

COLLABORATING AND COUPLED AGV SWARMS WITH EXTENDED ENVIRONMENT RECOGNITION

AUTONOMOUS SWARM FLEET CONTROL WITH HUMAN CONTROL

Industry 4.0 relies on accurate and automated processes, this creates a need for autonomous transportation with optional human supervision and manual forklift integration.

AGVs collaborate on complex tasks, controlled by an intelligent fleet manager. Virtual coupling allows to transport big or heavy loads with smaller vehicles, while an interchangeable platform also allows the setup of production support, like a robot arm or an on-board sorter.

This maximizes workload while minimizing the number of vehicles and therefore reduces invest by up to 30 percent. Also maintenance effort and downtime can be reduced when vehicles instantly replace others and can be re-scheduled on the fly.



THE IDEA

Two mechanisms will help to deal with the complexity of AGV production and logistics solutions: Collaboration and coupling, to be achieved with a platform solution combined with a fleet manager.

THE PROJECT PARTNERS



THE ACHIEVEMENTS

On the basis of the existing vehicles four different types of platforms have been implemented:

- Robot arm platform
- Pallet lifting platform
- Platform for standard boxes
- Tugger train platform

The interface was standardized eliminating the need for changes on the vehicle underneath. The electrical and the software interface as well as the mechanical structures have been standardized, so an exchange can easily be done and is ready for automation.

These setups have been tested in real production environments successfully, so implementation of the fleet control mechanisms will continue.

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