

# 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.

## TURNKNIFE 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 higher 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



### 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)

- 1 Horizontal feeding conveyor
- 2 Engineered with **high safety** standards
- 3 ChipperEKG condition monitoring
- 4 Turnknife TK-IV with QuickClamp
- 5 High throughput and excellent **chip quality**



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ScanChip chip analyzer enables the pulp, paper, or sawmill to define chip quality in accordance with standards by continuously measuring the chip quality.

be engineered for capacity increases or because of disc issues. Examples include adding additional knife pockets within the same diameter to increase capacity, or increasing the disc thickness on units where cracking is a problem. The upgrade to add knife pockets can result in a production increase of 6-15%.

### THE IMPACT OF IIOT IN THE WOODYARD

Developments in the Industrial Internet of Things (IIoT) have opened the door for ANDRITZ to acquire new sensor technologies that permit direct data access to machines, complemented by cost-effective Big Data analysis.

A recent ANDRITZ IIoT solution is ChipperEKG, which gives online information and knowledge about the chipper and its knife system. Similar to the device a doctor hooks up to the human body to evaluate heart health, the ChipperEKG (Electrical Knife Graphs) keeps track of 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, anvil, trigger, and gearbox) monitor the chipper in real time. This real-time data is analyzed (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 serious chipper 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 IIoT solutions are available in mobile, hand-held formats – tablets, smartphones, or even augmented reality glasses – to make the daily plant routine much more efficient.

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HHQ-Chipper, model EXL, is the world's largest chipper with 18 knives that ensure sustainable conversion of round wood into best possible chips at high capacity.



HHQ-Chipper equipped with well-proven TurnKnife TK-IV with QuickClamp hydraulic mechanism to permit very fast and safe knife changes.



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