be made to the desired duty points. The impellers are designed as integral castings or are welded together, depending on the size and shape of the impeller. They are secured to the shaft flange with anti-fatigue bolts, and the force is transmitted by friction fit.

GUIDE VANE MECHANISM

The guide vane mechanism is opened and closed in a continuous process. The guide vanes are connected to the operating ring individually by means of articulated levers. This ring is actuated via hydraulic cylinders and rotates the guide vanes into the desired position. The volute pump can be designed with or without guide vane mechanism. This component acts on the one hand as an emergency closing element if there are difficulties with the power supply. On the other hand, if synchronous motors are used the power input during start-up is kept to a minimum when the guide vanes are closed. In addition, by closing the guide vane mechanism it is also possible to start the pump while the pressure pipe is still filled. This guarantees a brief starting period with minimum power input.





- 1 THRUST BEARING**
 - Slide bearing
- 2 BEARING SUPPORT**
- 3 PIT LINER**
- 4 RADIAL BEARING**
 - Slide bearing
- 5 SHAFT SEAL**
 - Mechanical seal
- 6 HYDRAULICS**
 - Radial impeller
 - Semi-axial impeller
- 7 METAL VOLUTE**
- 8 GUIDE VANE MECHANISM**
 - Optionally with or without guide vane mechanism
- 9 INLET BEND**

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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