



## Webinar Automation Optimise your logistics with automated processes

- Tuesday, 16.02.2021 -

### Q&A's

**Q: Is artificial intelligence already being used in driverless transport systems?**

**A:** The answer is: yes. Nevertheless, please be reminded you do not necessarily need the latest innovations such as AI to have a solid business case. Today, artificial intelligence is primarily deployed to analyse data. Automated trucks continuously communicate with a traffic manager, generating enormous amounts of information. This data can be extracted to a cloud. This data can then be analysed and contribute to optimising the system. For example, the recognition of patterns in errors that have occurred in the past can predict the system behaviour in the future, and can contribute to the definition of actions, e.g. preventive maintenance, to avoid them in the future.

**Q: Is SLAM navigation done by means of computer vision or with another technology?**

**A:** SLAM navigation can be done based on any technology, which captures the surroundings. For instance, cameras or laser scanners are often used.

**Q: What is the advantage of SLAM navigation?**

**A:** SLAM navigation has the advantage to operate in changing environments, without needing to install navigation infrastructure. The fleet of trucks captures the latest image of the warehouse all the time by exchanging the information between all operating trucks in real-time. This can result in easier installation but regularly faces constraints when high reliability and positioning accuracy is required. Therefore, we mainly offer standard reflector-based laser navigation by default.

**Q: Does SLAM navigation imply slower automated operations because of the real-time mapping? Are there any issues when it comes to WiFi coverage?**

**A:** A lot of data transmitting and processing is needed for SLAM navigation in order to update the map of the surroundings continuously. It could be the case, that the design of the system is not appropriately fitted to those needs. This could result in slower system operation speeds. Long term, we envisage that processing power and bandwidth will not form a bottle neck.

**Q: Can the automated equipment scan barcodes of the containers and storage locations? Is it possible to equip an AGV with RFID or other ID technology to automatically perform asset tracking / automate inventory?**

**A:** Yes. Certainly, the AGV's can be equipped with barcode scanners, RFID or with any possible pallet identification technology. We recommend avoiding it because of the extra costs associated with implementation. Also, some limitations arise with this concept (e.g. correct position, form or quality of the barcode).

We can avoid those issues by making use of the software-based tracking and tracing. When an order is made in the system, information of the goods (pallet ID, pallet type, current location, etc.) is transferred as part of the tracking and tracing process. This allows avoidance of the scanning process and therefore saves additional equipment costs.



**Q: Does the AGV also drive around obstacles when it has stopped and the obstacle remains still?**

**A:** It is a feature with which we have experience. It makes sense to some degree, but we recommend avoiding dynamic routing. The reason lies in the fact that “zig-zag” driving reduces the efficiency of the system. There are different solutions to deal with obstacles. A common solution would be to trigger alarms indicating that the obstacle must be displaced or to reroute the other vehicles via another path.

**Q: Do you have tools to monitor the existing (non-automated) equipment to better map the current processes and thus improve the ROI?**

**A:** We offer tools for fleet management (e.g. STILL neXXt fleet) as well as intralogistics consultancy, based on dedicated tools. The limitations of fleet management tools are that they are not exactly tracking the process flow, which would be helpful as a basis for designing an automated system.

With our product “Intralogistic Consultancy”, we offer a service to analyse and map the current processes. In addition, if wanted, we can offer you solutions that can improve the logistics process.

**Q: What costs do I need to expect when analysing the present processes with a logistics consultant?**

**A:** It varies from the complexity and size of the scope. We are happy to provide an estimation.

**Q: Is there a STILL warehouse simulation tool for both driver operated trucks and automated vehicles? If so, can this tool do basic warehouse layout schematics?**

**A:** We do offer system simulations, yes. Simulating manual drivers is quite uncommon, but theoretically quite possible.

**Q: Do the pedestrians have a transmitter?**

**A:** It is possible, but not necessary. The pedestrians do not need any transmitters. The AGV's are equipped with 360° safety scanners to ensure a safe operation for people, vehicles and goods. We do have customers that have it as an extra safety feature.

**Q: How does STILL deal with AGV service?**

**A:** STILL covers the same level of service for AGV's as we are doing it for manual material handling equipment. In addition, this service can contain a 24/7 remote hotline support.

**Q: Concerning using the automated solutions in the automotive business: are there use-cases for usage with tire pallets? 3-4 tire pallets are stored on top of each other with the need of very precise placement to prevent crashes. Is the system capable of this storing process?**

**A:** There use cases handling tire cages indeed. There are also many use cases covering block stacking. For block stacking the container design is of the utmost important. If tolerances are already extremely tight, it seems the application would be unfavourable to automate.

**Q: Do you need special racks for the AGV's?**

**A:** Not necessarily. Disturbances like touching pallets must be avoided to ensure a reliable and well running process. The most common mistake is when the potential overhanging of loads is not being considered in the system design. In manual operation the positioning of pallets or loads does not have to be 100% optimal. One can 'squeeze-in' a load. In automatic mode most definitely not.

Therefore, it is recommended to evaluate the existing racking systems together with one of our engineers. The same would be recommended before planning a new racking system. It is important to ensure enough spacing between the pallets or loads to ensure a smooth-running automated process.



**Q: Can automation be adapted on any existing WMS system? Is it possible for AGV's to communicate with any logistics systems like SAP? What is the way of generating orders from the ERP-system to the control unit from the AGV?**

**A:** STILL AGV systems contain a management software with a host protocol, which can communicate with different WMS systems. Besides the AGV management software, we also have the possibility to provide the middleware to bridge the gap between those systems. The reason lies in the fact that we develop our software in-house. Detailed planning and IT workshops are therefore a relevant part of the planning process to clarify how both systems communicate with each other.

**Q: Can the AGV equipment work outside? Can AGV's be used in indoors and outdoors or between different halls?**

**A:** There are AGV's on the market which can operate outdoors. We also do have experience with this and it can work well.

So far, our strength and focus lies in automating warehouse intralogistics, therefore we do not quote these solutions. Nevertheless, we continue our developments in the domain, and have partners we can work with.

**Q: Do you see automation also for bigger (combustion) IC counterbalance forklift trucks or is this mainly for small electric trucks? Will you offer automated solutions for loads of up to 6 or 7 tones?**

**A:** Today automation focuses on indoor applications ranging from small deckload vehicles to very large VNA trucks. Our focus lies on pallet type loads, ranging 1-2.5 tons. For 6-7 tons some other niche players may be better suited.

**Q: You have spoken about environment. Can we use the vehicles to load and unload trucks?**

**A:** It is possible to load lorry trailers, but there are lots of constraints (e.g. speed, docks, navigation, pallet dimensions, dock levellers, trailers inner dimensions, ...). For this reason, we do NOT offer it commercially. We recommend automating the easiest processes or part of the supply chain first to get the best ROI.

**Q: Do you always have to use a staging which is upfront for this kind of application or is this not needed?**

**A:** There are solutions to load the lorry trailers directly, though we do not quote them today.

**Q: What should be the warehouse size for AGV's to operate or the number of pallet positions to justify the TCO of the equipment? Do AGV's ever reach small warehouses?**

**A:** To be financially viable, it is desired to have a two-shift operation. The great ROI starts coming from 3-5 AGV's onwards, which typically matches with 50 pallet movements per hour and more. This of course requires a certain type of operation. Nevertheless, also smaller applications can be efficient. There are also a lot of projects running with 1-2 trucks, to get the benefits of automation.

**Q: What is the required aisle width (of the reach truck)?**

**A:** The aisle width depends on several things. The size of the truck is dependent on the weight to be handled, battery size, but also the size of the load and its overhang determines the environment. Having mentioned these aspects, an absolute minimum aisle width would be 2.9 meters, though it is advised to plan larger for having higher speeds and more efficient processes

**Q: Can you interface with e.g. shrink-wrappers?**

**A:** Yes certainly.



**Q: Are there any cost arising for the customer by requesting an AGV project?**

**A:** If there is a general understanding of what is needed, then it is free of charge and part of our service to work out a commercial offer.

However, if it is a very early stage of problem solving and general questions on how to tackle present issues, STILL provides an independent consulting service which is to be paid. During this kind of consulting, we will analyse existing processes and seek alternatives to improve your logistics. This consultancy is not limited to the STILL products and recommendations can also include stationary automation etc.

If desired, we can then of course create an offer afterwards.

**Q: Do you support linked transportation, where goods is handled as one order but managed by multiple vehicle types? How do different automated vehicles incorporate in the transport system? Is it possible to place them all in the same program or manager?**

**A:** Yes! We offer a portfolio of different vehicle types, that are operating together in one system. The traffic manager can split the transport requests into several sub-transports, which consists of different vehicle types.

**Q: Cooperation with AGV and manual forklifts for narrow shop floors, is there productivity loss, due to waiting and "traffic jams"?**

**A:** Yes. Vehicles can be equipped with extra machine safety sensors to deal with more manual traffic interaction. Nevertheless, it is advisable to plan a system in such way that interaction is limited.

**Q: Can the AGV use a drum clamp and detect drums and possibly unload a truck?**

**A:** Customised AGV's can be equipped with several forms of clamps, potentially also drum clamps. Unloading lorries comes with a high degree of variables which can jeopardise smooth operations. Therefore, we currently do NOT quote commercial truck onloading applications.

**Q: Does the system communicate with the fire protection and alarm systems on site, e.g. fire alarm system, fire protection doors?**

**A:** Yes! The traffic control system can be connected to all kinds of other systems. Also, a protocol can be implemented for where the vehicles shall park in such scenario.

**Q: Are the forks of the AGV's able to be leaned forward? e.g. If I have a gravity rack with a certain incline, is it possible, that the AGV can lean the pallet to store it inside?**

**A:** Yes, reach trucks can do so.

**Q: Is it possible to retrofit a standard VNA or reach truck into an AGV? Would it be possible to automate STILL trucks already in use?**

**A:** No, it is not desired. Normally the effort to do so is high and the trucks do not accomplish all requirements in the first stage. For this reason, we configure a new vehicle appropriate to the interface and parameters. Also, the investment in automation goes way beyond the price of the base truck, so it's better to start from a solid basis to enjoy the system for as long as possible. We do have a second-hand market where we can revalorise your existing trucks.

**Q: What is the residual value after 84 months?**

**A:** This question cannot be answered generally due to the fact that it is dependent on several parameters. It would be great to discuss it individually to give the most appropriate answer.



**Q: Would the shown solutions work for a combination of different pallets sizes and depths, e.g. combination of single deep, 1.7 m deep pallets and 2.4 m deep pallets with telescopic forks? How can multiple pallet sizes be handled in the same system (from 110x110 to 280x120)?**

**A:** Different load types can be handled in one system – especially with a reach truck / fork solution. Therefore, it is required to plan the process and layout with such load dimensions.

Our VNA systems can handle large ranges of pallet types, though the 280mm size may give problems or at least compromises which make the overall WH not viable.

**Q: Do I need STILL for teaching new distances, sources and syncs with complex programming or can I do it simply by myself?**

**A:** For CE and reliability reasons we always offer the support by one of our engineers. Small changes can occur quickly. An interface allowing customers to do so themselves for simple applications is being tested.

**Q: Are these products able to connect with IoT (Internet of Things)?**

**A:** They embody IoT. The system can exchange data with other systems whenever needed.

**Q: Can AGV's operate in a cold store environment at -20 degrees?**

**A:** It is being prepared. Due to its complexity, it requires further evaluation for the specific requirements per case. We would be happy to discuss it individually.

**Q: How long does the project implementation take and what tasks do I have to expect as a customer?**

**A:** 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 must be defined. Usually it takes a total of 8-12 months until the system is ready for handover.

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, the customer shall have a system operator who overlooks the daily functioning of the system. The commissioning phase is ideal to familiarise staff with the new system. We recommend involving the staff who will later control the system at a very early stage.

**Q: How do you have foreseen the loading of the batteries while working? How will the system secure the battery supply/charging processes? Is it possible to charge batteries automatically?**

**A:** Yes, very often. There are different automated battery charging concepts, of which automatic 'opportunity' charging is mostly used (the trucks 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 intelligent software solutions, even for short charging cycles.

**Q: Does this OPX iGo neo driver follow the operator, because he is wearing some kind of transmitter that leads the truck? What if the operator stands behind the trolley in case of a longer distance? Does the truck switch to manual mode and starts?**

**A:** The OPX iGo neo follows the operator by detecting and tracking him through motion tracking. This happens after the operator has left the standing platform and activated the autonomous mode button.

If there is any uncertainty about the operator's current position (e.g. operator is invisible behind an obstacle like a trolley, forklift...), the additional radio-based tracking system inside the remote control helps to locate the operator. This hybrid tracking approach ensures continuous picking operation even in complicated customer environments and this leads to maximized picking performance.



**Q: Concerning the OPX iGo neo following the picker: is the full one automatically taken away and does a new empty one arrives? So that the picker can continue to pick continuously?**

**A:** No, once the pallets on the OPX iGo neo are full, or the order for that pallet has been completed, the operator can place those pallets at a transfer location for other trucks or move them to the destination in manual mode. Fully automated order pick support systems can be designed based on integrated iGo systems solutions.

**Q: Is stacking in block storage of e.g. 5 cage boxes possible?**

**A:** Yes. We do have kinds of block storage with various load types like cage boxes. Anyhow, there is a side constraint on that kind of operation. The loads must be suited to the load operations and often, the variety of good and dimensions as well as small tolerances could lead to the issue that it is not advisable in a block storage. Therefore, some reviews and qualifications of the block storage needs to be done.

We can offer to test those applications with reach trucks as a service, to figure out if the individual block storage is suitable for an automated solution.

**Q: The introduction of automated processes extends far into higher corporate and IT levels. How far can STILL accompany/support its customers during the integration?**

**A:** AI is the way to the top. It also depends on the IT we are delivering and what is already available on the customer side. Quite often, customers already have a warehouse management system (WMS). An interface of the trucks would allow the connection of all trucks to the existing WMS so that only a traffic control system would be needed in addition. This tool can be provided by us. In this case, the transport orders would be generated in an existing WMS system on the customer side and the additional traffic manager would coordinate the transport tasks between all operating trucks. If required, we would also be able to deliver an appropriate WMS system to implement the project.

Additionally, in cooperation with our sister company Dematic, we can offer in-house SAP-EWM consulting. Independent of the solution, intensive IT workshops are needed to clarify all interfaces.

**Q: I have seen a couple of AGV's over the years. They always work at quite a low speed. Do you think the speed can be increased within the safety rules in the future?**

**A:** First of all, reduced speed is not a technology reason. The AGV's can normally drive as fast as manual trucks. We limit the speed to ensure safe driving and handling. In addition, the trucks are working continuously without interruption, achieving great performance over a 24/7 period. It turns out that increasing driving speed only improves system performance marginally. The big optimisation is in load recognition, the adjusting of the vehicle position and the picking/dropping process. We have achieved great improvements with the camera technology which we are integrating e.g. VNA and reach truck systems.

**Q: Must people wear a tag to indicate when he/she comes too close to the vehicle and they enter the dangerous zone? How does the automated system know that a person is approaching it?**

**A:** Every truck is equipped with 360-degree safety sensors and those will detect if an obstacle is in the way. This obstacle could be a person, but also a pallet or something else. Depending on the distance of the obstacle, the AGV knows how to react – lowering the speed, stopping or restarting. Additionally, all trucks are equipped with emergency stops, if something appears unexpectedly. By activating the emergency stop, the truck will directly stop all functionalities. All AGV solutions do also have a CE certificate, which ensures that all possibly arising safety issues are tested upfront.

**Q: What is the minimum needed to set up the right network (Wi-Fi strength, etc.) Is this included in STILL's plan or should this be established by the plant themselves?**

**A:** Usually the Wi-Fi is provided by the customer. The AGV's do have specific requirements when it comes to the configuration. We are not offering the Wi-Fi on our own, but we will of course support you with the specification.