Key Equipment: INNOVATION ON DISPLAY IN THE WOODYARD

Hardware, software, and everything in between: ANDRITZ integrates several innovative technologies to increase chipper throughput and wood chip quality.

There may have been a time when the woodyard was a necessary-but-neglected area of the pulp mill, but that time is over. Introduction of new equipment, new features, and expanded capabilities to enhance chip production is happening at a rapid pace at ANDRITZ. The best part is that the economic benefits from these innovations can often be enjoyed by retrofitting existing lines.

**HHQ-CHIPPER**
ANDRITZ mastered the horizontally fed chipper configuration and has been perfecting this unique geometry since 2001. The HHQ-Chipper creates the thin and square-shaped chips at the highest throughput obtainable. The horizontal feed keeps the logs correctly oriented to the chipper knives where they can be simultaneously chipped against the bedknife, instead of against other logs, to produce uniform chips with minimal oversize, pins, or fines.

Confidence in the excellent and consistent chip quality produced by the HHQ-Chipper has led some mills to eliminate the chip screening process prior to the cooking plant, significantly lowering investment and operating costs. This, of course, increases the value-added benefits of ANDRITZ woodyard technologies.

To date, over 130 heavy-duty HHQ-Chipper systems have been delivered to mills worldwide. The innovative and high-capacity EXL model in the HHQ-Chipper series is operating at the world’s largest single-line pulp mill (in Brazil). In total, 28 EXL models have been sold. More recently, the EXL+ model with extra high capacity has been introduced to the market.

**TURNKIFE SYSTEMS**
ANDRITZ chippers are equipped with well-proven TurnKnife systems, which are available in several models. The latest model is the TK-IV. The chippers can also be equipped with knife changing systems, such as the QuickClamp hydraulic mechanism, to permit very fast and safe knife changes. The TurnKnife systems have proven themselves around the world as the standard for safety, quality, and the ability to change knives quickly to ensure the highest chipper uptime possible.

TurnKnife technology has several key advantages. The knives are light and much safer to handle. In the latest TK-IV model, the knives have a very long operating life. TurnKnife knives do not require regrinding. The knives can be reversed and rotated, much like rotating tires on an automobile, to extend the knife changing intervals. In this way, the chipper produces consistently high chip quality over a longer time period, compared to conventional knives.

ANDRITZ offers TurnKnife and auxiliary systems, such as the ScanChip optical chip analysis system and automated chip samplers, for any brand of chipper. It is easy to convert a chipper disc from any other knife system to the TurnKnife system.

**CHIPPER DISC MANUFACTURING**
In addition to its own manufacturing, ANDRITZ now produces replacement chipper discs for other brands of chippers. The discs can be more than one-to-one replacements. Custom solutions can be tailored to meet specific needs.

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**BENEFITS:**
- Superior chip quality at the highest throughputs
- Minimum fines and pins generation
- Outstanding runnability
- Reliable operation and easy maintenance
- Flexibility as process needs and chip sizes change
- Proven design with more than 130 installed units
- Highest capacity chipper in the market (HHQ-EXL size)
continuously measuring the chip quality.

To define chip quality in accordance with standards by heart of the chipper – the knife. The EKG (Electrical Knife Graphs) keeps track of the evaluate heart health, the ChipperEKG a doctor hooks up to the human body to and its knife system. Similar to the device tion and knowledge about the chipper and shows real-time information about the heart of the chipper – the knife. The EKG indicates the knife contact with the log and shows real-time information about the condition of the knives and bearings. ChipperEKG offers information about the actual knife condition during operation. It correlates knife life with chip quality to accurately forecast the optimum time for knife changes. Sensors embedded in the chipper (front and rear bearings, arvl, trigger, and gearbox) monitor the chipper in real time. This real-time data is ana- lyzed (actual compared to standard) and the results are displayed on monitors for operators and maintenance personnel. The result is online condition monitoring of bearings, online knife wear index, online detection of poorly installed knives, or damaged knives (which prevents seri- ous chipping damage), online detection of abnormal knife forces (typically caused by stones or metal pieces), and increased visibility into chipper health to support maintenance scheduling. Many ANDRITZ IoT solutions are available in mobile, hand-held formats – tablets, smartphones, or even augmented reality glasses – to make the daily plant routine much more efficient.

Our automatic expert at ANDRITZ are up to the task. The latest development efforts within predictive maintenance programs for machines and plants of our client industries have resulted in an integrative condition monitoring solution. With this tool it is not only possible to monitor and control all assets of a mill regarding individual performance but also, and this is the real gain, it will be possible to predict behavior in advance so as to enable highly sophisticated mainte- nance planning. The results will be more efficiency, reliability, and resource savings all across the process.

ANDRITZ know-how regarding both process and digitaliza- tion is being combined into smart algorithms that have the power to predict machine conditions based on data that is made available by dedicated high-end sensors for industrial applications. The gained data is pre-selected and orga- nized, then processed by the best suitable algorithms and analyzed in order to provide the relevant insights for our cus- tomers’ targets.

The integrative strategy of Metris products, combined with digital solutions from ANDRITZ, makes sure that all solutions have the proper interfaces to seamlessly function together and as a result increase the overall performance. This means customers with existing Metris OPP contracts, our core prod- uct for optimization of process performance, can simply include the new condition monitoring app as an add-on to enhance the overall capabilities and accuracy of their solu- tion package. This results in an even higher degree of optim- ization that is translated into real savings for the customer.

One aspect of the achievements in our digital developments for mills is in the area of maintenance. Now we can provide meaningful information about assets in order to increase productivity, efficiency, reliability or even plan stops of a plant in a more effective way. Besides that, performing proper maintenance increases the lifetime of an asset and there- fore decreases or postpones overall investments, freeing up financial resources for other areas.

Metris Vibe is one of the latest developments to come out of our R&D department in the area of condition monitoring. A vibration and temperature sensor, Metris Vibe is the first of its kind, and functions wirelessly on critical equipment that is otherwise very difficult to access or subject to safety issues. With the vibration sensor, the respective equipment can be analyzed on its actual state and provides data via low energy Bluetooth technology to a gateway that sends the relevant information to the Metris platform.

Further developments in the area of condition monitoring that are soon to be integrated into the Metris digital solution portfolio include sound intelligence systems using industrial microphones to capture irregularities in sound with a similar approach. All insights are sent to the Metris platform where big data analysis takes place using individually adapted algorithms that analyze and process captured data in order to provide target-oriented information to the customer in real time.