

WHITE PAPER

Automatic transport - autonomous vehicles
or better stationary systems?



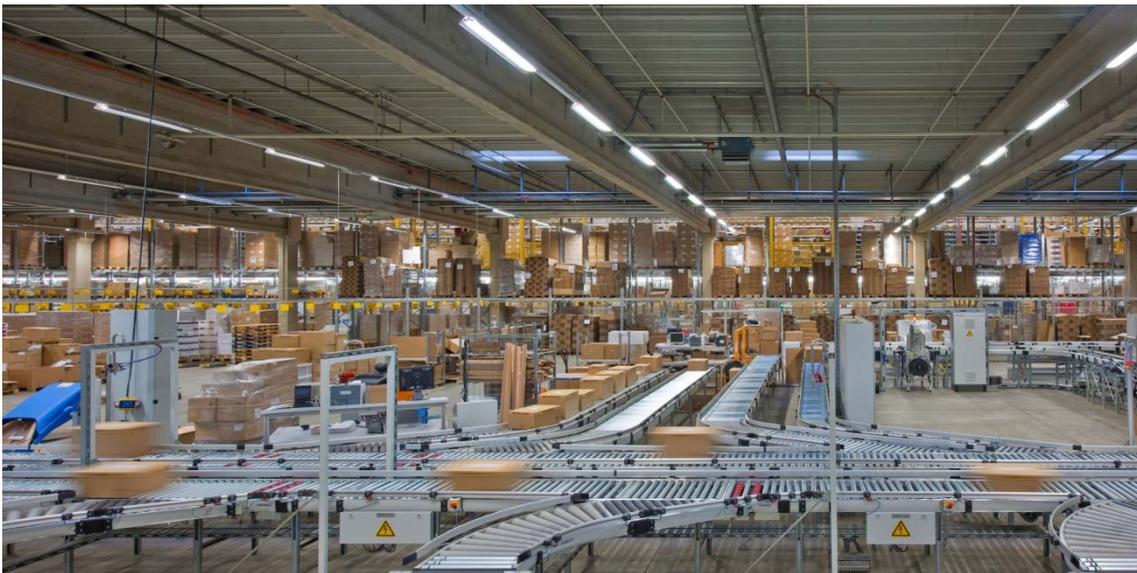
STATIONARY CONVEYORS VERSUS AUTOMATED GUIDED VEHICLES

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1 Introduction

An optimal flow of material is a prerequisite for efficiency and productivity in intralogistics. High-performance conveyor technology ensures an ideal connection between the various functional areas in the logistics center. With digitized goods tracking, Industry 4.0 networked elements, and 24/7 availability, the demands placed on the flow of materials have increased significantly in recent years. High cost pressure and a continuing shortage of skilled workers are added to this. Companies are therefore increasingly choosing to automate their flow of materials. There is always the central question of which kind of automated technology reflects the individual business processes in an efficient, reliable, flexible, and economical manner. Then there are the different systems that are in use, which, in simple terms, can be divided into two categories: stationary conveyor technology and automated guided vehicles (AGVs). Both solutions have different features and - most likely for this exact reason - complement each other ideally. The system that best meets the respective logistical requirements depends on various factors which have to be reviewed in each individual case.



High conveying capacity is achieved with stationary conveying technology. This makes it particularly suitable for companies that continuously transport large quantities of material. ©Unitechnik

2 Individual advice as the basis for a decision

In addition to stationary continuous-flow conveyor systems and non-continuous flow conveyors such as electric monorail conveyors, automated guided vehicles that move autonomously in the warehouse are increasingly establishing themselves on the market. The choice for one of the two options or an intelligent mix of both must be made individually for each project and depends on the specific requirements of the application. Logistics planners or manufacturer-independent general contractors such as Unitechnik offer important assistance in the selection process. Both are completely free to choose their products and make decisions based solely on criteria that support the customer's benefits, such as throughput, scalability, reliability, and cost efficiency. Within the framework of an independent consultation, it is also possible to create a simulation of the desired transport solution and thus determine its effects on the overall logistics system in advance. A 3D model offers a very concrete idea of the planned system for the user.



A 3D model offers a very concrete idea of the planned system for the customer. ©Unitechnik

3 The solutions at a glance

3.1 Stationary conveyor technology: powerful and robust

Stationary conveyor technology is permanently installed and thus tied to a specific location. This reduces the flexibility of material transport, as it takes place on predefined routes. At the same time, however, a high conveying capacity is achieved, which is only possible with AGVs through the use of a corresponding number of vehicles and with great space requirement. Stationary conveyor technology, such as roller or chain conveyors, is therefore particularly suitable for companies that continuously transport large quantities of material. High material flows are also caused by the supply of goods-to-person picking stations. However, subsequent scaling of this solution is relatively costly and time-consuming. Therefore, a detailed analysis of the required performance should be carried out in advance: How many loading units are transported per hour on average? How many at peak times? Where are the material flows distributed? What distances have to be covered? What's the variance?

Providing for a capacity reserve is worthwhile when designing the conveyor system. Planning should take performance fluctuations as well as future developments into consideration. This is ultimately more cost-effective than retrofitting an existing conveyor system with additional lines. One alternative to continuous conveyors are solutions such as electric monorail conveyors, which follow fixed routes but whose performance can be scaled by the number of vehicles.



Providing for a capacity reserve is worthwhile when designing the conveyor system ©Unitechnik