



Optimise your production with Autonomous Mobile Robots (AMR)

30 January 2025, 06:10

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From strategy to practice: here's how to get the maximum from AMR technology

Autonomous Mobile Robots (AMR) transform the way production and logistics work. They make it possible to move materials and goods more efficiently, accelerate production processes and at the same time reduce costs. But how do you integrate this technology into your production environment successfully?

A well-thought-out approach is crucial. In this four-part blog series we discuss how you integrate AMR into your production environment and so develop a sustainable and profitable solution.

What you can expect:

1. [Choose the most suitable production strategy: push or pull..](#)
2. [Build a digital production environment with tools like UNS and MQTT.](#)
3. [Optimise your processes with fleet management software.](#)
4. [Plan and simulate efficient scenarios with AGVsim.](#)

This approach lays a solid foundation for a sustainable and cost-effective AMR solution in your business.

1. Choose the most suitable production strategy: push or pull?



material flow and

- **Push strategy:** production is guided by forecasts and prognoses. Decisions are made on the basis of expected demand, often before orders come in. This often leads to higher inventories and risks of overproduction.
- **Pull strategy:** production starts only with specific customer orders or market needs. This reduces inventories and increases the flexibility for rush orders. Customer orientation is the focus. This strategy requires a flexible, connected production environment that responds quickly to changes in demand.

A push strategy is often used in AMR-guided processes to automatically give priority to urgent transport assignments. This ensures smooth production without extra workload.

[Read more about production strategies](#)

2. Build a digital production environment

A strong digital infrastructure is essential for successful AMR integration. Two important tools:

- **Unified NameSpace (UNS):** a naming system that assigns unique and clear names to everything within an environment, such as files, devices or users. Thanks to these unique names there is no confusion, so that everything is easily findable and usable. UNS serves as a central data model that seamlessly integrates systems such as ERP, MES and WMS.
- **Message Queuing Telemetry Transport (MQTT):** a lightweight 'publish-subscribe' messaging protocol that ensures fast and reliable data exchange between machines and systems. MQTT is a popular protocol for Machine-to-Machine (M2M) communication.



The combination of UNS and MQTT enables AMRs to communicate in real time, work together smoothly and respond immediately to changes.

[Find out how digital tools support your AMRs](#)

3. Ensure efficient fleet management for your AMRs



Fleet management

The system:

- Gives **real-time insight** into the status and location of AMRs.
- **Optimises routes** to shorten transport time.
- **Prevents collisions** with smart algorithms that predict and resolve conflicts.

Practical example: in our demonstrator environment the Meili fleet manager promptly detected collisions and distributed tasks efficiently. This increased productivity and minimised downtime.

[Read more about fleet management](#)

4. Plan and simulate with AGVsim

Do you want to be certain that your investment in AMRs is optimal?

Use AGVsim to simulate scenarios:

- Determine the **ideal number of AMRs** for your processes.
- **Optimise route planning.**
- **Analyse** the effect of speeds and battery performance.

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By conducting simulations, for example with changes in routes, speeds or battery capacity, you get valuable insights to optimise your processes and prevent surprises. This data-driven approach helps companies increase efficiency and produce a solid Return on Investment (ROI).

[Find out more about simulations with AGVsim](#)

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