

Collaborating and Coupled AGV Swarms with extended environment recognition

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.

EIT enables bundling of the research competences of charismaTec (AGV manufacturer), Magna Steyr (large scale automotive development and production plant, therefore acting as a real world test environment), TU Delft (with their SAM|XL Smart Advanced Manufacturing Lab) and TU Vienna (with their Pilot Factory).

Already a modular hardware and software platform was established, that offers switching between a robotic arms, a pallet lifting mechanisms and a tugger train setup. These setups have been tested in real production environments successfully, so implementation of the fleet control mechanisms will continue.