Kuraray Trosifol A real first: automated distribution centre with a difference

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Nine weeks was all it took for STILL to set up this raw materials warehouse, including all the necessary automated components, for Kuraray Trosifol in Troisdorf near Cologne. The warehouse is the first to feature a sophisticated material flow concept, which sees semi-automated shuttles communicating with automated reach trucks as part of a channel storage system.

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We might not know it, but almost all of us will have come across PVB films at some point in our daily lives. PVB films have a very high tear resistance, which makes them the ideal choice for the middle layer in laminated safety glass for windscreens. Kuraray Trosifol in Troisdorf near Cologne is one of the leading manufacturers of these plastic films, which in addition to windscreens are also used in safety glass for banks and jewellers, skyscrapers, photovoltaic systems and even in the glass dome of the Reichstag building in Berlin – the seat of the German parliament.

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Sector: Specialist chemical company Company: Kuraray Group, worldwide sales of more than EUR 4.8 billion and over 10,000 employees, including 700 in Germany

Challenges: Acute lack of space, need for flexibility to handle fluctuations in production, delivery of around 400 pallets per day Solution: Sophisticated material flow concept using semi-automated shuttles in combination with automated reach trucks STILL products: Channel rack system with 3,300 bays, STILL PalletShuttles, automated FM-X reach trucks, RX 60 electric forklift trucks, work platform measuring approx. 40 meters long, and various material handling components such as chain conveyors and an automated stacking machine. Integration of material flow control system and upstream warehouse control system.

When a transport order is received, a shuttle collects the correct pallet for delivery to production.

Modern production supply system

In order to remain competitive, Kuraray Europe GmbH decided to expand its production capacity in Troisdorf in western Germany and address its acute lack of storage space by centralising the storage of its raw materials in an automated warehouse. Smart interactive software and automation systems ensure that the flow of goods through the warehouse is both transparent and efficient. However, what really sets the system apart is that it is the first to feature semi-automated shuttles communicating directly with fully automated reach trucks, in order to ensure raw materials are supplied to the right production supply station at the right time.

Sophisticated intralogistics system from a single source

It took PVB film specialist Kuraray a long time to find the right contractor to supply the complete intralogistics system for its new raw materials warehouse. Measuring 4,500 square meters, the building's floor space is almost as big as a small football pitch. "We pitched our project to many well-known suppliers of driverless transport systems and complete solutions. In the end, there were only three who had the confidence to take it on, and ultimately STILL was the only contractor able to implement the complete concept in the very tight timeframe of only nine weeks," explains Manfred Kania, Head of Logistics at Kuraray Europe GmbH. The sophisticated system put forward by STILL's Intralogistics Systems department comprises the following components:

- a high-density channel rack system with 3300 bays
- seven STILLPalletShuttles
- three automated FM-X reach trucks
- two RX 60 electric forklift trucks
- a work platform measuring around 40 meters long with seven workstations
- components including chain conveyors, cross transfer trolleys with telescopic forks, buffer storage and an automatic stacking machine for empty pallets
- a material flow control system and upstream warehouse control system.





The FM-X trucks automatically transport the BigBags to the material handling system on the work platform. The system is extremely flexible and transparent, meaning it can adapt its storage arrangements to accommodate fluctuations in production. Moreover, the initial investment will be quickly recouped thanks to Kuraray Trosifol's 24/7 production operations.

Fast implementation

Once the concept had been finalised, the next (and biggest) challenge was to implement it in just nine weeks! "It was essential that we installed the rack system, conveyor and work platform and commissioned everything in this short timeframe," recalls Dr Sven Schade, the responsible intralogistics project manager from STILL, adding: "Despite the initial difficulties when commissioning a similar pilot project, the system went live on schedule, thanks to the exceptional hard work and enormous commitment of all the suppliers, as well as the seamless partnership with Kuraray Trosifol."

Material flow in raw materials warehouse

The fine PVB plastic granules required for production are delivered in large BigBags. RX 60 electric forklift trucks, operated manually and equipped with scanners and terminals, unload the BigBags from the incoming trucks. The goods are scanned and recorded in the upstream warehouse control system and then allocated to the appropriate channel of the PalletShuttle channel system using the STILL touch-screen terminal. The STILL PalletShuttles then automatically accept and store the BigBags





 ↑ Manually operated RX 60 trucks store the BigBags in the channel storage system.
The FM-X truck positions the shuttle in the right channel with millimetre precision, ready to transport the BigBags to production.
→ The BigBag required for production is placed on the transfer station for the material handling system.

in the relevant channel, making maximum use of the available storage space while also ensuring fast access to goods. The three automated FM-X reach trucks handle outgoing goods 24 hours a day. In an entirely automated process, they place the shuttles in the right channels with millimetre precision and transport the BigBags to the material handling system for onward transport. The material handling system consists of chain conveyors, cross transfer trolleys with telescopic forks, buffer storage and an automatic stacking machine for empty pallets. It transports the BigBags to the seven workstations, where the raw materials are extracted from the bags and transported through pipes to the five production machines in the neighbouring halls. The empty pallets are collected in the automatic stacking machine and then transported by the FM-X reach trucks to the channels specially reserved for empty pallets and stored using a shuttle.

Complete traceability

The warehouse control system serves as the central interface for this sophisticated material flow concept. It communicates with the vehicle control system, the STILL PalletShuttles, the material flow control system and the quality management system. It monitors all goods and vehicle movements and systematically reports all incoming and outgoing goods to the upstream SAP system in real time. Any processes completed in the warehouse are automatically recorded in the IT system, in order to guarantee transparency and traceability.





Clever energy concept

Around 400 pallets arrive by lorry and are stored every day. Goods are then removed from the rack system when needed – at an average rate of twelve pallets per hour. The system supplies production with raw materials 24 hours a day, meaning the warehouse equipment from STILL is constantly in use. To meet this continuous demand, STILL developed an energy concept based on replacement batteries. The charge levels for the batteries in all trucks are monitored continuously. When the remaining charge drops below a certain threshold, the reach trucks or shuttles automatically return to the battery replacement station.

Summary

By installing all the components of the intralogistics system at Kuraray Trosifol's new raw materials warehouse, STILL provided the company with a one-stop-solution. This project was also the first to see semi-automated shuttles interacting directly with automated reach trucks. Even more impressively, all this was achieved in just nine weeks! "We were able to commission the system right on time for the start of production," says Manfred Kania with satisfaction. Previously the different ware-house areas were managed manually, but now the whole warehouse system has been amalgamated and optimised. "Any downtime at the new distribution centre would mean all production lines in our 24/7 manufacturing system would come to a standstill within a few hours. We therefore need at least 98 percent system availabil-ity – a requirement STILL has met to our complete satisfaction. This state-of-the-art logistics centre has given us an efficient and transparent warehouse management system and simplified our manual material handling operations considerably," Kania explains.

The emergency back-up system provides protection should any faults occur and the service support guarantees a smooth and efficient flow of materials at all times and in the long-term. STILL's service engineers respond quickly and are available 24/7, meaning we can guarantee a reliable flow of goods, just as we can guarantee the safety of laminated safety glass made with PVB film from Kuraray Trosifol.



Action! Video of the STILLPalletshuttle in use togeher with two automated STILL FM-X at the warehouse of Kuraray.

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