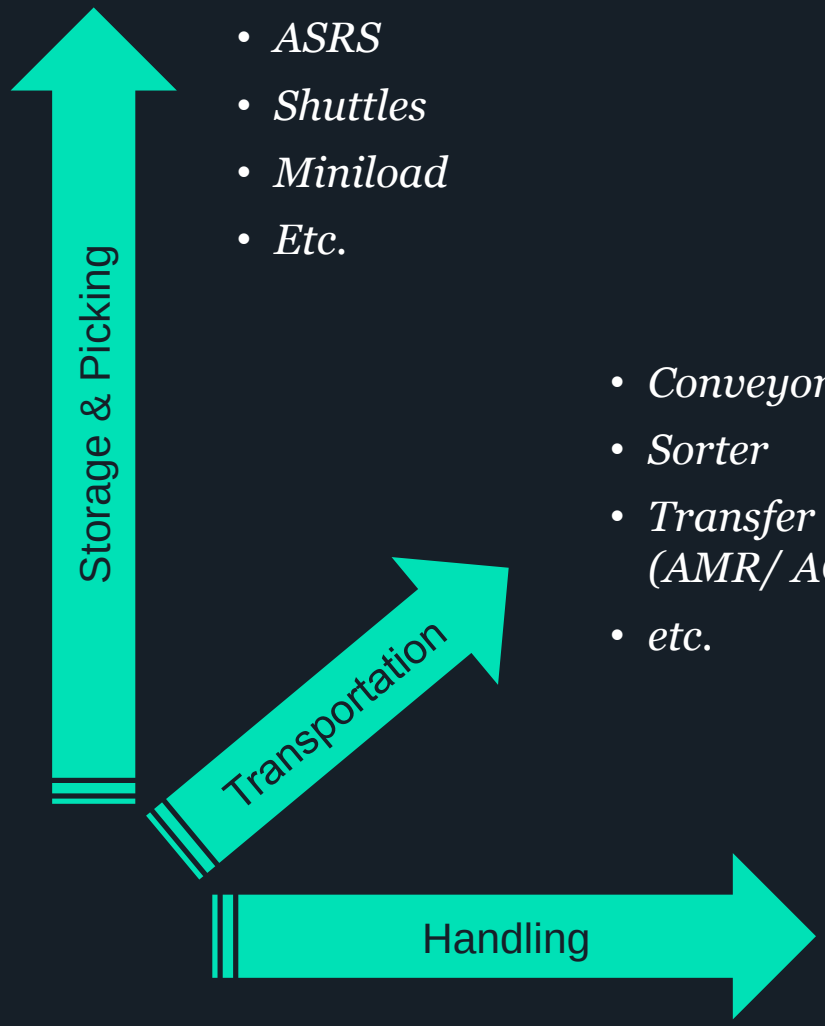
Smart Brownfield Automation

LOGIMAT 2025

Miebach

Agenda

Classic automation



- *ASRS*
- *Shuttles*
- *Miniload*
- *Etc.*

- *Conveyor*
- *Sorter*
- *Transfer vehicle (AMR/ AGV)*
- *etc.*

- *Robots*
- *Palletizer/ Depalletizer*
- *etc.*

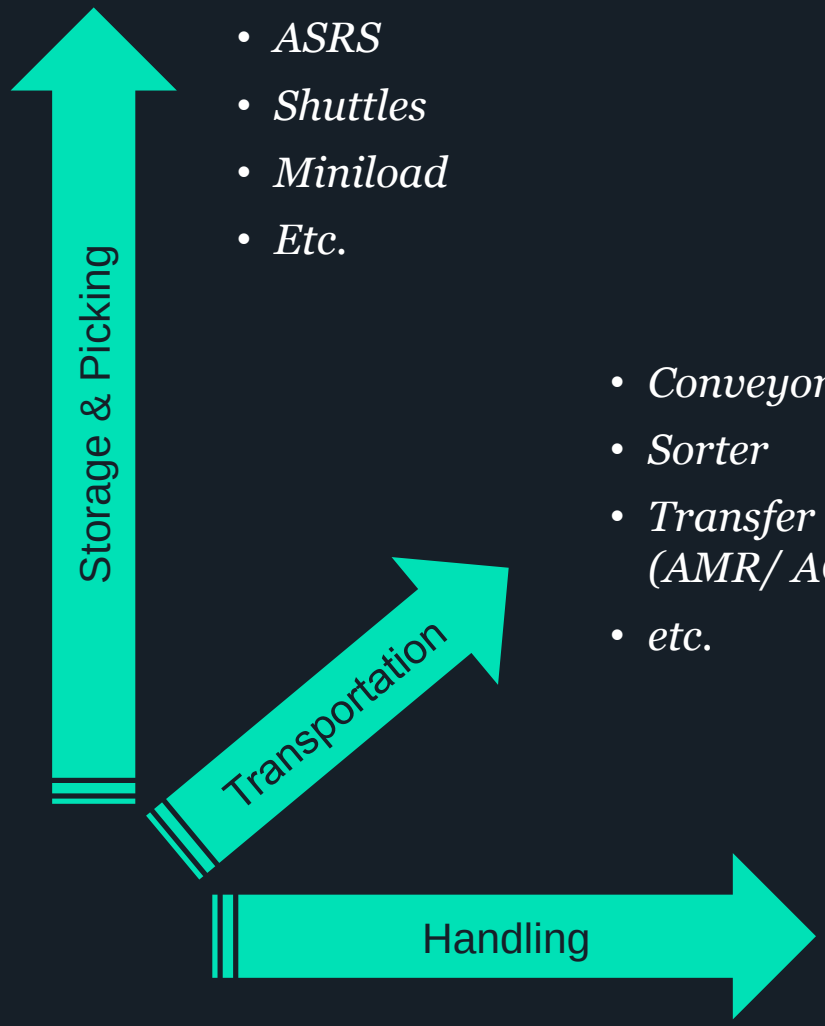
Mostly used for:

- *Conveying and storage* technology
- with *great effect*
- but also *high CAPEX*

...and mostly in the dimensions of:

- Solutions for storage and order picking
- Solutions for transportation
- Manipulation/handling solutions

Classic automation



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The main factors influencing best fitting system

- Follows function for designated tasks
- physical dimensions of the goods to be handled

Current focus is often on storage solutions

- Exotec, Autostore, etc.
  that can be integrated into *existing buildings* or
- Shuttle solutions, which are mostly *built greenfield*
- Transport solutions such as AGVs, AMRs or Monorail, as well as robots and cobots, which primarily support order picking

Smart Brownfield Automation

- ***is an alternative to new greenfield developments or large brownfield investments***
- ***to leverage further cost saving potential in difficult economic times***

With the focus on:

- *Automation potential along the entire process chain*
- *Low CAPEX*
- *Short pay back periods*
- *Modularity for scaling up*

When it comes to automation, the focus is usually on "the warehouse"

~50% of OPEX costs are incurred in picking and packing.

As a result, these processes offer the greatest savings potential.

A significant proportion (35%) of OPEX costs are also incurred in peripheral processes (incoming goods, storage, outgoing goods).

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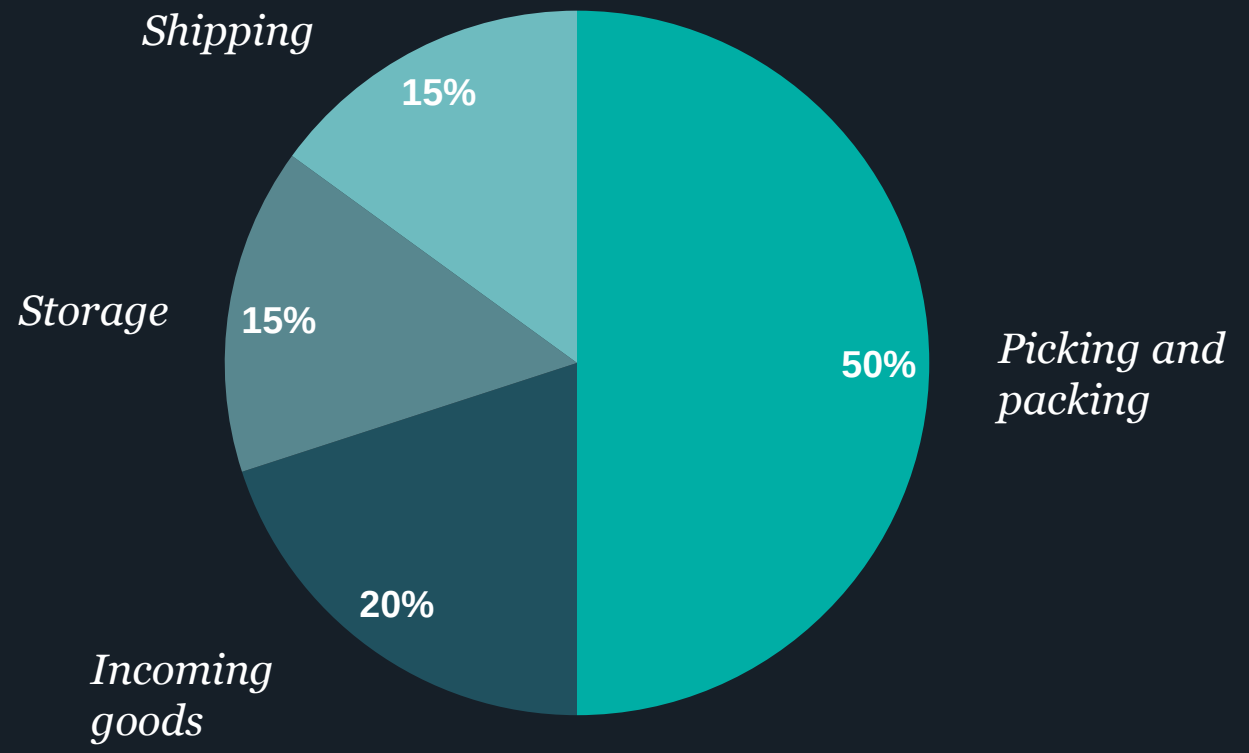
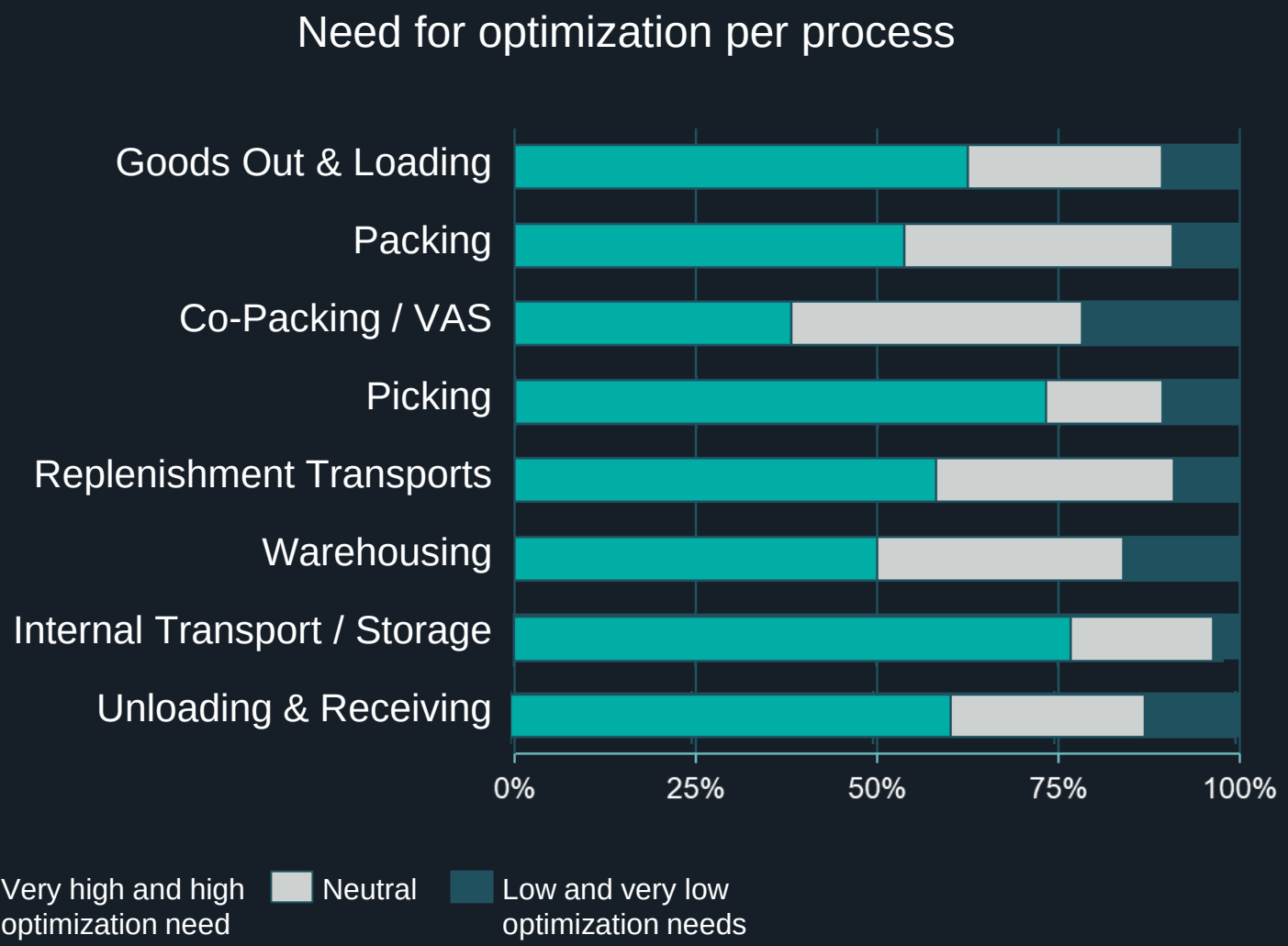
Distribution of OPEX costs

in %



Greatest need for optimization in order picking & internal transport, lowest need identified in VAS according to Miebach Brownfield study

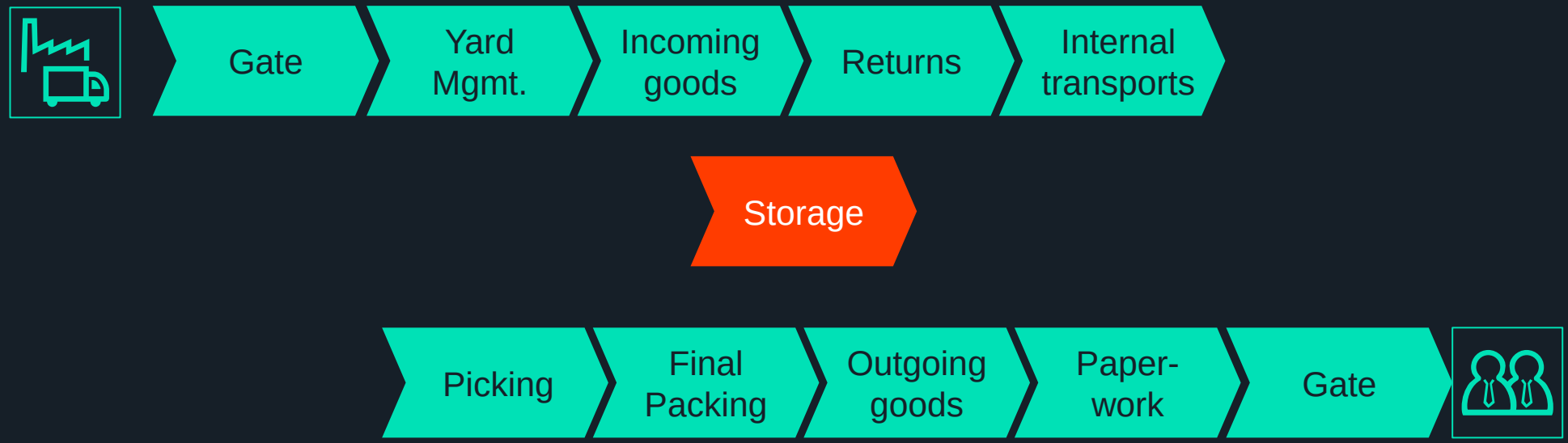


- Around 36% consider the need for optimization in *order picking* to be very high and a further 38% consider it to be high.
- Around 25% consider the need for optimization for internal *transport/storage* to be very high and a further approx. 52% consider it to be high.
- A very high or high need for optimization is also identified for *unloading* (11% and 50%) and *loading* (11% and 52%).

However, smart automation must be considered “gate to gate”

Many "peripheral processes" also offer considerable automation potential that can be exploited smartly"

Typical process chain at the site



The focus of Smart Brownfield Automation is on low CAPEX and scalable, rapid implementation in ongoing operations

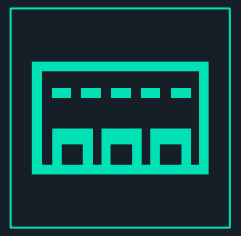
When selecting automation technology, various criteria must be taken into account in order to arrive at a sensible and practicable solution that satisfies all areas of the organization.

Commercial

- *Current market situation*
- Number of providers on the market
- Procurement times

Operative

- Implementation during ongoing operations
- *Short realization period*
- Scalable solution
- Can be used for existing load carriers



Framing conditions

- *Existing infrastructure* (building height, column grid, floor requirements, etc.)
- *Existing IT infrastructure*

Who has ever dealt with the automation of the gate process?

Did you know that for many companies, automating the gate process pays off with as few as 2 employees at the gate?

Incoming goods

Yard management: possible technical alternatives

Gate | Yard Mgmt. | Incoming goods | Returns | Internal transports | Storage

	Self-registration terminals	Self-registration via app	License Plate Registration
Image			
Description	• Check-in and check-out terminals for truck drivers • Registration process can be managed independently by the truck driver	• Check-in and check-out app for truck drivers • Registration process can be managed independently by the truck driver	• Recognition of the truck license plate using cameras • The trucks are directed to the correct gate via the KZ number • Approval for registered trucks only
Advantages	• Terminals have multilingual function • Relief for employees at the check-in station	• App has multilingual function • Relief for employees at the check-in station	• The truck yard can be automatically monitored by the system (mix of cameras and software) • Opportunity to connect the system to the registration process
Dis-advantages	• Software can be prone to errors	• Software can be prone to errors	• Cameras have difficulties recognizing the KZ number during thunderstorms or snow • Non-legible concentration camp signs are denied access

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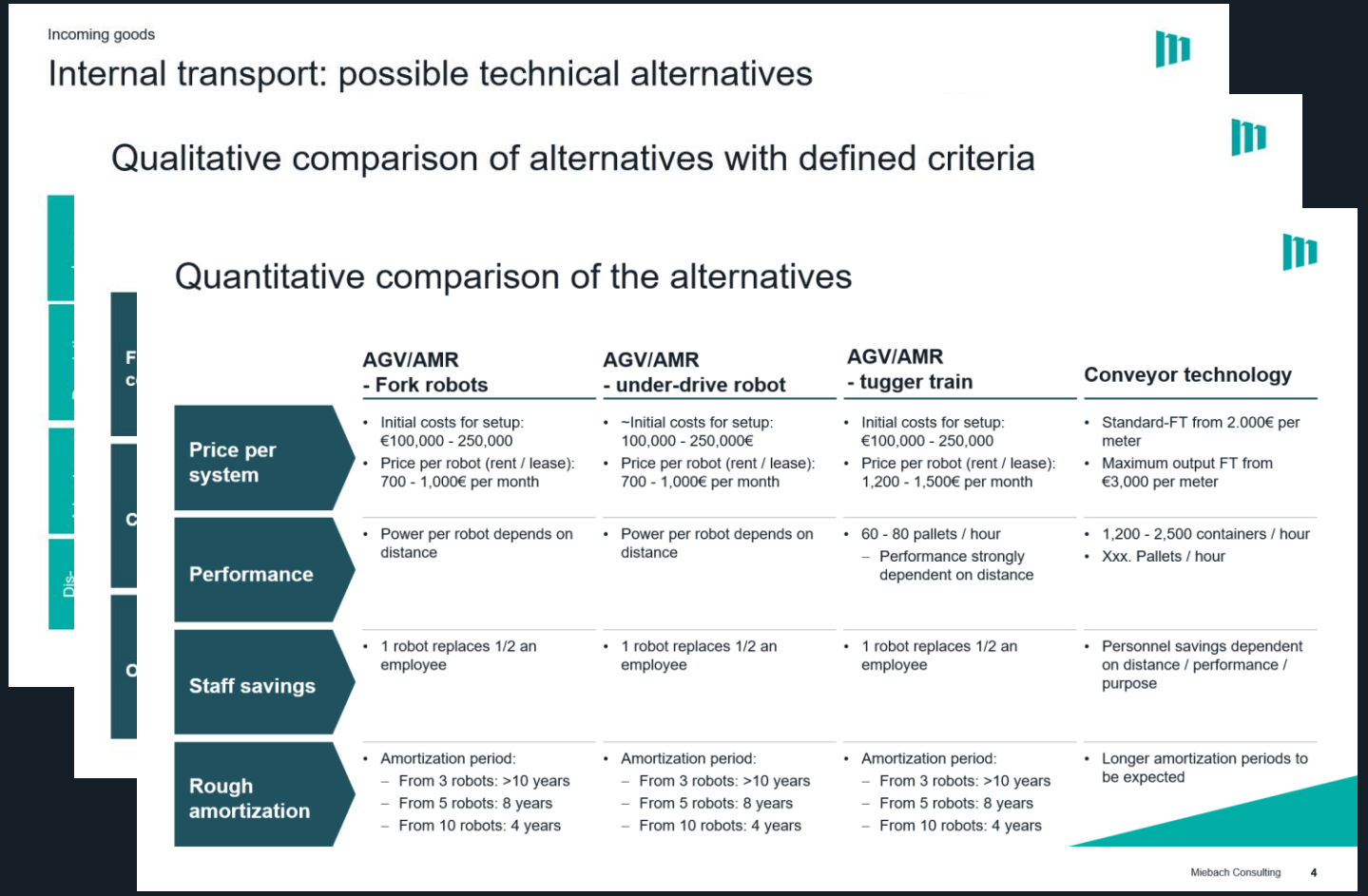
Payback of a Put Away automation depends on many parameters

Put-away automation is much more difficult to calculate than other transport processes, as WE often only runs in one shift.

…but it can be particularly interesting for finished goods warehouses with continuous feeding.



Incoming goods

Internal transport: possible technical alternatives

Qualitative comparison of alternatives with defined criteria

Quantitative comparison of the alternatives

	AGV/AMR - Fork robots	AGV/AMR - under-drive robot	AGV/AMR - tugger train	Conveyor technology
Price per system	• Initial costs for setup: €100,000 - 250,000 • Price per robot (rent / lease): 700 - 1,000€ per month	• ~Initial costs for setup: 100,000 - 250,000€ • Price per robot (rent / lease): 700 - 1,000€ per month	• Initial costs for setup: €100,000 - 250,000 • Price per robot (rent / lease): 1,200 - 1,500€ per month	• Standard-FT from 2.000€ per meter • Maximum output FT from €3,000 per meter
Performance	• Power per robot depends on distance	• Power per robot depends on distance	• 60 - 80 pallets / hour – Performance strongly dependent on distance	• 1,200 - 2,500 containers / hour • Xxx. Pallets / hour
Staff savings	• 1 robot replaces 1/2 an employee	• 1 robot replaces 1/2 an employee	• 1 robot replaces 1/2 an employee	• Personnel savings dependent on distance / performance / purpose
Rough amortization	• Amortization period: – From 3 robots: >10 years – From 5 robots: 8 years – From 10 robots: 4 years	• Amortization period: – From 3 robots: >10 years – From 5 robots: 8 years – From 10 robots: 4 years	• Amortization period: – From 3 robots: >10 years – From 5 robots: 8 years – From 10 robots: 4 years	• Longer amortization periods to be expected

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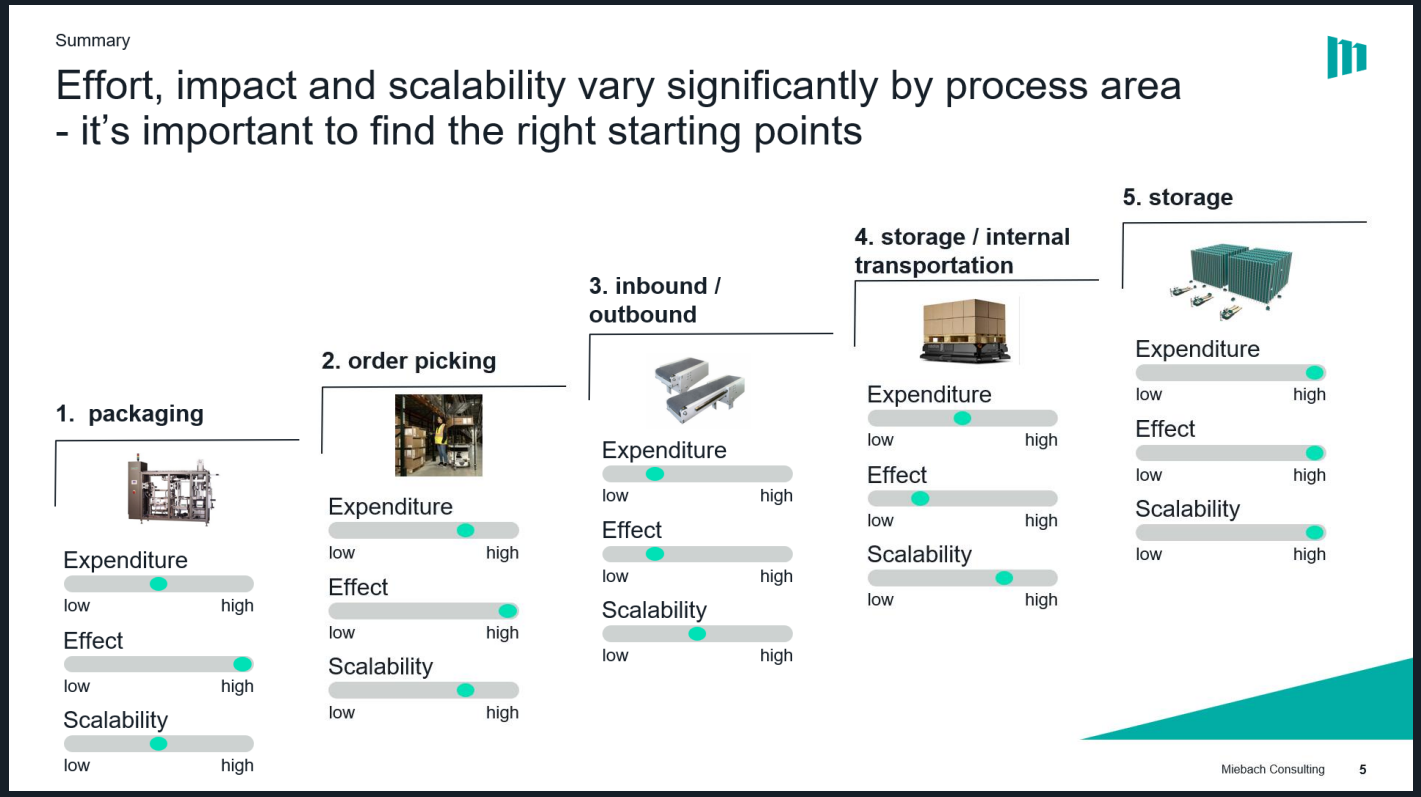
It's worth looking outside the mainstream

In times of tight budgets, smart brownfield automation is the choice of the day, enabling quick and measurable success with limited CAPEX.

Once introduced, scalability can be used to tap further potential.



- Let's get started!

Next steps

Which process do you use to start your Smart Automation Journey with?

1) .....

2) .....

3) .....

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