

# STEAM DEICING IN THE DEBARKING DRUM

## LESS ENERGY, LESS WATER, MORE SAVINGS

In its never-ending quest to improve performance across the whole of the pulp mill, ANDRITZ has dramatically enhanced the process of deicing logs in the woodyard by introducing steam injection into the debarking drum.

With a much smaller footprint, less water and energy use, and improved efficiency when it comes to wood losses, steam deicing technology from ANDRITZ represents huge savings to pulp mill operators when deicing logs.

Antti Haapalainen, Head of Wood Processing Product Group at ANDRITZ explains, "The traditional way to deice logs in the woodyard is by using warm water – at around 50 °C – which is sprayed in a long tunnel onto the log bundles on a moving conveyor. In this case, the warm water melts the ice and snow on the surface logs; however, the logs in the middle of the bundle do not get so much heat energy and can often remain frozen.

"In the case of the ANDRITZ steam injection deicing system in the debarking drum, multiple injectors are housed in the drum itself, and the energy transfer of hot steam is much more efficient than warm water, and therefore super-efficient when it comes to deicing the logs. At the same time, the steam injection system has a much smaller footprint and has markedly less auxiliary equipment required for operation."

The operating principle from ANDRITZ first involves a steam injection to melt ice and snow in the entrance of the drum, followed by a second injection of steam

spread directly on the surface of the logs during debarking using special log lifters. Steam injected directly onto rotating logs ensures that all logs are properly deiced. Furthermore, the amount of energy and thus the whole deicing process is easier to control and can be accurate according to the requested debarking degree, thereby saving energy.

"This constant steam injection sequence in the drum is crucial to the debarking process as it makes sure that the frozen core of the logs does not cause the surface bark to freeze again, resulting in a much more efficient debarking process," says Haapalainen. "In the case of the warm water deicing system, energy input stops at the entrance of the drum and frozen cores can re-freeze the surface bark. Ultimately, this means the debarking process needs more warm water and the drum needs to rotate harder to get the required result, which increases energy costs and the possibility of white wood loss."

### SAVINGS: FRESH WATER, EFFLUENT, ENERGY, AND WOOD LOSS

Calculations by ANDRITZ indicate that an average size pulp mill, with a warm water deicing system can save around 1.5 MEUR a year by installing a steam injection system on a typical nordic debarking line.



These savings are made in the areas of fresh water, wood losses, steam and power consumption.

- Fresh water consumption savings of up to 40%
- Lower emissions and carbon footprint
- Electricity consumption up to 240 kW lower installed power
- Steam consumption up to 20% saving
- Less wood losses, at medium sized mills (more than 100 KEUR annually)
- Lower investment cost (equipment and civil works)
- Efficient layout of the plant
- Lower life cycle costs (less equipment to maintain)

"There are many savings to be made by installing a steam injection system," says Haapalainen. "First of all, with a warm water deicing system, fresh water needs to be constantly added as the water

becomes full of soil, mud, and bark residue. With the steam injection deicing system in the debarking plant, 40% less fresh water is required, which also means there is much less effluent."

"Also, there are generally lower emissions considering reduced effluent and we need less equipment due to the smaller footprint. Electricity consumption is much lower due to less energy being used in the debarking process and, of course, there is less wood consumption due to more accurate debarking efficiency. In addition to these savings,

→ "over-debarking" can be avoided and drum rotation can be kept optimum for the purpose."

Furthermore, due to exposure in the long tunnel of conventional deicing conveyor, some 2 MW of heat loss occurs during winter months on the warm water deicing system, representing a 23% energy loss. As the steam injection system is contained in the debarking drum and energy transfer to logs is more accurate, much less energy is wasted.

### INSTALLATION AND LIFE CYCLE

Due to its smaller footprint, less equipment requirements, and lower effluent amounts, the steam injection deicing system is ideal for both greenfield and existing mills.

"A smaller footprint and less equipment mean a major saving on capital costs," says Haapalainen. "The steam injection deicing drum can replace existing deicing systems at mills, for example, in cases where effluent load has to be minimized, as ANDRITZ has the engineering expertise to tailor-make to individual mill requirements."

"There are less civil works, investment costs are lower due to less equipment needed, and the lower lifecycle costs mean a fast return on investment."

ANDRITZ is currently installing a new debarking and chipping line with steam deicing in the debarking drum at the Nordic Paper Bäckhammar mill in Sweden. The plant will have the capacity to process over 1.4M m<sup>3</sup> of pine and spruce logs annually. Start-up is scheduled for the fourth quarter of 2025.

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