



PUMPS

# PREMIUM PUMPING TECHNOLOGY FOR THE SUGAR INDUSTRY

IIoT ENABLED PUMP SOLUTIONS

**ANDRITZ**

ENGINEERED SUCCESS

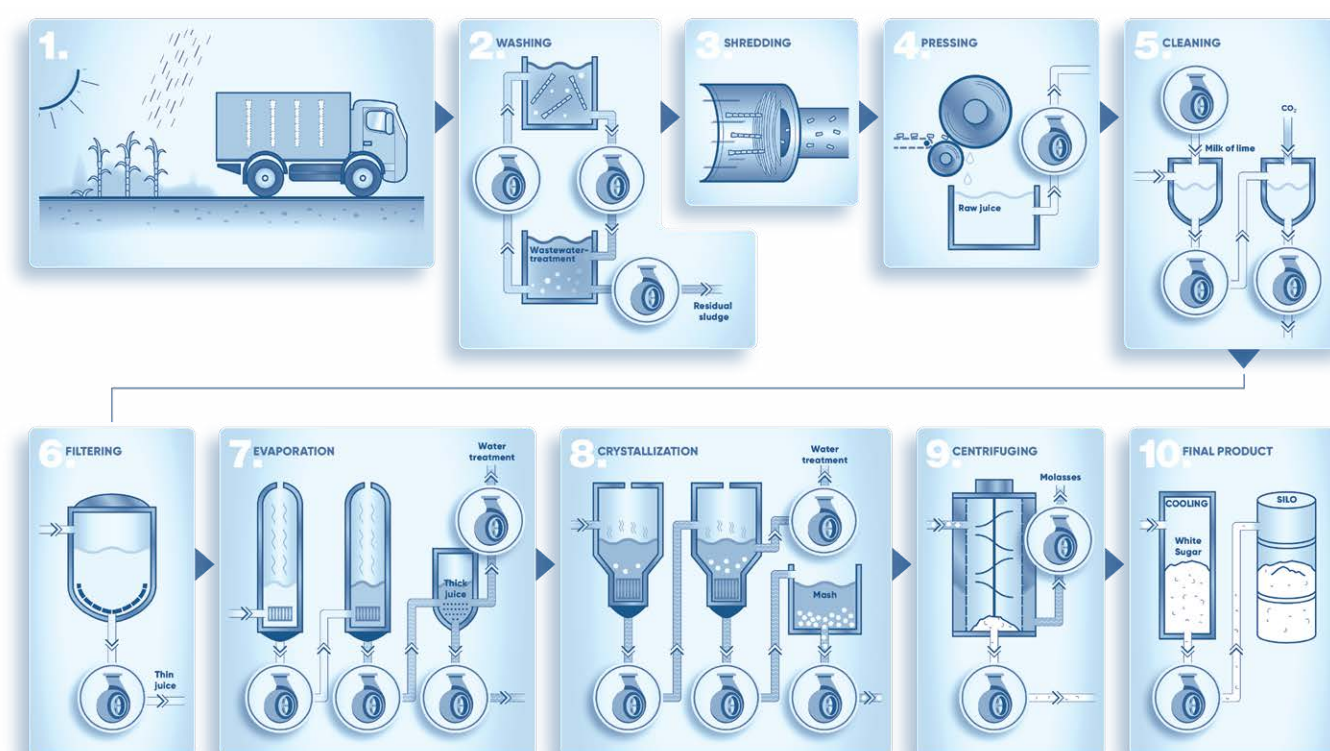




# ANDRITZ in the sugar industry

Are you responsible for the operation or maintenance of a sugar-producing facility? ANDRITZ develops and manufactures centrifugal pumps that are used throughout the sugar production process either from sugar beet or sugar cane.

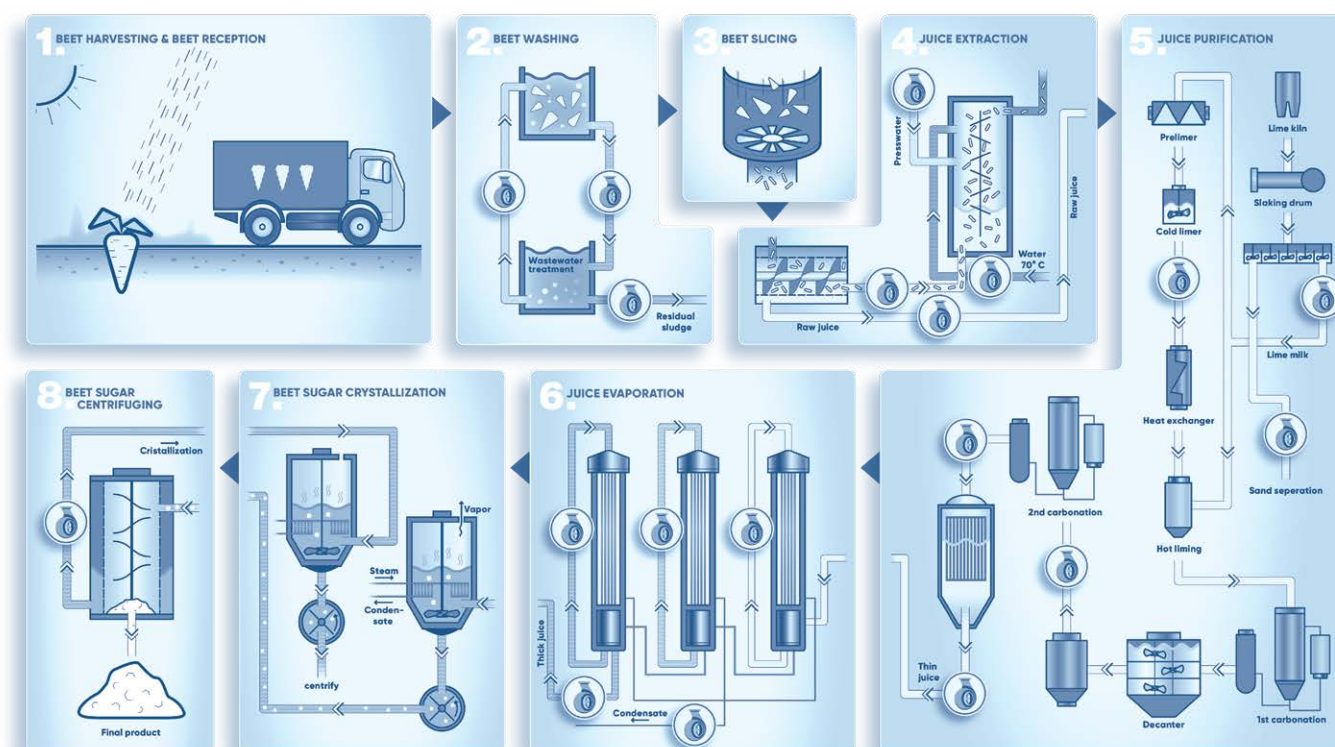
## SUGAR CANE



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## SUGAR BEET



# Custom-tailored pump solutions

Pumps from the ACP, ISO and S series with closed or open impellers are used according to the flow rate required, from beet washing to juice purification and on to carbonatation. As the sugar content increases as a result of juice thickening and the gas content rises due to centrifugation, ANDRITZ self-priming centrifugal pumps can be used for syrup applications without any difficulties.

The combination of a single-stage centrifugal pump with an integrated vacuum pump prevents any accumulations of air at the impeller inlet and guarantees high priming performance by the pump, even with unfavorable suction pipe routing. The vacuum pump removes the gas content in the medium in order to ensure that the thick juice can be conveyed without any difficulties. The pump is not sensitive to high concentrations (at a sugar content of up to 70%) as a result of the semi-open impeller, which also provides higher efficiency with viscous media compared

to closed impellers. As a result of these design features, ANDRITZ self-priming centrifugal pumps with an integrated vacuum pump are excellently suited to convey thick juice with a high air and sugar content at low investment cost and maintenance needs.



## THE ADVANTAGES AT A GLANCE

- Efficiencies of up to 90%
- Assembly system
- Highly cost-effective thanks to high efficiency and long service life
- Cost reduction if self-priming centrifugal pumps are used instead of positive displacement pumps
- Decades of experience and comprehensive process know-how guarantee a high standard



# Single-stage centrifugal pumps with closed impeller

ANDRITZ single-stage centrifugal pumps with closed impellers, also available according to EN 733, ISO 2858 and 5199 standards, are characterized by their low energy consumption and easy maintenance thanks to their modular design. They are available with closed,

radial and vortex impeller. These pumps have been designed to convey clean, slightly contaminated, and aggressive liquids up to a viscosity of 150 mm<sup>2</sup>/s without abrasive and solids content.

# Single-stage centrifugal pumps with semi-open and open impeller

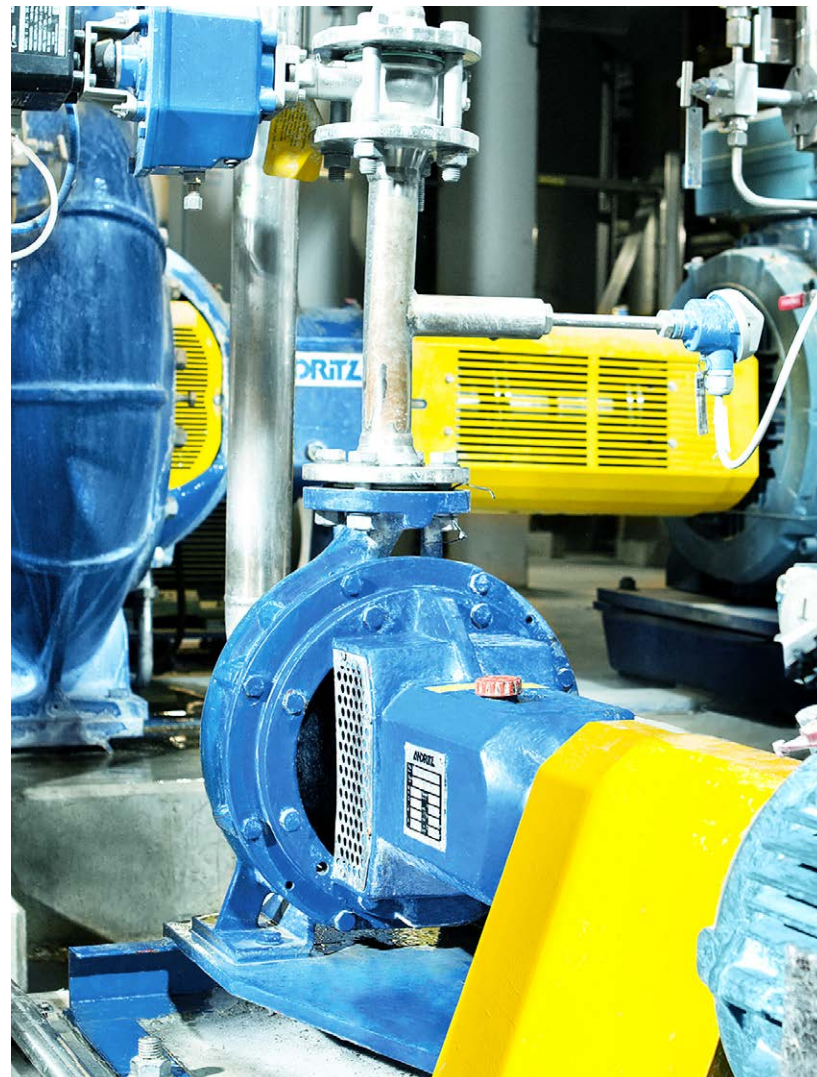
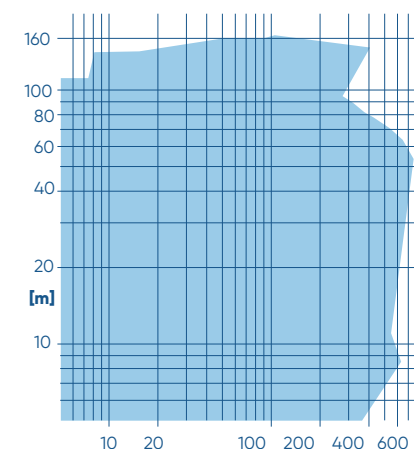
ANDRITZ single-stage centrifugal pumps with semi-open or open impeller convince with their robustness, maintenance-friendliness, and high efficiencies. Various material combinations guarantee long product

life cycles and outstanding economic 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\*

- According to EN 733, ISO 2858 and 5193
- Flow rate up to 600 m<sup>3</sup>/h
- Head up to 160 m
- Delivery pressure up to 16 bar
- Efficiency up to 90%
- Temperature up to 140° C

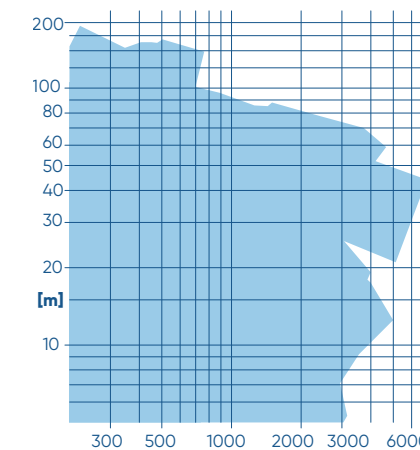
\*These values are guidelines and may differ depending on project requirements



## PRODUCT FACTS\*

- Flow rate up to 9,000 m<sup>3</sup>/h
- Head up to 190 m
- Delivery pressure up to 40 bar
- Efficiency up to 90%
- Temperature up to 200° C
- Also available with degasser

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





# Self-priming centrifugal pumps

ANDRITZ self-priming centrifugal pumps fulfill high customer expectations regarding efficiency, life cycle, maintenance-friendliness and economic efficiency. ANDRITZ self-priming pumps with an integrated vacuum pump prevent air from collecting at the impeller inlet and guarantee that the pump primes well, even with high gas content or unfavorable suction pipe arrangements.

The vacuum pump removes gas from the medium to guarantee trouble-free transport of the media. Thus, the unit is insensitive to conveying sugar content of 70% without any difficulties due to the semi-open impeller. The semi-open impeller also provides better efficiencies with viscous media compared to closed impellers.

# Medium-consistency pumps

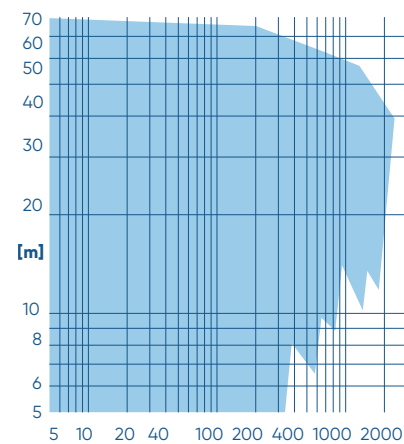
Conveying all types of viscous media is a complex task. ANDRITZ offers a practically tested single-stage medium-consistency pump with fluidizer for all types of viscous media occurring in the sugar production. They transport molasses, green juice, white juice, lime water, or sludge. Their excellent economic efficiency has been proven many times, providing energy savings of up

to one third compared to other medium-consistency pumps and lower investment costs due to lighter construction. ANDRITZ medium-consistency pumps fit perfectly into the application to replace existing old systems, as they offer state-of-the-art pumping and thus, provide major advantages.

## PRODUCT FACTS\*

- Self-priming
- Integrated water ring vacuum pump
- Flow rate up to 9,000 m<sup>3</sup>/h
- Head up to 190 m
- Delivery pressure up to 40 bar

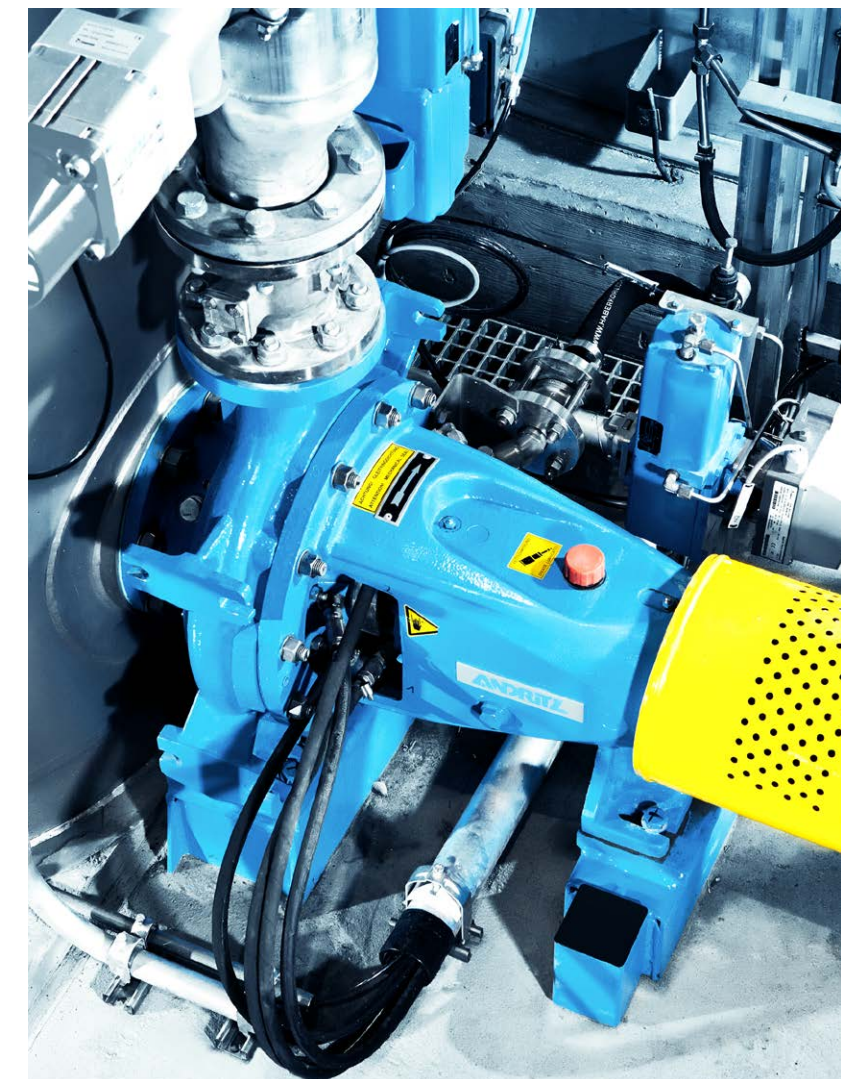
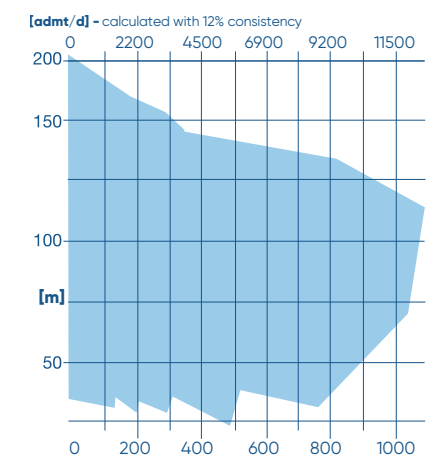
\*These values are guidelines and may differ depending on project requirements



## PRODUCT FACTS\*

- Flow rate up to 13,000 adm<sup>3</sup>/d
- Head up to 190 m
- Delivery pressure up to 25 bar
- Temperature up to 140 °C
- Consistencies of up to 16%

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





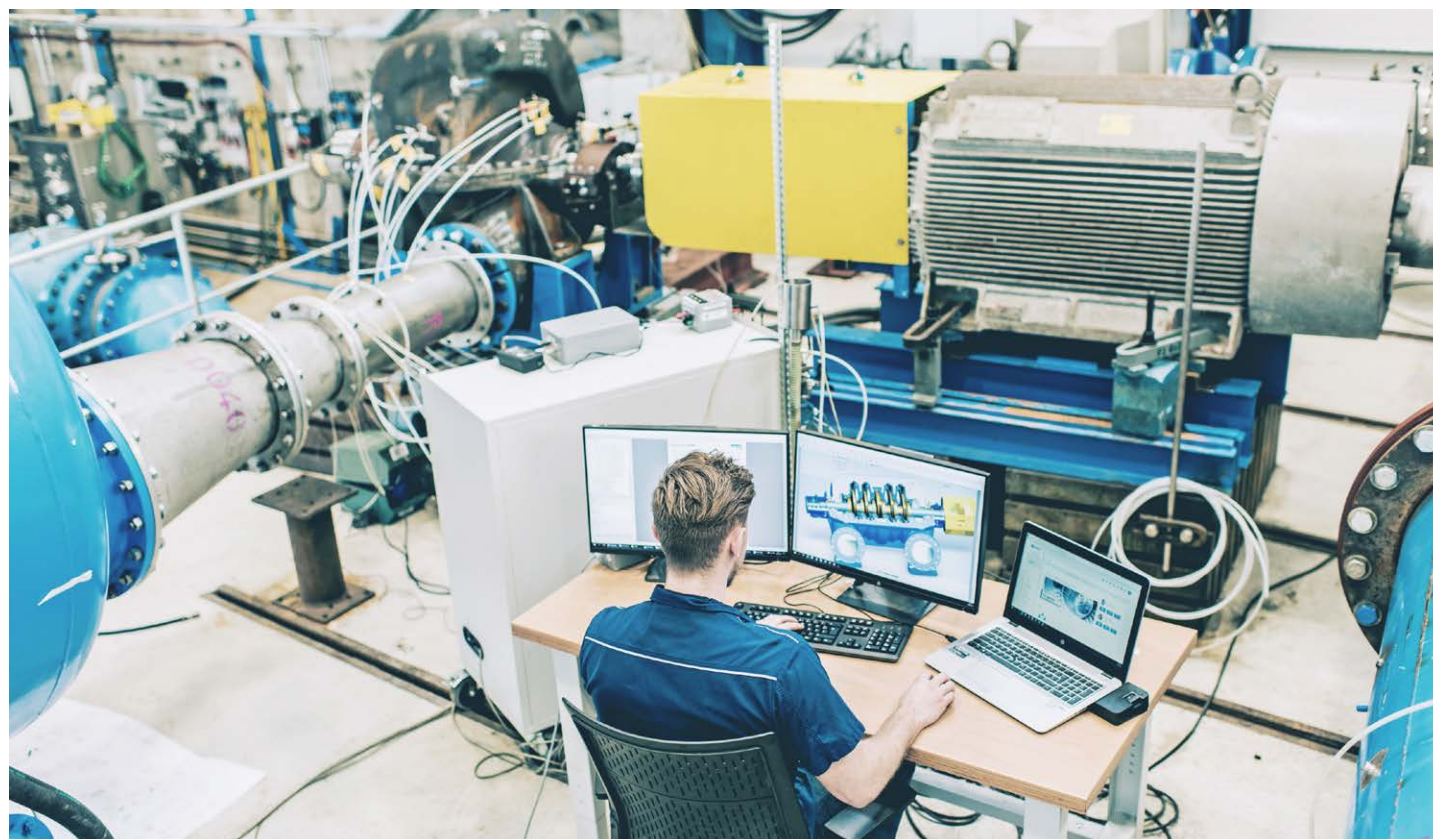
# Always a flow ahead – Research and development

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 pump-

ing 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





# Sweet pumps

## ANDRITZ pumps in the sugar industry

As a supplier of tailor-made pump solutions for the sugar industry, the international technology group ANDRITZ has an extensive knowledge of the necessary process technologies. This forms the basis for the development and production of reliable components for the sugar production. ANDRITZ centrifugal pumps can be used throughout the entire production chain and offer maximum efficiency and ease of maintenance. Due to their robustness, wear resistance through a wide variety of material combinations and the fact that they meet the highest customer requirements in terms of efficiency, service life, ease of maintenance as well as cost-effectiveness, sugar manufacturers all over the world rely on ANDRITZ centrifugal pumps.

The consumption of sugar is almost as old as humanity itself. In Melanesia, Polynesia, the first traces of the cultivation of sugar cane for food use were found and date back to around 8000 BC. The first extraction and processing of sugar cane, however, took place only in Persia around 600 AD. For this purpose hot sugarcane juice, treated with a clarifying agent – a mixture of proteinaceous substances and lime –, was poured into wooden or clay cones, at the top of which the sugar crystallized into a sugar loaf. For many centuries, sugar had been a medicine or a luxury item because the common people used the more affordable honey to sweeten food and drinks. Although modern sugar refining developed as early as the 16th century, it was not until the beginning of an industrial production from about 1850 that the sugar price fell. From then on,

sugar became that popular mass agent. In the period from 2016 to 2017 alone, the annual sugar consumption was 181 million tons worldwide. The largest sugar producers are Brazil (24.8 million tons), India (22.1 million tons) and China (11.1 million tons).

ANDRITZ already has numerous, convincing references in the sugar industry. In addition to these credentials, the pump division of the international technology group received due to their outstanding customer service in the course of the project negotiations, the best price-performance ratio and the shortest delivery time and good relations of the local representative Reis Pazarlama ve Ticaret Ltd. Sti. to the customer, one of their most recent projects in this industrial sector. In April 2017, the respective customer commissioned ANDRITZ to supply 35 centrifugal pumps.

Since September 2017, 35 ANDRITZ centrifugal pumps have been operating in a sugar factory in Azerbaijan. ANDRITZ pumps are to expand the annual production capacity to up to 10,000 tons of sugar. Due to the great satisfaction of the customer with the high quality of the produced and delivered pumps, he purchased a complete ANDRITZ spare parts package just one month later, in October 2017.



35 ANDRITZ CENTRIFUGAL PUMPS HAVE BEEN OPERATING IN A SUGAR FACTORY IN AZERBAIJAN. THEY ARE TO EXPAND THE ANNUAL PRODUCTION CAPACITY TO UP TO 10,000 TONNES OF SUGAR.





## 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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