

TIAC

Opening up a world of possibilities in tissue



The tissue machine laboratory, which provides extensive testing methods, supports research and development efforts.



ANDRITZ has signaled its intent to become the global leader in tissue production technology with the opening of the Tissue Innovation and Application Center (*PrimeLineTIAC*), a dedicated tissue pilot plant for R&D in Graz. SPECTRUM – together with a customer – took up the invitation to visit the brand new facility.

The taxi driver drops us off at 8:00 am sharp outside the prestigious offices of ANDRITZ global headquarters on the outskirts of Graz, Austria. After identifying ourselves at the reception, we are quickly met by a very friendly and smiling Klaus Gissing, ANDRITZ's Vice President of Tissue, and the founder of the *PrimeLineTIAC* dream.

It must be said at this point that the ANDRITZ headquarters in Graz is not just the home to Members of the Board and all things corporate and financial, it is also home to some of the most precise engineering known in the global pulp and paper industry.

THROUGH THE TUNNEL INTO ANOTHER WORLD

After polite greetings, Gissing whisks us off through the tight security barriers and into the inner realms of ANDRITZ's office block. But there is no meeting room for us

here today. We are swiftly escorted past all the offices, led through a glass door and into a long pedestrian tunnel; it's as if we are going from one world into another – and we certainly are.

As we come out of the tunnel, blinking into the daylight of a large factory yard, wooden crates containing precision-made, heavy metal rolls and objects of all shapes and sizes are being stacked ready for transportation to destinations around the world.

And there, after a short walk along a well-marked path, and gleaming in the autumn sunlight, we have our first sight of the revolutionary *PrimeLineTIAC*, the solid, purpose-built base of trailblazing R&D for the global tissue industry. "This was our dream, which became a vision, and now here is the reality," says Gissing gesturing proudly.

ALL TISSUE STAKEHOLDERS WELCOME

And make no mistake, the *PrimeLineTIAC* concept is a revolution for the tissue industry. For the first time, all stakeholders are involved from across the board of the

tissue industry: producers, pulp suppliers, chemical companies, felt producers, converters – all are welcomed here to share in the development of the future of this dynamic tissue industry. In fact, ANDRITZ has already signed up 20 of some of the industry's most well-known names, for instance suppliers Albany, Danfoss, IBS, Nash, Solenis, as well as pulp production companies Södra and Fibria.

The partners in *PrimeLineTIAC* are given regular access to the pilot plant, and allowed to

carry out their own R&D alongside ANDRITZ experts in an effort to create the very best in technology and products in the areas of raw materials including pulp, chemicals, and consumables used in the production process.

"This exactly fulfills our idea," says Gissing. "A place where all stakeholders in the industry can come together, and work together on creating the future of the tissue industry."

Gissing then welcomes us into what looks like a brand new building, but which we are

told is an existing building ANDRITZ has restructured and totally refurbished for the purpose of *PrimeLineTIAC*.

As we enter the front door and turn left, there is a large downstairs office with a full picture window looking over the heart of the operation – the tissue machine. This is the control room, which is full of banks of computer screens and high-tech servers, and is the data capturing center where every conceivable production statistic will be recorded, gathered, and examined; and is set to what will become a major R&D hub for Metris, ANDRITZ's Digital IIoT Solutions. "Our Metris operations here will not only be a showcase for data capture and data management in tissue, but will also be the benchmark for Industrial IIoT in the pulp and paper industry globally," explains Gissing.

CREATING THE FUTURE

We head up the stairs, past inspirational quotes on the walls, such as: "The best way to predict the future is to create it" and "Innovation distinguishes between a leader and a follower". All good motivational words for R&D people. Now it is time for our meeting and to find out more about *PrimeLineTIAC*,

A customer takes the tour with Klaus Gissing, ANDRITZ Vice President of Tissue (right) and Hannes Thier, ANDRITZ Project Manager *PrimeLineTIAC* (left).



Customers of *PrimeLineTIAC* can operate with absolute confidentiality when conducting trials at ANDRITZ's site in Graz.



"The *PrimeLineTIAC* will be the birthplace of new products and processes."

ANDREAS ANZEL
Director, *PrimeLine TIAC*



in the purpose built, light and airy, dedicated meeting room – also overlooking the tissue machine, this time from above.

"We began dreaming of an R&D center for tissue around 2003," says Gissing, "but we knew we needed to first establish a strong market position in order that such an investment would be accepted from our stakeholders."

"I took over as head of tissue at ANDRITZ in 2008, and by then we were stronger as

we had some success, particularly in China. After a lot of hard work and innovation, by 2015, we were being taken a lot more seriously, and after some deliberation, particularly about where the site should be – China or North America were initially on the table – we decided the best place was right here, in Graz, where we already have a lot of our R&D."

Graz is the ideal location for a number of reasons, not just because ANDRITZ headquarters is situated here. Gissing explains,

"This region of Austria is home to a number of large pulp and paper mills, including Sappi's flagship mill Gratkorn, Heinzl Group's Pöls and Laakirchen mills. It is also close to a number of leading pulp and paper universities, including one at Graz, and others not far away at Darmstadt in Germany and Grenoble in France.

"These seats of technical learning in the pulp and paper industry are going to be important for the R&D center; we will be working closely with them including a week

every year when they will have full use of the *PrimeLineTIAC* pilot plant."

PrimeLineTIAC has the added bonus that there is an ANDRITZ pulp R&D center within 200 meters of the site in Graz.

"WE BECAME OUR OWN CUSTOMER"

The concept of the *PrimeLineTIAC* took about 20 months to transform from vision to reality, with ANDRITZ encountering a number of challenges on the way – challenges usually reserved for its own customers. Hannes Thier, Project Manager, *PrimeLineTIAC*, says, "This was a unique situation as we became the supplier and customer in one – essentially we became our own customer.

"This allowed us to see projects from a different angle completely and experience what it's like to walk in our customer's shoes, for instance having to navigate through local council regulations on noise and emissions, something we are not normally included in. We learned a lot about what our customer has to go through with this project – and we will definitely apply this knowledge to future customer projects."

PEOPLE AND TECHNICAL KNOW-HOW AT THE CENTER

At the fundamental center of *PrimeLineTIAC* is knowledge and experience. These two vital ingredients are provided by people with unheralded experience in innovation in tissue globally. ANDRITZ, as well as having its own experts, has gone out of its way to look for the best in the industry – among one of those hired is Thomas Scherb, a tissue industry innovation professional who has 17 years' experience operating tissue pilot plants. Scherb is now Sales Director at *PrimeLineTIAC*. Gissing says, "You can have all the technology in place, but it is the knowledge of people that really makes a difference when it comes to innovation. We were delighted to welcome Thomas Scherb on board in August 2015, who has been instrumental in bringing the *PrimeLineTIAC* to life. He has brought with him real hands-on experience of running a tissue pilot plant in Brazil for a number of years."

Scherb will work closely with Andreas Anzel, ANDRITZ's own tissue R&D head who has over 13 years' experience on the front line of tissue innovation, and is now Director of *PrimeLineTIAC*. The combination of Anzel and Scherb's many years of experience on the front line of tissue development brings

unique expertise and synergies that allow the center to thrive when it comes to tackling new ideas and innovations.

The center also has a supremely well qualified operations team headed by Boris Jancic, who brings with him vast experience of commercial tissue production in Eastern Europe.

INTO THE HEART OF THE OPERATION

After a detailed technical briefing given by Gissing and Thier in the customer meeting room (see GETTING TECHNICAL section), we were ushered downstairs to the ground floor to view the heart of the operation at *PrimeLineTIAC*, the brand new tissue machine sitting in all its innovation-ready glory at the base of the building.

The tissue machine has been built taking into account all the parameters and demands a modern, future-looking tissue producer could possibly think of. The machine will allow up to eight different configurations that can be set up to test numerous energy saving ideas, raw material, and new product trials. Added to which there are in the region of 3,000 sensor points around the machine, which will record and save every



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KLAUS GISSING
Vice President of Tissue



GETTING TECHNICAL

conceivable piece of information or data that will later help to analyze the results of any R&D experiments carried out.

Gissing says that any data gathered on trials and product runs at *PrimeLineTIAC* are all treated with the utmost confidentiality, and all results, reports, and samples are the customers' property to take away with them. ANDRITZ cannot see any data unless the stakeholder is sharing the results with them.

READY FOR ANYTHING

"We have been avidly listening to what our customers are saying with the building of this tissue plant," concludes Gissing. "We know that energy savings are high on their list of priorities, but we also know that raw material usage in the form of pulp and chemicals is also as important. And, of course, we are acutely aware that improvement in quality is paramount for customers as they seek to capture new markets and increase their own market share for their existing products.

"R&D on all these crucial aspects is all in a day's work for *PrimeLineTIAC*."

After around three hours, our tour of the *PrimeLineTIAC* came to an end and we were taken back through the tunnel and past the security of the ANDRITZ headquarters. As we left the building we at SPECTRUM could only conclude that the finished *PrimeLineTIAC* – already being massively well received by the tissue industry – is an R&D center that is totally equipped for any ideas a customer, supplier, or university professor could ever want to throw at it.

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STOCK PREPARATION

All types of pulp – softwood, hardwood, virgin fibers, recycled fibers, bagasse, bamboo, and straw – can be treated in a continuous production line from pulping to the tissue machine headbox and without intermediate long storage that might negatively influence fiber properties. The system is split into separate short and long fiber lines to allow best development of fibers depending on any possible furnish. The different fibers are pulped in the FibreSolve FSV pulper, which allows high slushing consistencies up to 7.5 percent. Then fibers can be deflaked and refined in the Papillon refiner CS, where they are treated in the cylindrical refining zone much more gently. The layout features a flexible system configuration – interconnecting piping between the lines enable the use of the refiner and deflaker for short as well as for long fiber. It is then possible to evaluate the impact of different fiber treatment on the final product.

The individual stock components are then mixed in two ANDRITZ ShortFlow blending systems. The approach-flow system follows – two ModuScreens HBE, which combine lowest energy requirements with minimum pulsations and perfectly protect the tissue machine. Excess water from the tissue machine is clarified in a micro flotation system and used partly as shower water. There are also two MicraScreens with a fine-slotted screen plate and automatic self-cleaning device. The sludge with a consistency of approximately 2 percent, is dewatered in the Reject Compactor ReCo-L, which is able to thicken from low consistencies up to a dryness suitable for disposal.



THE TISSUE MACHINE

The new tissue machine can be operated in eight different configurations, from conventional tissue on a CrescentFormer with suction press or the new *PrimePress XT Evo* shoe press, to conventional enhanced tissue (vertical CrescentFormer), textured and premium structured produced on TAD and VTAD configurations. An overview of the tissue machine:

- Design speed: 2,500 m/min
- Headbox: 1-, 2-, 3-layer configuration with dilution control
- Former: CrescentFormer, TwinWire former
- Pre-Dryer: Two TAD drums, 14 ft
- Hood: TAD hood
- Press: Suction press, shoe press
- Dryer: Steel Yankee, 16 ft
- Hood: High-temperature hood
- Sheet run: Passive/active foils
- Reel: Centerwind reel



AUTOMATION

The eight configurations on the tissue machine are supported fully by a *PrimeControl E* automation system that allows flexibility by supporting several functional areas: Enhanced operability and maintenance, Embedded drive and quality control system, and Eco monitoring (resource management system). These three focused "E" areas are enabled by a set of integrated functionalities that lead to proper results tailored to the specific needs applied. The configuration can be controlled by mobile device (such as smartphone or tablet), in the main control room, or by remote control. The ensemble of the functional bundles is an extremely modern control system for tissue plants; it also supports in reconfiguration and pre-production phases, as well as during the whole operation phase. Additionally, the very latest digital technology available at ANDRITZ for monitoring and maintenance purposes is in use, including Metris Augmented Reality Glasses that allow operators to monitor equipment in real time.



PUMPS

The *PrimeLineTIAC* has been equipped with high-quality, multi-functional ANDRITZ process pumps. They fulfill three different purposes within the production process: transportation of all liquids, operation in the stock preparation process, and drainage. The core pump, however, is an ANDRITZ headbox pump with the lowest pulsation, which is achieved by offset rotor blades developed especially for tissue production. With efficiencies beyond 90 percent, it helps to save valuable energy, and conveys stock suspensions with consistencies of up to 2 percent.

Each of these pumps is equipped with a sensor concept that is unique in pilot plants worldwide. It allows the facility not only to control the operating mode of the pumps, but also to obtain important information on the process and on operation under different conditions.

