Webinar Automation
Optimize your logistics with automated processes

- Wednesday, 24.06.2020 -

Q&A's

Do obstacle warning systems (keyword: Obstacle avoidance) basically reduce the system performance? Sense or nonsense?

Appropriate warning systems can have different benefits depending on their use.
Example 1: Picking applications
An employee works in a real environment, pallets were placed manually on the floor and are in the drivepath. In such a situation, obstacle warning systems make sense because the truck can swirl the obstacle autonomously. In such a case, the picking performance increases by 10-20% depending on the situation, as the employee will not need to get on and off the truck.
Example 2: Fully automated AGV systems
Here it would not be helpful if employees were to place pallets in the warehouse and automated trucks were to manoeuvre around them autonomously. In this situation the obstacles could have a negative impact on process reliability and throughput, compromising the desired handling performance.

Is artificial intelligence already being used in driverless transport systems?

Today, artificial intelligence is primarily deployed to analyse data. More and more trucks communicate with each other and send their data to the cloud. This data can then be analysed and contribute to optimising the system. For example, errors that have occurred can be evaluated in order to avoid them in the future.

What is the cost ratio of manual trucks to automated trucks?

This question can basically be evaluated from different perspectives. For example, the operation costs of automated systems must be compared (in Germany 35'-70' €/year). Simple calculations show that automation can pay off as soon as companies plan to work in more than one shift.
As a rule of thumb, the hardware for automated trucks is available at about twice the price of standard trucks. Project and implementation costs need to be added for each system, however, the relative share of these costs drops as the size of the fleet grows.

How complex is the project implementation and what tasks do I have to expect as a customer?

Experience shows that a planning period of 3 to 6 months is required before the implementation with the project managers begins. The preparation and the start of the commissioning is usually completed within a period of 7-8 months.
The layout must be planned, the battery infrastructure must be prepared, the processes to be covered must be defined. Usually it takes a total of 8-12 months until the system is ready for hand over.
The customer must also coordinate their internal stakeholders, i.e. a project manager needs to be hired by the customer, to manage IT staff, among other things.
When the system is live, there is a control stand that staff must attend. So there must also be staff in the company who are familiar with the system. The commissioning phase is ideal to familiarize staff with the new system. We recommend to involve the staff who will later control the system at a very early stage.

What is the base price for autonomous order pickers like the OPX iGo neo?

Depending on the equipment version, 25'-30' € will have to be expected. A business case pays off very easily: With a 10-20% optimization of the workforce in 2-shift operation, the return on invest usually turns profitable within two years.
A typical application case are retailers or production companies that require a lot of order picking. It is important to utilize the maximum travel speed of the equipment wherever long travel distances need to be covered. If the distance between two picks is less than 10 meters, it is better to walk the distance. The ergonomic improvement and time savings are therefore high if the truck autonomously follows the human order picker.

How many automated reach trucks does it take to replace one manual reach truck?

As a guide value, it can be assumed that 1.5 automated trucks can cover the transport capacity of one manual machine.
The number of automated trucks is therefore slightly higher. The reason for this is that the automated equipment drives a little slower and in a more controlled way and that it specifically checks the environment for load pick-up and drop-off. On the other hand, automated trucks can operate 24/7 ensuring a continuous process flow. The manual/automated truck ratio turns out in favour of the automated machine if the system can be set up to operate continuously.

What is the maximum load pick-up for pallet trucks?

In principle, the load capacity can be designed for higher load capacities. The possible load capacity depends on the space required by the truck and on the fork design.

Are the work cycles planned to cover battery charging and are the batteries charged automatically?

Yes, absolutely. There are different automated battery charging concepts (the tucks control when, how and where the battery is charged). As soon as the truck is idle or battery capacity drops below a certain level, the truck drives to the charging station.
In a 24/7 system with a balanced utilisation, the trucks will be at the charging station for approx. 15% of the time. Both Li-Ion and lead-acid batteries can be charged automatically with respective software solutions.

Is it possible to change the AGV routes at any time? Or is it a fixed system? How flexible is the system?

As of today, the layouts can be adapted - but this requires some effort. For this reason, we recommend that adjustments be kept to a minimum wherever possible. The systems are usually fixed - to provide best performance and reliability. The routes are generally fixed.

In addition, current developments in AGV systems aim to enable customers to make certain adjustments (e.g. blocking aisles or individual positions) themselves. In the future, customers will be able to commission a system of limited complexity themselves, draw the layouts and supervise the implementation.

What is the delivery time for automated systems with AGVs?

The planning phase for an automated project should not be underestimated. Experience shows that it takes between three and six months. More comprehensive and detailed planning can shorten bidding phase substantially.
This is followed by actual delivery phase. For smaller systems this can be up to eight months. For larger, complex systems, the planning should be completed within twelve months.

How do I integrate automated systems into my own IT landscape?

The AGV trucks communicate with each other and are guided by an AGV system. The system controls different types of trucks and assigns work tasks. The AGV system receives the work tasks from a warehouse management system. The interface between the two systems is provided by STILL or adapted to the customer's software, depending on the technical requirements. On request STILL can also implement a warehouse management system.

Stand-alone systems allow to generate the work tasks manually, so that the AGVs are optimally run by the system.

What further developments will there be at STILL in the area of AGVs? For example, what is the development status of undercarriage AGVs?

The first tests with underrun AGVs (ATP) are currently underway at the STILL production plant in Hamburg. The first pilot customers will receive the trucks by the end of 2020. The test phase will start in 2021. The underrun AGV will supplement our portfolio of automated trucks and further increase the range of applications covered.

How is the interface to the existing machines organised?

The interface with robot cells, light curtains, doors, existing conveyor systems, palletizers, packaging and other machines is widely used. The AGV management software communicates with the respective machine/equipment via e.g. PLC communication, thus enabling smooth cooperation.

What navigation is used in the AGVs and how does it work?

There are different means of navigation. Nowadays, laser navigation based on reflector targets is the most widely used method because it is simple and reliable. With this navigation method, the scanner measures the distance and angle between the reference points and calculates its position by triangulation.

At how many actual movements (/transports) does the ROI become interesting?

From 3-5 vehicles the advantages outweigh the one-off implementation effort. As a guideline, approximately 40 pallet movements per hour can be expected for three AGVs.

Can existing VNAs be converted into AGVs by retrofitting?

Since automating industrial trucks is an investment in addition to the costs of the trucks themselves and the system usually has a long life cycle, we recommend starting with new and correctly configured trucks. We are happy to check a possible reuse of existing STILL fleets for other purposes.

What do you think of the following dilemma that management will face: Implementing automation but creating more unemployment or not implementing it, but spending a lot of money on paying workers' wages?

When it comes to automation, it is often said that "automation kills jobs". Correct is: Automation leads to the systematic optimization of internal company processes and thus also has an impact on HR planning. Introducing automated processes is by no means accompanied by redundant jobs - rather it supports employees by freeing staff from manual work countering the lack of staff elsewhere.

Positive effects of automation are, for example: The increase in the added value of each employee, better ergonomics and compensation of the loss of productivity caused by the demographic change that increases a shortage in skilled labour. Automation frees employees from physically demanding or repetitive work and creates new areas of occupation that require creativity and expertise. The workforce thus benefits from new fields of tasks and responsibilities created by automation. One example is the logistical responsibility of a production line in the role of a section supervisor for an entire production section, instead of just one process step. In line with digital change, automation is creating new occupational fields, such as combining logistics and mechatronics. In addition, the rising average age of employees in intralogistics and the opportunities to make jobs in intralogistics more attractive by creating ergonomic working environments are reasons for companies to invest in improved working conditions. The aim is above all to reduce physical effort. This applies to the use of modern warehouse equipment in terms of operation and comfort and thus to the intralogistics processes themselves. This also includes automating load handling. After all, the change from physically strenuous to automated material transports has a positive effect on employee satisfaction, sick leave, quality of work and recruitment efficiency.

The focus of automation is therefore not on reducing personnel, but on the more efficient use of human capital, because it creates value.