

# ANDRITZ: Engineered Success

*ANDRITZ is one of the world's leading suppliers of machines, equipment and services for hydropower plants, the pulp and paper, metalworking and steel industries and for municipal and industrial solid-liquid separation. The listed technology group's headquarters is located in Graz, Austria, though they employ approximately 26,000 people and operate more than 250 locations worldwide.*

*Pump Engineer had the pleasure of speaking with Dr. Uwe Seebacher, Global Director Marketing, Communications & Strategy, Pumps, about current projects, upcoming developments and the meaning of the "blue heart".*

*By Melina Schnaudt*

ANDRITZ was founded in 1852 in Graz as a foundry; as such, the pump division is the oldest part of the company. The pump division employs approximately 1,500 people at four production sites in Austria, Germany, China and India and includes the pulp and paper, water and wastewater, food, mining and power industries. The company also provides custom-tailored pump solutions for almost every other industry and is experiencing steady growth.

"We are always called when things are difficult," Dr. Seebacher says. ANDRITZ isn't solely a pump manufacturer in the way that many of its competitors are. Rather, it is a technology group of which pumps are a subdivision. As such, the company knows the entirety of the involved processes and value chains and are aware that pumps are only one component of said chain. Bearing that in mind, Dr. Seebacher says, integrating pumps into a process landscape is "no problem" for ANDRITZ.

## Engineering expert water

ANDRITZ's global customer base is well aware of the company's expertise with large-scale pumps, leading them to quite often provide ANDRITZ supplies completely on an EPC basis for the entire system. What was formerly the Bellwood granite quarry — located northwest of Atlanta, Georgia — will soon become one of the biggest water storage facilities in the country, storing some 2.4 billion U.S. gallons of water (9.1 billion liters) as a part of this program. This expansion of the city's raw storage capacity will provide Atlanta with a reliable supply of drinking water for the next 100 years and will increase the emergency raw water reserve from just three days to 30 days. The Department of Watershed Management, which is in charge of the water supply of about 1.2 million people in Atlanta and its surrounding area, is investing approximately USD \$300 million into this project. "A city like Atlanta cannot risk having the drinking water supply stop working," Dr. Seebacher explains. "In this case, we had to show through our own test runs that our pumps could deliver on this performance." This order is the largest pump order for ANDRITZ in North America to date and marks



*ANDRITZ was founded in 1852 and soon included pumps in its original portfolio.*

an important step into the growing market.

Among the major benefits of ANDRITZ's proposed solution of using double suction submersible motor pumps is the full compensation of the axial thrust independent of the rotational speed. This characteristic neutralizes the load on the pump, the motor and its thrust bearings. With this technology, two contra-rotating submersible motor pumps are arranged on top of each other and are driven by a continuous pump shaft, and each of the two pumps transports half of the capacity to the middle of the pump at full pressure. This significantly reduces wear and tear, increasing service

life to up to 20 years or more, as well as providing the maximum possible operational reliability. The division of work between the two pumps not only achieves the complete compensation of axial thrust, it also halves the suction velocity at the pump inlets. This protects the well walls around the intake openings and minimizes the intake of abrasive solids and silt.

## IoT goes IoP

While the Internet of Things (IoT) is a major topic in most industries, ANDRITZ is approximately 15 years ahead of the market. “What many people refer to as the future — the IoT — has been around here for 15 years. What ANDRITZ AG is talking about now, rather, is the Internet of People (IoP).”

With IoP, customers with demands for a certain size — for example, 50 or 60 pumps anywhere in South America — can connect with ANDRITZ’s service technician in a repair case or problem, using modern tools. “That way, our customer in Uruguay does not have to wait for someone from ANDRITZ to fly down. Waiting times can be really long, especially in cases of the wrong visa or wrong spare parts.” Instead, customers can virtually connect with the company’s service center, where the problem is analyzed — perhaps even solved — under supervision. If that is not possible, spare parts are ordered along with the service technicians and the necessary steps to take action that ultimately lead to solving the problem. “That way, we create real added value for the customer.”

## Pattern recognition

IoP also incorporates training. “We train our employees in virtual reality (VR) when they are about to go to a customer’s plant so that they know exactly where they are, where they have to go and where the machines are in the plant.” The third advantage of IoP is the possibility of pattern recognition. All pumps delivered by ANDRITZ are IoP-compatible and can connect to them. That way, ANDRITZ is able to generate more data to recognize certain patterns and to assess whether or not the pump is still in optimal condition, or if the customer already has losses. In that case, either something in the process chain before or after the pump is affected, or the liquid that goes through is no longer of the degree of purity that it needs to be. With that knowledge, ANDRITZ engineers can act immediately. “The pump is the heart of a process. We often hear that the pump is broken. Usually, however, the pump was not broken; either the liquid was not clean or the pressure had changed, which caused damage to the pump. The pump is the centerpiece that immediately shows where something is wrong.”

As a result, ANDRITZ uses pattern recognition. The information goes all the way to “big data” so that patterns can be compared “from a data protection point of view”, according to Dr. Seebacher. This data can even be used for digital twins, with which ANDRITZ is



All pumps delivered by Andritz are IoT-compatible.



*Thanks to its technologically superior, innovative and economical solution, ANDRITZ was awarded a strategically important contract to supply three submersible motor pumps, complete with peripheral equipment, for Quarry Pump Station, Atlanta, USA.*

able to virtually optimize existing process chains. The digital twin maps the entire process with the machines, materials, fluids and components. There, individual components of the process are exchanged, enabling ANDRITZ to optimize the customer’s processes.

“If a customer already has another IoT or IoP solution, we can easily integrate our pumps, but we can also serve the customer with the entire all-in-one solution by offering the system with our own solutions. This competence for the entire value chain, and not only for the pumps, is a huge advantage,” says Dr. Seebacher.

Many companies are afraid to open their data, which is a great disadvantage for the company. As Dr. Seebacher points out: “A technology company like ours, working together with Microsoft and other cloud solutions, has a different level of security compared to a manufacturer with a standalone factory. If companies do not want to open their data, it’s fatal — because they will never get the performance that we can get when we





Impellers of ANDRITZ vertical volute pumps. These pumps will be installed at another major project of ANDRITZ's pump division in Kaleshwaram, India.

minimize risks and costs through pattern recognition and the corresponding possibilities of predictive maintenance." That is how ANDRITZ differentiates itself from its competitors: "The market is not aware of these possibilities. They do not have the experiences and the systems that we have, and are therefore not interested in things like this."

## Digital planning

ANDRITZ has the entire value chain under one roof. Service is a strong and quickly-growing area because the company's engineers are trained accordingly, and this expertise is important when a component has to be adjusted correctly. "With our expertise, we can optimize patterns," Dr. Seebacher says. These days, companies even request the company's services before building a new production line. ANDRITZ virtually programs, maps and optimizes the entire process and adjusts it until the machines obtain optimum performance. "If a machine is running above the optimum, abrasion occurs, and I have to replace the pump earlier. That can be adjusted in advance. Based on our information, the production chain is built." As Dr. Seebacher points out, ANDRITZ gives the customer a huge advantage due to the lack of risk

and immediate efficiency. That way, there is no need for the company to laboriously optimize through trial and error afterwards. The simulator integrates the data into the system and trains the customer's operators; that way, all ANDRITZ has to do when a production chain is started is apply the system data.

## Growth through acquisition

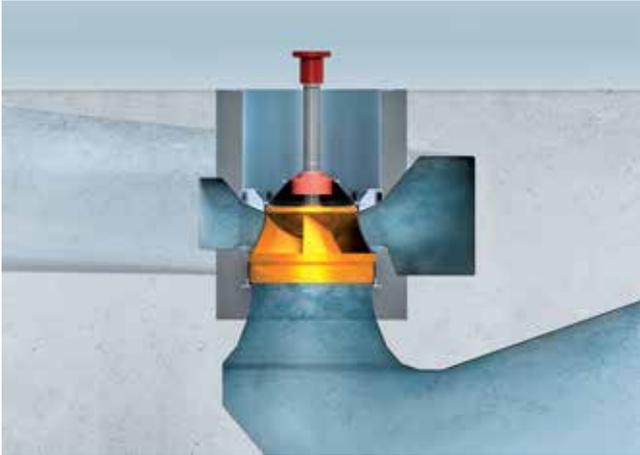
Among the top priorities of ANDRITZ's pump division are technology leadership, knowledge transfer, sustainability and, of course, solid growth through specialized products that can work in difficult and complex environments. ANDRITZ AG has a turnover of USD \$7 billion and around USD \$1 billion of free capital available so that they are able to take over a company in the event that it is sensible to do so. "At the beginning of the 2000s, we bought the German investment, Ritz, which is very successful — even in the African sector — in West Africa, as well as South Africa," Dr. Seebacher explains. "We bought this investment in 2008. We know that the pumps of Ritz have been working in the difficult conditions of this market for 50 years — salty air and porous, high temperatures. If pumps run under these conditions for 30, 40 or 50 years without problems, then it is a high-quality test."

"We are now observing that new markets (like the Emirates) are moving away from pure delivery towards sustainability," Dr. Seebacher remarks. A higher number of customers are willing to pay more for good quality because people cannot afford pumps that break after two or three years. "ANDRITZ pumps have a significantly higher efficiency — more than 90% above the market average," Dr. Seebacher points out. "This means that even if the pumps are 5, 10 or 15 percent more expensive to purchase, they have amortized at lower energy costs, flow rate optimization and higher efficiency after one to two years."

## The importance of sustainability

ANDRITZ often works closely together with governments that choose the company because the government can no longer afford to run tests or take risks with their upcoming large-scale projects. "If, somewhere in a section of Senegal or Dakar, the drinking water supply fails, then that is a huge problem," says Dr. Seebacher. Furthermore, governments work with public money, so preventing product trials while doing business with the right suppliers is key.

"Water is needed everywhere in the world in the appropriate form. Today, wastewater is nothing but the gold of the future," Dr. Seebacher makes clear. "Accordingly, the governments have to do something." The willingness to invest has emerged out of necessity. Other areas (such as mining) are life-saving. If companies do not have products that work properly, they risk people's lives unless water is available. In the paper sector, matters come down to improving process



*ANDRITZ knows that beyond offering different products, significance lies in alternative production methods, as well. One such example is concrete volute pumps. ANDRITZ engineers developed the possibility of having different structural methods (concrete blocks, metal/steel parts or wood inlays, in the event that the pump is especially large) to save on cost and time.*

efficiency in order to watch one's ecological footprint. Companies can no longer afford working energy or resource-consuming; rather, it has to ensure that its eco-balance is right. "That's where our pumps come in again. They amortize after 1 to 2 years because of better energy efficiency." According to Dr. Seebacher, this is the case in the sugar business, as well, as companies are looking for sustainable products. "Because of the aggressiveness of the media, I have less runtime of the products, but through our production processes and coatings (such as duplex and super-duplex), we can optimize that, too."

## Present through difficult times

Another major project of ANDRITZ's pump division was in Kaleshwaram, India. ANDRITZ received the contract to equip three pump stations with a total of 27 volute casing pumps near the village with an order value of over 60 million euros, and commissioning is scheduled for June of 2018. A pump station delivers 660 cubic meters of water per second from the Pranahita River, which is then transported via other stations to a water reservoir. This reservoir is used for the sustainable irrigation of agricultural land in the cities of Karimnagar, Medak, Nizamabad, Nalgonda and Rangareddy district. In total, ANDRITZ is responsible for the water treatment of 20 villages. The spiral casing pumps are characterized by low energy consumption, which is achieved by their very high hydraulic efficiency of up to 90 percent.

ANDRITZ has already faced several difficult situations — one of which occurred during a job in Johannesburg, because the South African city is built on mines and there are multiple mine trenches in the city center. As the groundwater rises, the water is burned by mine residue. Therefore, the water needs to be pumped out regularly so that the level is not too high. "We were

involved there due to our technology leadership with submersible pumps," notes Dr. Seebacher. ANDRITZ was also part of the "miracle of San José" in Chile in 2010 when the mine disaster occurred, during which they helped to lead the 33 miners involved to safety.

## Alternative product methods

ANDRITZ knows that beyond offering different products, great significance lies in alternative production methods, as well. One such example is the CVP pump (concrete volute pump). These large pumps — which revolve around flow rates, rather than high altitudes — are used in areas such as flood monitoring. ANDRITZ's engineers developed the possibility of having different structural methods (concrete blocks, metal/steel parts or wood inlays in the event that the pump is especially large) to save on cost and time. In the case of utilizing wood inlays, the inlays are boarded with wood, and then concrete is poured around them. The wooden part can then be removed and reused for the next pump. "Competitors cannot do that," says Dr. Seebacher. "They recommend to the customer, despite a large size, to do that with concrete components. This results in enormous cost and time."

## The "blue heart" of ANDRITZ

"The people of ANDRITZ have a blue heart — the ANDRITZ heart," Dr. Seebacher says. "ANDRITZ is shaped by its long history. The modern management and the positive and proactive work environment allow people to identify strongly with the company."

## Biography



*Global Director Marketing, Communications & Strategy, Pumps*

Dr. Uwe Seebacher has been the Head of Global Marketing & Communication at ANDRITZ since June of 2017. He attended academic high school before going into business studies with a focus on organizational development, marketing strategy and HR in Graz, Vienna and the USA. He did his dissertation in the field of QM, and began his career by working for Deloitte and Touche, an accounting company that he helped to build up. He was then self-employed in management consultancy with a publishing house that included clients such as Allianz, Lufthansa and Commerzbank.

