

Competences

Driverless transport system (AGV)



Flexibility requires planning

Driverless transport systems can be used very flexibly for various transport tasks. This flexibility requires detailed planning in order to ultimately determine the optimal number of vehicles while keeping transport times low.

The complexity of the planning results from the number of transport sources and sinks, from the given layout as well as from process-related requirements such as the transport of goods through a clocked production line.

Goals of the simulation

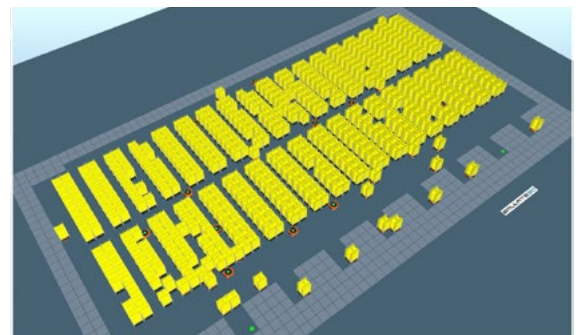
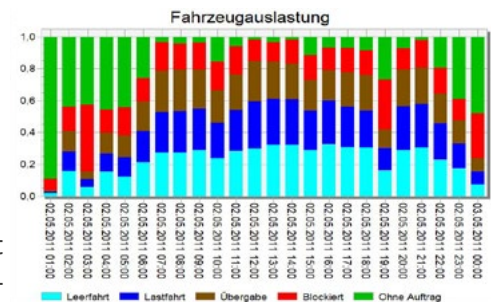
In order to determine the best number of vehicles, a suitable control strategy must be worked out in the simulation. On the one hand, this control should provide the empty vehicles at the demand points (transport sources) in a short time and, on the other hand, lead them to their destination in the shortest possible way. In addition, the control system must be able to react to fluctuations in the transport volume without causing a backlog at one of the transport sources or overloading certain routes.

Furthermore, the energy management for the vehicle battery can be verified in the simulation. The best charging points and the required charging cycles can be determined.

Imaging accuracy

In the simulation, the behaviour of the vehicles can be mapped very precisely. The following parameters are taken into account:

- Maximum speed forward and backward,
- Acceleration,
- deceleration,
- cornering speed,
- Speed for positioning or creep travel,
- Switching, locking and unlocking times,
- loading and unloading times,
- minimum distance between vehicles and
- Block distance definitions.



Simulation results

In addition to the throughput, the simulation provides information on the utilisation of each individual vehicle and the behaviour of the transport sources. For this purpose, the time between transport request and pick-up as well as delivery at the destination can be measured. This results in key figures on the transport orders such as the average transport time or the number of transports per hour.

These results can be used to determine the efficiency of the AGV and the number of vehicles required. The robustness of the process with regard to fluctuations can also be assessed through the simulation of different transport load scenarios and the simulation of disruptions.



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Feel free to contact us

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