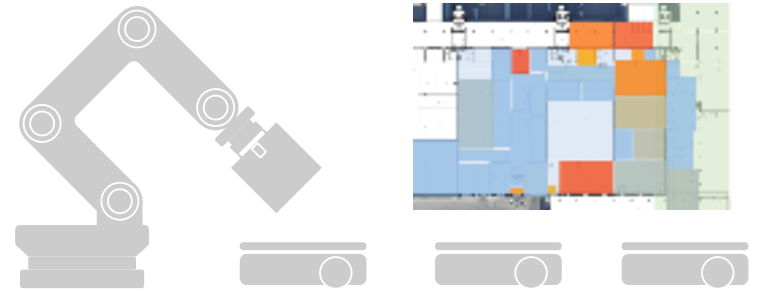# Autonomous Air Cargo Warehouse Handling

As early as the early 1970s, there were ideas - amazingly visionary and realistic from today's perspective - about how transport processes could be designed to be driverless and highly automated. Since then, large parts of production and distribution logistics have been comprehensively modernised. In contrast, many air cargo handling processes seem out of date. While the companies involved are desperately looking for skilled workers in view of rising freight volumes, the few known concepts for automated or even autonomous air cargo handling have hardly progressed beyond the first experimental stages. In other words, today - 50 years later - airports offer an interesting, highly complex test environment for adapting established solutions from other logistics fields.

Goals & Opportunities

For a large number of processes in the air cargo halls that have so far been carried out manually, it is being examined whether available automated guided vehicles (AGVs) and robotic systems can be usefully integrated into the handling process. The process sections under consideration include handover processes between the companies involved, the assembly and disassembly of transport units suitable for air cargo, as well as various warehouse, special cargo and customs processes. A possible use case for autonomous air cargo warehouse handling is to be demonstrated on a test basis with suitable technology.

Desired Outcomes

With the use of autonomous systems for demonstration purposes, a reduction in average handling time and an increase in service quality of up to 10 % each is targeted. This would lead to a significant increase in the performance of existing infrastructure at peak times. The selection of the cases is based on a detailed analysis of the current situation, which includes the empirical recording and evaluation of the value creation by means of Manual Process Intelligence (MPI) at partner airports, as well as on a comprehensive market analysis of available AGVs and robotic systems of different categories. Corresponding use cases form the basis for the definition of the requirements and the tender for the system to be tested.

Challenges

In times of global supply bottlenecks, the availability of the test system must already be taken into account when selecting the use cases and defining a test field that is as meaningful as possible. In addition, the use of corresponding systems in ongoing handling operations bears the risk of initially slowing down processes during a transitional period. Employees must be protected especially where systems may not be in separate areas but in the direct environment of people or even interact with them.