

Press release

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Automation and digitalisation: an autonomous outdoor transport train at the Roto plant in Leinfelden-Echterdingen / Fully automated loading in the interim storage area and unloading in the Logistics Service Centre / Very high degree of automation within production and intralogistics / Intensive planning phase / Multi-level safety concept

A showcase project for Roto intralogistics

Leinfelden-Echterdingen – Automation in production must always deliver concrete improvements for the company and its customers. Roto Frank Fenster- und Türtechnologie GmbH is now sharing details of how another completed project at its Leinfelden-Echterdingen production site meets these criteria. Since October this year, all production output has been transported from the interim storage area in production across the company's premises thanks to a fully automated, electric, driverless outdoor transport train. The train also unloads the transported pallets fully automatically at the Logistics Service Centre. Loading, unloading and transport are carried out autonomously without manual intervention.

By using this outdoor transport train, the global architectural hardware and gasket specialist is once again living up to its reputation as a pioneer in the use of innovative technologies in the architectural hardware industry. It has also sparked great interest from industrial companies outside the sector in Stuttgart, who have already seen the system in use at Roto.

Optimal organisation of material flows

The project forms part of the "Logistics Strategy 2025" adopted by Roto Fenster- und Türtechnologie GmbH in 2019. This strategy involved defining several concepts with a focus on automation and digitalisation. As a result, since the end of 2020, driverless transport systems have been supplying the indoor production facility at the site with empty cardboard boxes and transporting the full boxes from the assembly lines to the interim storage area. Stefan Duge, Intralogistics Project Manager in Leinfelden, summarises the benefits of both transport systems: "Now this project has been completed, it has enabled us to optimise the organisation of a large part of our internal material flows. Both transport systems are extremely flexible and ensure continuous material flows within our production and intralogistics."

Faster availability for customers

The added value for customers is clear from the faster availability of goods. Duge describes the connections: "Both systems can be used irrespective of the number of work shifts. This means that we reduce our throughput times by continuing to transport parts and materials 24/7 without interruption, even at peak production capacity or during holiday periods. As a result, our finished goods are dispatched more quickly and are therefore also available to our customers sooner."

With regard to delivery performance, there are further advantages which are to be expected to a certain extent for an indoor system, but which are remarkable for an outdoor system. With just one annual inspection, the outdoor transport train is likely to require little maintenance; it is ready for use in almost all weather conditions and can, of course, also be controlled manually, if required.

Reliable safety

The outdoor transport train was commissioned following intensive planning with the support of the supplier Neumaier Industry GmbH & Co. This planning phase involved determining the quantities to be transported, the exact specifications of the vehicle, the technical and visual

design of the transfer stations and the multi-level safety concept. Both the tractor unit and the two trailers are equipped with all-round safety scanners. These can detect the smallest obstacles – or even a person on the track or between the three train sections – and stop the vehicle immediately.

The illuminated transport train moves at a maximum speed of 5 km/h across the plant premises. It is equipped with geonavigation in order to stay exactly on the specified route. Road markings, signs and speed bollards guide and “slow down” any lorry traffic which is also on the company premises at the same time, so that the vehicles do not obstruct each other.

Roller conveyor technology

The communication between the transport systems was also precisely coordinated, as the outdoor transport train collects the finished goods from the interim storage area, i.e. from the same hall in which several manually controlled indoor transport systems and the autonomous indoor transport train are also moving. Loading and unloading operations use the same powered roller conveyor technology which has also proven itself in the industry for buffering pallets. Accordingly, the two trailers of the outdoor transport train are also equipped with roller conveyors and each trailer can hold two pallets per transport.

Automation and digitalisation variety

The outdoor transport train is another example of the logistics strategy being implemented consistently and therefore further demonstrates the company’s drive for full automation and digitalisation. Although the system cannot be used 1:1 at other locations, Production Director Dr Stefan Thiernemann says Roto wants to “transfer the experience from this project to other production plants in the medium term”.

There is a long list of Industry 4.0 projects already in progress including recording machine and operating data online, using collaborative robots, digital spare parts management, 3D printing (additive manufacturing) and using mixed reality glasses (HoloLens). Thiernemann summarises the aim of all these projects and the benefits for the customer: “Automation and digitalisation are key pillars in our strategy of operational excellence which also help us to provide our customers with the best quality and ensure a reliable delivery service.”



Automation of intralogistics: Roto Frank Fenster- und Türtechnologie GmbH is now using a driverless outdoor transport train at its Leinfelden-Echterdingen production plant in addition to several driverless transport systems in the production halls. The electrically powered transport train moves the entire production output fully automatically from the interim storage area in production to dispatch.

Image: Roto Frank Fenster- und Türtechnologie

outdoor_transport_train.jpg



With the help of the driverless outdoor transport train, Roto Frank Fenster- und Türtechnologie GmbH can continue to transport parts and materials at the Leinfelden-Echterdingen plant 24/7 without interruption, even at peak production capacity or during holiday periods, which is a key advantage of the transport system, says Stefan Duge, Project Manager for Intralogistics in Leinfelden. It complements the driverless transport systems already in use in the production halls since 2020.

Image: Roto Frank Fenster- und Türtechnologie

Stefan_Duge.jpg



Dr Stefan Thiemermann, Production Director at Roto Frank Fenster- und Türtechnologie GmbH, summarises the aim of the Industry 4.0 projects in production and the benefits for the customer: "Automation and digitalisation are key pillars in our strategy of operational excellence which also help us to provide our customers with the best quality and delivery service."

Image: Roto Frank Fenster- und Türtechnologie

Dr_Stefan_Thiemermann.jpg

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