



PUMPS

# INDIVIDUAL HYDRAULIC DIMENSIONING FOR SPECIFIC OUTPUT CHARACTERISTICS

VERTICAL VOLUTE PUMPS

**ANDRITZ**

ENGINEERED SUCCESS

# ANDRITZ Pumps for your industry



Water



Pulp and  
paper



Power



General  
industries

**ANDRITZ specializes in the development and manufacturing of high-quality pumps, offering a comprehensive range from standardized products to tailor-made solutions across various industries. Our pumps have achieved global success in diverse applications, including municipal drinking water supply, wastewater disposal, industrial water distribution, and significant infrastructure projects such as irrigation, seawater desalination, and water transmission.**

**In flood control, irrigation, and water transport, ANDRITZ not only provides the largest and most powerful pumps, but also complete systems and pumping stations. As a prominent supplier to the pulp and paper industry, we leverage strong process expertise to deliver pump solutions that enhance process stability and energy efficiency.**

**Our product portfolio encompasses a full range of robust process pumps and innovative medium-consistency pumps with an advanced system to avoid fiber losses. Notably, our double-suction headbox pumps boast efficiency levels of up to 93% and low-pulsation impellers, crafted with innovative methods. They thus provide the best performance in the paper manufacturing process.**

**In line with our commitment to sustainability, ANDRITZ offers reliable small hydroelectric power plants and pumps utilized as turbines for private, municipal, industrial, and commercial applications. Our diverse range ensures economically and ecologically sustainable energy production. Specializing in hydroelectric storage, our pumps cover a wide range from high heads to high flows, showcasing our engineering competence.**

**Our pump series, distinguished by modern and robust designs, high efficiency levels, and sustainability features, find applications in various demanding industries, including sugar and starch, lysine, bioethanol, hydrogen, fertilizer, mining, offshore, and general process industries.**

**Additionally, ANDRITZ provides IIOT-enabled premium pump technology for enhanced process monitoring, thus reflecting our commitment to cutting-edge solutions.**

# Customized premium pump technology

For over 170 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 m<sup>3</sup>/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

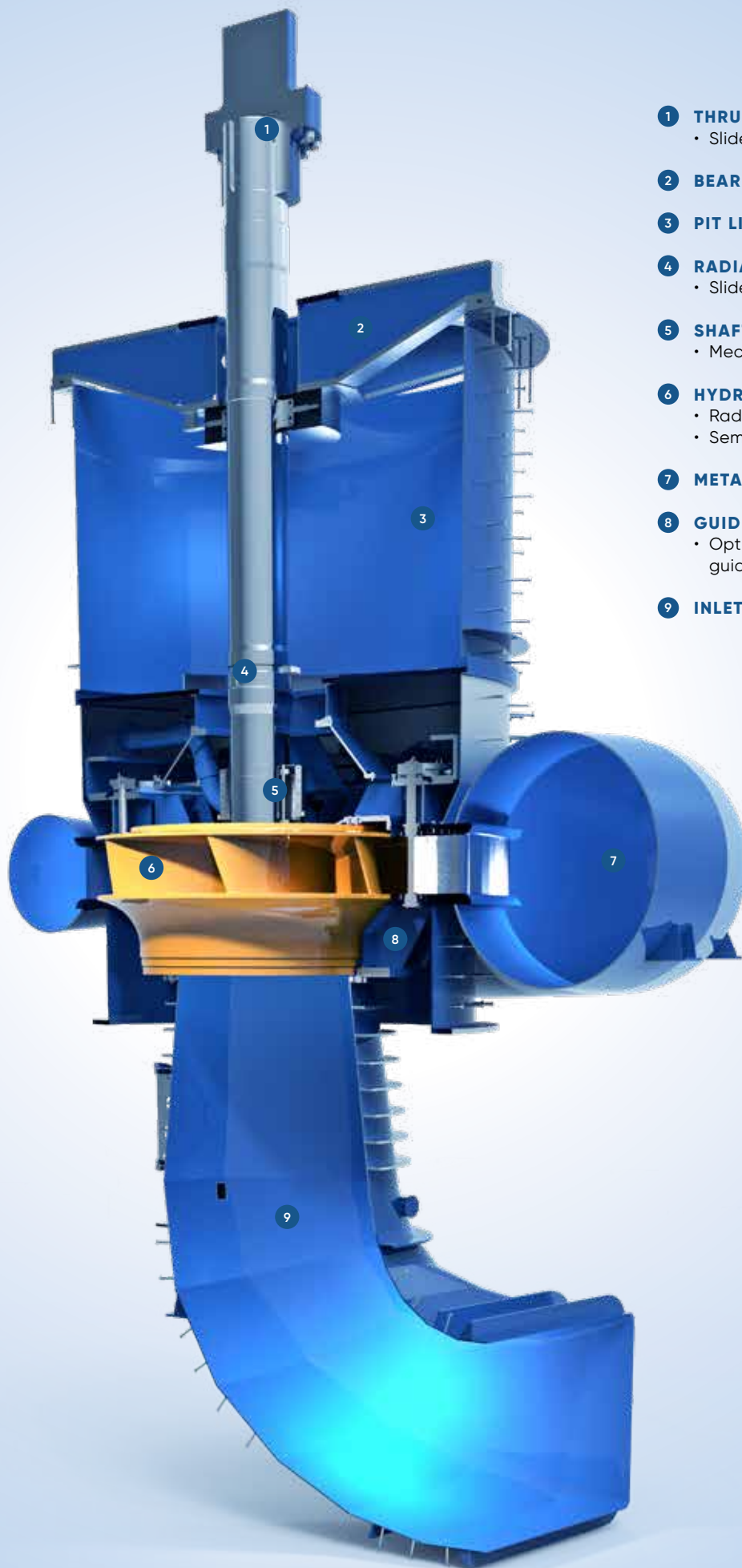
ANDRITZ offers a complete program of impeller shapes for all combinations of delivery rates and heads, according to specific speeds. By varying the trailing

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 Pump Technology Center (PTC) 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 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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