

PRESS RELEASE

Weinsberg, October 2018

Automated fiber-cement production

What a Facade!

James Hardie, a pioneer in fiber cement, is breaking the mold in the US with a new fully automated production line for facade siding. The integrated concept of heavy-duty expert Vollert includes in-plant transport, an air-conditioned, 100 m long high-bay warehouse, transfer tables, manipulators and automatically clocked autoclave trains. Tons of facade boards are loaded and unloaded within minutes. Automation accelerates the pace, reduces waste and saves space.

Fiber cement is durable. It is a premium high performance building board used in exterior cladding or as interior underlayment. The technology was further developed in the mid-1980s by the Australian building materials manufacturer James Hardie. Today - 8 million homes later - the name is a byword for high quality construction and high-quality design in the field of facade siding.

A success in the US

In the United States, these fiber-cement panels in wood design give many houses the typical American country house look. In 2017 James Hardie arranged the expansion of their production facility in Tacoma near Seattle due to steadily growing demand - with double know-how from Germany. Another mechanical engineer vendor supplied the systems for the fiber composite board production, and together with Vollert, James Hardie took a strategic move towards the automation of the intralogistics processes. "All internal distances from the production line to shipping are fully automated. This is a novelty for the manufacturer, because up to now all workstations were manually connected by forklift," Lars Strobel, responsible Sales Project Manager at Vollert explains. The advantages of a high degree of automation are obvious. Faster, precisely clocked processes, less floor space requirements and a clear increase in safety when moving the products were factors that convinced the building materials manufacturer to undertake this step.

Vollert developed a sophisticated intralogistics concept that also integrates the control of the processes besides the fully automated high-bay warehouse, transfer tables, manipulators and five wire rope systems. The intralogistics specialists have decades of experience in the design of material flow systems for the building materials industry. Already

in the 1950s, Vollert applied the cable car principle to ground-based wire rope hoists, which ultimately revolutionized the wood and ceramics industries and others. The engineers then developed circulating lines for brickworks and the finest porcelain well into the 1980s. Vollert was the first supplier who introduced the technology in the precast concrete industry. Today, Vollert is one of the leading international suppliers in the industry with more than 350 precast concrete plants implemented worldwide and subsidiaries in Brazil, Russia, China and India.

In-between wet and dry is the high-bay warehouse

The clearly noticeable core of the James Hardie system is a 13 m high and 100 m long high-bay warehouse located at the end of the pre-production line. It serves as a buffer and pre-drying chamber between the wet area (green sheet) and the autoclave plant, where the fiber cement boards are exposed to pressure and heat to attain final strength. During pre-production, sand, cement and cellulose fibers are mixed with water, pressed into slabs and stacked while damp. The packs of slab are then moved via roller conveyors to the stacker crane for storage in the high-bay warehouse. The air-conditioned environment delivers a constant temperature and humidity which allow to precisely control the pre-drying processes. The double-row warehouse has 160 storage bins. The raw slabs are stored there for several hours to cure before they are further processed. "James Hardie puts great stress on ease of maintenance and easy access to all parts of the plant for their staff," says Jens Tangel, Technical Project Manager at Vollert. "That's why, for example, the stacker crane can drive out of the high-bay climate chamber completely for maintenance. Otherwise the job would make the technicians sweat quite a bit."

Trains under pressure and steam

The final strength of the fiber-cement boards is obtained in high-pressure furnaces, so-called autoclaves. The slab packs are moved on trains into these long steel tubes. By means of the ground conveyor system and transfer tables, the packs are first moved from the high-bay warehouse into the autoclave area. A number of high-pressure furnaces are arranged in parallel. Upstream is a track system for loading and unloading the transport trains. The Vollert manipulator is arranged over the tracks so that it can operate all tracks fully automatically at a travel distance of approximately 30 m. One autoclave train can accommodate a number of packs, each 3.5 m long. The manipulator fetches and delivers a stack of slabs within each cycle. After that the Vollert wire rope systems automatically advances the cycle of the trains by one placement, so that the next unloading and loading

position is ready for the manipulator. The manipulator needs only 40 minutes to load a train completely. Finally, the transport train runs entirely into the autoclave, which is then closed. The following exposure to heat and pressure accelerates the chemical reactions of the fiber-cement components, so that it cures. The finished boards are then cut according to specifications and painted during the next steps. "Our gripper on the manipulator is specially designed to place the stacks of slabs at an angle if needed, and to pick them up again. The upstream feeder technology can arrange the packs at an inclination, if desired." explains Jens Tangel.

Demand is already higher than capacity

The new production line in Tacoma has been running since June 2018 to James Hardie's utmost satisfaction. Yet, even before completion, it became obvious that due to the high demand more capacities are needed.

About Vollert Anlagenbau GmbH

As specialists for heavy loads and large parts, Vollert Anlagenbau GmbH develops turnkey intralogistic concepts for the aluminum and metal industry. As a general contractor and full-service provider, the service range encompasses state-of-the-art material flow, storage and packaging technology as a stand-alone solution or integrated into a larger logistics environment.

Whether fully automated mega-high bay systems for aluminum coils, intelligent material flow systems for the leading aluminum extrusion press manufacturers, the world's most efficient storage and retrieval machines for the storage of sheet metal plates, automatic crane systems for 50 tons and more or the most modern surface coating systems – Vollert is everywhere.

Vollert's plant and machine solutions are used in more than 80 countries worldwide. Its subsidiaries in Asia and South America also strengthen the sales activities. Vollert employs 270 people at its company headquarters in Weinsberg. **www.vollert.de**

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Image 1



Image 2