TransRoll automated storage system at a Scandinavian board mill
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Pesmel’s TransRoll automated storage systems have proven their worth in cases where the height is no limit to accommodating a high-bay storage system. But as a recent installation at a medium capacity board mill demonstrates, this system can also be applied in existing facilities with limited ceiling heights.

The mill in question is Europe’s leading producer of premium paperboards, including folding boxboard. The mill is an integrated board and pulp mill that produces 400,000 tonnes of folding boxboard and 270,000 tonnes of kraftliner.

Reorganizing production

As part of a larger program to transform itself into a pure paperboard company one paper machine was converted to produce linerboard. Along with this change, the existing fine paper sheet cutting operations also ceased, replaced by a new extrusion coating line. This change required an intermediate roll storage (IRS) between the paperboard production lines and the extrusion coating line.

Extensive studies showed that the only practical area for this IRS was the old empty sheeting hall next to the new extruder line. The challenge was the 20 feet height of the ceiling in this area which would significantly limit storage volumes using the traditional method of stacking rolls on the floor. The available footprint was also too limited to allow the use of traditional clamp trucks or automatically guided vehicles (AGVs) because the access routes to allow these vehicles to clamp and lift large, seven-tonne paperboard rolls would take up almost half of the available footprint.

Effective solution for limited space

Pesmel’s proposed solution was based from the start on TransRoll, a concept that has been used successfully for a long time at converting plants for IRS needs. The standard TransRoll rack was scaled to fit the available height in this facility meaning that only two levels of roll channels with a maximum diameter of 72 inches could be accommodated. It also required asymmetric channel lengths (80 feet and 55 feet) with an aisle between them for one stacker crane to make full use of the available footprint. In other words, the traditional stacks of rolls were tilted for horizontal channels to fill the available shallow space optimally with rolls from wall to wall and floor to ceiling. The storage volume was doubled compared with that of an AGV solution. The targeted handling and sorting capacity was met using an intelligent warehouse management system (WMS) linked to the mill’s manufacturing information system (MIS) to keep the IRS inventory.

In the final solution the TransRoll concept was able to accommodate 4,500 metric tons of paperboard into a 34,000 sq. feet space with a height of only 20 feet and a handling capacity of 300 metric tons an hour. Fire safety was ensured with sprinkler pipes fitted into the rack on each of the two levels. In addition, the chosen concept simplified the layout by minimizing the need for conveyor equipment to move rolls between the production lines, the new extruder and the central wrapping station, all this made possible through use of the new stacker crane.