



PUMPS

ADDED FLEXIBILITY FOR OPTIMIZED PUMP OPERATION

VERTICAL LINE SHAFT PUMP

ANDRTZ

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 LINE SHAFT PUMPS

are available in different designs and materials optimized for service conditions and customer requirements. These pumps can be installed for water transport purposes for irrigation, drainage and drinking and industrial water supplies. They can also function as cooling water pumps or flue gas desulphurization pumps in power stations. Additionally, ANDRITZ vertical line shaft pumps are used as seawater intake pumps for desalination plants. Depending on the area of application, choice of material

and suitable finishing are the determining factors in functioning and stability of the pump. ANDRITZ vertical line shaft pumps are designed as either radial, axial, or mixed flow pumps. The choice of material is customized ranging from cast iron, cast steel, non-alloyed and low-alloy steel grades, stainless CrNi steel grades, or duplex and super duplex steel grades. ANDRITZ also offers a complete program of impeller shapes for all combinations of delivery rates and heads, according to specific speeds.

FIELDS OF APPLICATION

- Water transport for irrigation and drainage
- Water transport for drinking and industrial water supplies
- Cooling water pumps for power stations in power supply
- Flue gas desulphurization pumps in power supply
- Seawater intake pumps in desalination

PRODUCT FACTS*:

- Model pull-out or non pull-out
- Impeller radial, semi-axial or axial
- Head up to 80 m (single-stage), up to 120 m (multi-stage)
- Flow rate up to 70,000 m³/h
- Power up to 10,000 KW
- Highest efficiency

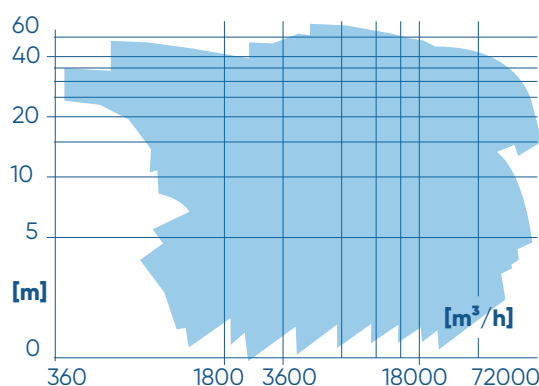
*These values are guidelines and may differ depending on project requirements



Vertical line shaft pump

PRODUCT BENEFITS

- Customized to your specific needs and requirements
- Hydraulic impeller blade adjustment
- Speed control unit for the drive
- Separately mounted, angle-adjustable impeller blades to optimize efficiency or alter the duty point at a later stage
- IIoT ready



ADDED FLEXIBILITY FOR PUMP OPERATION

Power plants, for example, commonly experience changes in the cooling water flow rate and head (e.g. day/night operations or tidal fluctuations). Thus, additional flexibility beyond fixed-angle impellers or manually adjusted impellers is needed. There are typically two ways to achieve that flexibility: speed control with a frequency converter or hydraulic impeller blade adjustment. ANDRITZ delivers pumps with either type of adjustment. Depending on range of fluctuation in delivery rate and head, other installed equipment, budget available etc., the specialists at ANDRITZ will help in the evaluation and selection of the right solution.

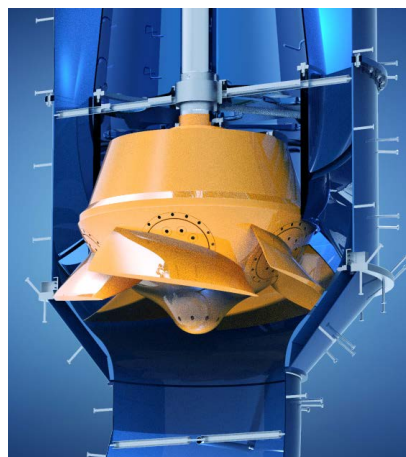
FREQUENCY CONVERTER

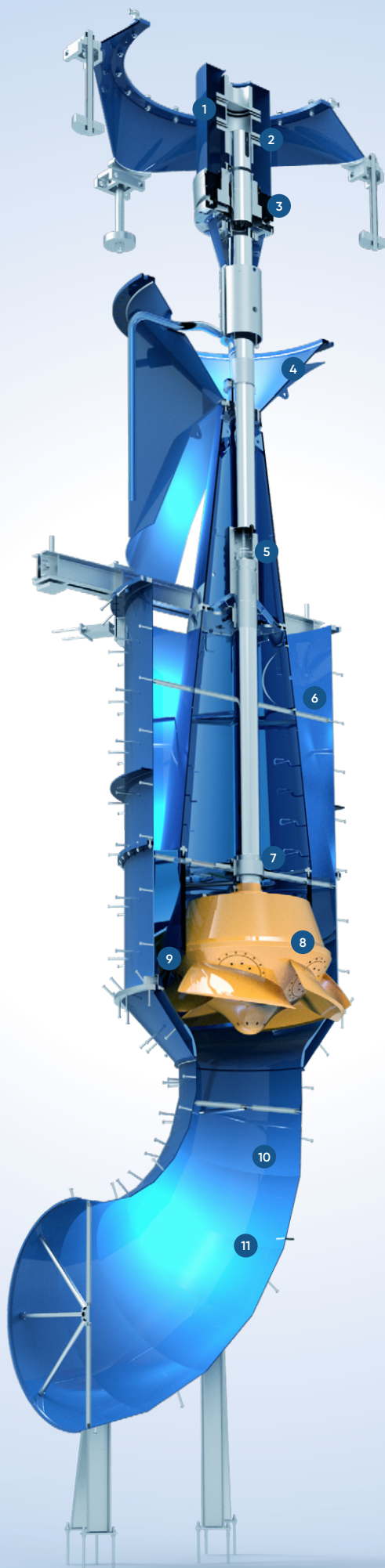
The flow rate and head can be controlled by means of a continuously variable speed control unit for the drive, using a frequency converter. Here, ANDRITZ has put together the ideal concept for the pump, drive motor and frequency converter to optimize efficiency.

HYDRAULIC IMPELLER BLADE ADJUSTMENT

The hydraulic adjusting device has clear advantages when there are substantial changes in delivery rate. With its ability to vary the impeller blade angle up to 15° between minimum and maximum, it can be a perfectly acceptable alternative. It has proven to be highly reliable. By using separately mounted, angle-adjustable impeller blades, it is possible to compensate any uncertainties in the system design. The hydraulic blade adjustment mechanism allows the impeller angle to be varied continuously

during operation. Thus, the pump can be set quickly and easily to the required flow rates and heads. As a result, the efficiency can also be optimized or the duty point altered at a later stage. In this case, the angle of the impeller blade can still be adjusted manually to suit new conditions before installation and start-up. In addition, the adjusting mechanism features long service life, low maintenance requirement and does not require any electronic spare parts.





- 1 **THRUST BEARING**
 - Anti-friction bearing
 - Slide bearing
- 2 **BEARING AND MOTOR SUPPORT**
- 3 **SHAFT SEAL**
 - Stuffing box packing
 - Mechanical seal
- 4 **DISCHARGE BEND**
- 5 **RADIAL BEARINGS**
 - Steel/rubber bearing or ceramic bearing
- 6 **COLUMN PIPE**
- 7 **SELF-LUBRICATING (WATER)**
- 8 **DISTRIBUTOR**
- 9 **HYDRAULICS**
 - Radial impeller
 - Axial impeller
 - Semi-axial impeller
- 10 **SUCTION BELL**
- 11 **INLET BEND**

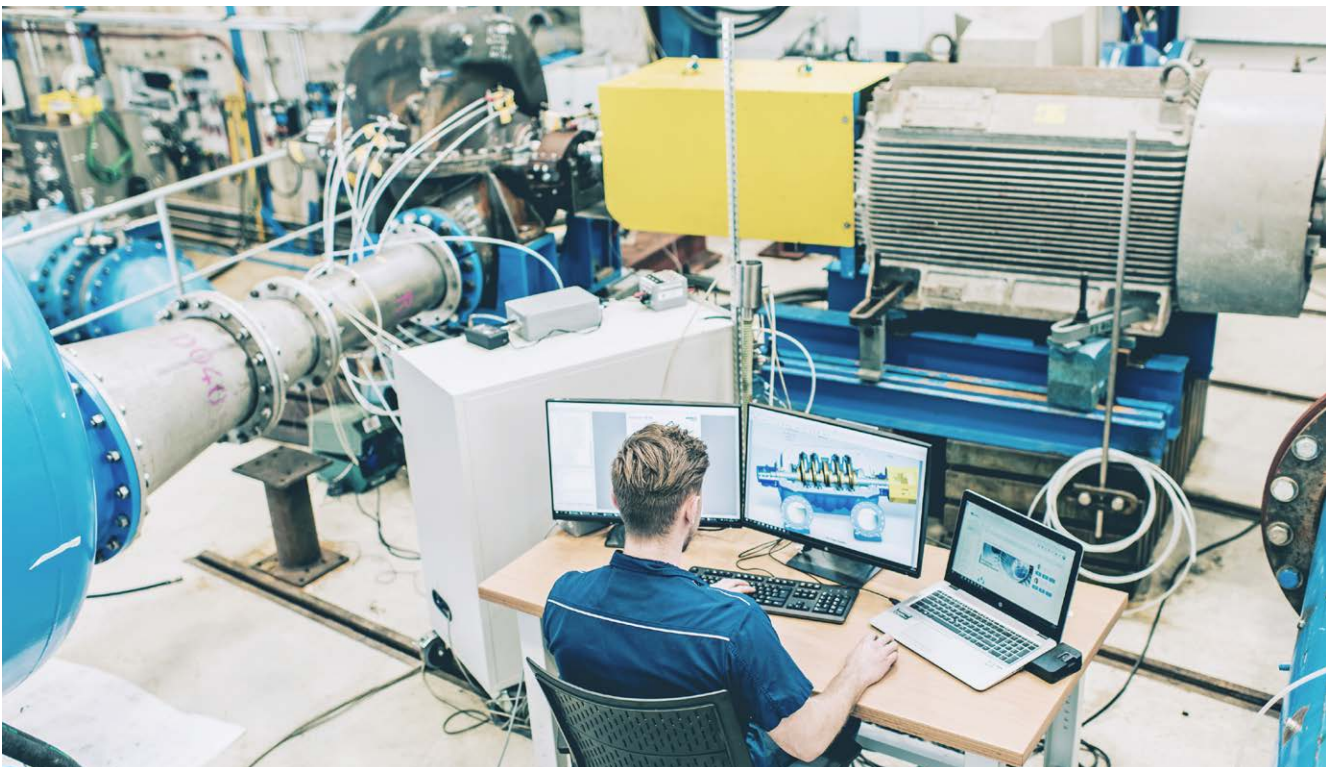
Always a flow ahead - Research and development

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!

EUROPE

ANDRITZ AG
Stattegger Strasse 18
8045 Graz, Austria
p: +43 316 6902-2509
f: +43 316 6902-413
pumps@andritz.com

ANDRITZ Ritz GmbH
Güglingsstraße 50
73529 Schwäbisch Gmünd,
Germany
p: +49 7171 609-0
f: +49 7171 609-287
ritz@andritz.com

SOUTH AMERICA

ANDRITZ HYDRO S.A.
Av. Juruá 747, Alphaville Industrial
06455-010, Barueri, SP – Brasil
p: +55 11 4133-0000
f: +55 11 4133-0037
bombas-brazil@andritz.com

ASIA

ANDRITZ (CHINA) LTD.
No.83 B Zone, Leping Central Technology & Industry Park, Sanshui District,
Foshan 528137, Guangdong, P.R.China
p: +86 0757 6663-3102
atc_pumps@andritz.com

ANDRITZ Separation & Pump
Technologies India Pvt. Ltd.
S.No. 389, 400/2A & 400/2C,
Padur Road, Kuthambakkam
Village, Poonamallee Taluk,
Thiruvallur District –
600124, Chennai, India
p: +91 44 4399-1111
pump.in@andritz.com

ANDRITZ FZCO
Dubai Airport Free Zone (DAFZA)
Building 6WB – Office No. 642
Dubai, United Arab Emirates
T: +971 4 214 6546
dubai@andritz.com

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GHIOLDI RAPPRESENTANZE
INDUSTRIALI

Walter Ghioldi – 20147 Milano
phone +39 393 9924134
info@ghioldirappresentanze.it
www.ghioldirappresentanze.it

