Webinar “Automation in Production Logistics”
Many ways lead to automation - but only a few will take you there profitably

- Tuesday, March 30, 2021-

Q&As

Q: What are the advantages of reach trucks compared to normal forklift trucks?
A: Standard counterbalance trucks have the advantage that the operator has a good view ahead on his activities.

Q: Are the forklift trucks IP67-rated for outside use?
A: Our basic serial trucks can be equipped with additional fittings to ensure a higher IP-class. After this, we add automation to the vehicle, fulfilling all the functionalities required for automated use. As a standard, we do not design the automation packages with a higher IP-class. It is very important to understand, however, that even though it is possible to fulfil a certain IP-class with this attachment, outdoor transports in all circumstances and with all possible weather conditions would also have to be managed. This means to safely detecting the surroundings, interpreting and using the data to fulfil outdoor applications etc. As this is not only challenging but also very costly and requires lot of testing, it often becomes difficult to realise a business case that makes sense in its entirety.
We at STILL do not have standardised inhouse solutions, but we are very happy to advise our customers in finding the best solution.

Q: What minimum aisle width is required for the automated forklift truck? Is this a question of safety distance?
A: As for the safety distance, the overall goal is to avoid possible risks according to the machine directive and current guidelines. Therefore, escape routes (0,5m width, 2,1m height) must be provided, if the truck is to be driven at rated speed – which is what we recommend for maximum performance. Alternatives are e.g. alternative measures such as reducing speed.
The aisle width depends on the loads and the way they face, as well as the vehicle type itself.

Q: What is the minimum distance between reach trucks on a 2-way route? From the animation it seems to be very low.
A: For driving at maximum rated speed, we must ensure that nobody will be exposed to danger and therefore consider escape routes/distances when planning the driving routes. As standard we plan with 0.5 m next to the vehicle, as a distance in between two vehicles on a 2-way-route we plan with 0.2 m.

Q: Are you working on a possibility to load/unload a truck with your automated forklift trucks?
A: There are no commercially available STILL solutions at this point, and there will not be in the near future. Within the group we do have successfully implemented several ATL systems in the past 2 decades, including a few in Europe. ATL often do not bring the advantages that customers would expect.
It is slower than manual loading, which requires long waiting times for parked trailers and many docks. Pallets and trailers must all be uniform, as well as the dock levellers, in order to fit in pallets in a reliable manner.
Experience has shown that large American factories are often better suited than those in Europe. As ATL AGVs are expensive, other parts of the intralogistics process can often be automated at a better ROI.

Q: What happens to the forklift drivers who drove or operated these forklifts?
A: When it comes to automation, people often think "automation destroys jobs". However, the fact is that automation leads to the systematic optimisation of internal company processes and thus also has an impact on human resource planning. At the same time, the introduction of an automated process is by no means accompanied by job cuts - rather, it supports employees by relieving them of manual processes and counteracts staff shortages elsewhere. Positive effects of automation are, for instance: an increase in the added value of each employee, a plus in ergonomics and the compensation of the increasing shortage of skilled workers due to demographic change. Automation relieves employees of physically demanding or repetitive work and creates new areas of application that require creativity and expertise. As a result, the workforce benefits from new fields of tasks and responsibilities created by automation. One example is the logistical responsibility of a production line as section supervisor of an entire production section instead of just one process step. In conjunction with the digital transformation, new occupational fields are emerging through automation, such as the combination of logistics specialist and mechatronics engineer. Furthermore, a rising average age of employees in intralogistics and the opportunities to increase the attractiveness of occupations in intralogistics through ergonomic working environments are reasons for companies to invest in improved working conditions. The main objective is to reduce physical strain. This concerns the use of modern warehouse technology in terms of operation and comfort and thus the intralogistics processes themselves. This also includes the automation of load handling. After all, the change from physically demanding to automated material transport has a positive effect on employee satisfaction, sickness levels, work quality and recruitment efficiency.
So the focus of automation is not on saving staff, but on the more efficient, value-adding use of human capital.

Q: In the presentation of the forklift truck solution, you see all the forklifts running "unmanned". Is that correct?
A: Yes, that is what we want to show. All of the presented solutions kinds of AGVs – “manless” vehicles.

Q: Can you use these turtles also for outdoor transportation? Is there an outdoor option for platform vehicles? If yes, what would be the ground requirements?
A: The turtles are designed for indoor applications. Outdoor-applications are constantly being revised by our R&D-department.

Q: Can "turtles" operate in wet environments where the floor is wet? Or carry loads that can have water dripping? What does a wet floor mean for the forklift's system?
A: A wet floor is one of many challenges in outdoor applications and in particular results in a possible decrease in friction - in the worst case even to sliding friction. We at STILL must ensure a proper working system in all circumstances.

Q: We are looking for a deckload AGV, neither forklift truck nor a towing AGV are suitable for our application. A robot will place materials on top of it. Would this AGV be suitable for such an application? Is it possible to mount a robot on top of the deckload AGV?
A: The AMR is definitely able to serve as a taxi-system after materials have been placed on the AMR. To mount a robot on top of the deckload AGV is a different story and does have many challenges. We are constantly checking impulses from the market to see if developments are making sense. This is certainly an interesting topic, however, in the short- and mid-term consideration it is not an application for us.

Q: What are the technical specifications (size, capacity, loading height, speed) of the "turtles"?
A: We do have different types/sizes of turtles. The payload is up to 1.5 tonnes, with a driving speed of max. 2.0 m/s (unloaded) or 1.5m/s (loaded). The dimensions of the smallest version (payload 600 kg) are 956*730*240 mm, with a lifting height of 55 mm. More details upon request.

Q: What is the lifting capacity of the platform units?
A: Between 600 kg and 1.2 tonnes.

Q: Can reach trucks operate at negative temperatures?
A: Yes, that is possible. We equip our trucks with a deep freeze equipment. One thing to be absolutely avoided, however, is to switch between different freezing zones, especially deep freeze and cold/warm.

Q: What is the speed of a deckload AGV compared to an AGV?
A: The speed is the same.

Q: How does the AMR navigate within production environments? Is it recognising the environment by SLAM technology?
A: So far it is an optical navigation with markings on the floor. SLAM is planned, but not so easy to realise when you think about the height of the AMR's field of vision.

Q: We as a company are interested in the deck load option but there is one issue. We must transport pallets from the warehouse to a clean room production zone through a SAS. Do you have solutions for this? The machine is clean enough to enter the clean room zone.
A: In any case, we have to check the requirements and evaluate in the existing clean room classification. Any clean room zone requires detailed verification.
In the case of stand-alone systems, it is possible to generate the orders manually so that the control system can optimally control the AGVs.

Q: What is the name of the AGV?
A: The Quicktron-based AMRs will be named "ACH"-series. A system of numbers following the letters indicates the size/payload of the vehicle. For example: ACH 06 is the Quicktron-based AMR with a payload of 600 kg.

Q: The pallet movement x per hour is higher in a standard truck. How do you justifiy this?
A: Considering safety measures, data to be processed and limited driving speeds due to the need to always drive & stop in a safe way, processing times of automised solutions are indeed slower than those of standard MHE-trucks.

Q: I have a question regarding stackers and tugger trains. What are the advantages of keeping the manual control cabin on the AGV compared to competitors who do not have it?
A: Let us call it an integrated emergency strategy. All vehicles can also be driven manually. Tugger trains are commonly used in so-called *dual use*. First, it automatically drives from the supermarket to production. There a driver takes over, drives manually through production, handles the load also manually and afterwards sends the tugger train back to the supermarket in automated drive mode.

Q: Do you offer inductive charging with your automated tugger trains?
A: Yes! This technology makes a lot of sense for Tugger Trains, as several charging points can be distributed over the length of the routes, so that the train can always be charged in between. In addition, this requires less space, as the train is virtually charged in line and the tractor does not have to be separated from the frames for charging.

Q: How much does a tugger train cost? A towing vehicle and trailer? And what is the unit price of the turtle or project price at approx. 5 AGV of the turtle?
A: The costs of a tugger train depend on the level of automation. Level 1 is automated driving and manual load handling, level 2 is manual driving and automated load handling, level 3 is fully automated. Costs are about 65 - 70 k€, manual frames (depending on the type) are around 6.5 k€, handover stations approx. 10 - 12 k€, automated frames with integrated roller platform approx. 15 - 20 k€. Of course, the unit price of an AMR depends on many factors, such as vehicle equipment or type/size. For customers' budget considerations, we like to give reference values of 25,000 – 50,000 €, the former when using standardised goods-to-man units of a smaller series and higher number of units, the latter when using production logistics vehicles with upscale equipment.

Q: Can the AGV forklift truck handle 2 pallets at once using extended 1600mm forks?
A: Yes, it is also possible with extended forks or a 2-pallet-clamp.

Q: Are the vehicles compatible with an existing AGV? How can the automation be integrated with existing warehouse management systems and what are the costs?
A: The AGVs communicate with an AGV management software. The system controls different types of vehicles and assigns transport orders. The AGV system receives the transport orders 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. STILL can also implement a warehouse management system on request.
In the case of stand-alone systems, it is possible to generate the orders manually so that the control system can optimally control the AGVs.

Q: How do the turtles charge their battery?
A: There are various automated battery charging concepts, of which automatic "opportunity" charging is the most common (the system independently decides when, how and where to charge the battery). As soon as the vehicle has nothing to do or the capacity falls below a certain level, it moves to the charging station.
In a 24/7 work cycle with a steady performance, the unit will be at a charging station approx. 15% of the time.
Both Li-ion and lead-acid batteries can be charged automatically with appropriate intelligent software solutions, even with short charging cycles.

Q: Will 5G be used as a frequency here in the future?
A: Not planned yet, but it is possible.

Q: Can the reach trucks be connected to a mobile racking system?
A: That is basically possible but needs to be checked and approved in detail. This will not work without a thorough analysis.

Q: Is there a questionnaire of the necessary requirements at the customer's site in order to study the feasibility of an automated system?
A: There is no standard form as the requirements depend on the selected system. This needs to be evaluated during the quotation process. To be checked are the layout, drive ways, processes, WiFi, load sizes, weight, demands from customer side, IT requirements, etc.

Q: Here is a question regarding the platform units. How can we navigate with QR systems in those plants with pedestrian and truck interaction that will mess up the codes?
A: The QR codes are sticking safely and well protected on the floor. They could not be mixed, only destroyed. To do so would be a kind of, let´s call it "sabotage", i.e. it would require a the willingness to

destroy them.

Q: Do all three of you always attend to the customer because otherwise the customer would possibly only receive one of your solutions?
A: No, we are one team and we cover all applications. Today we presented the different solutions in a way to set them apart. However, our local automation experts are trained to find the most adequate solution for and with you.

Q: Your solutions exclusively include floor logistics. Why? Wouldn't a combination of floor logistics, crane logistics and robotics make more sense? I mean controlled systems, of course.
A: Connection with robot cells, light curtains, doors, existing conveyor systems, palletisers, packaging and other machines is quite common. The AGV management software communicates with the respective machine/equipment via PLC communication, for example, and thus enables smooth cooperation.

Q: Apart from the operators needed to drive forklifts which these solutions will free up, how many people are necessary to maintain and to control the AGV forklifts on a shift basis? Like in a control room or something like this.
A: It is indeed a good idea to have someone monitor the proper functioning of the system in order to maximise its performance.

Q: Do you only provide the hardware like the AGVs? Or the necessary software as well?
A: The software is always part of any automation project - navigation, traffic management, order management, if required also warehouse and material management.

Q: How can the truck find the exact destination in the warehouse? Is there any kind of program included in the truck specifically for the warehouse routes?
As the "trollies" are driving fully automated in the warehouse, how do they find their way? What is the technology behind this? Are they finding their way with Bluetooth? Or is there some kind of GPS infrastructure?
And as for entire units: How does the navigation system work? Is it based on laser guidance with or without reflectors? How does the AMR navigate within production environment? Does it recognise the environment by SLAM technology?
A: Nowadays, laser navigation based on reflector targets is most commonly used because it is simple and reliable. In this navigation method, the scanner measures the distance and angle between the reference points and calculates its position based on triangulation.
The current Quicktron vehicles navigate via QR codes on the ground; a corresponding camera is fitted in the vehicle to detect the QR codes.
The further development focuses on navigation via landmarks that are detected in the environment at scanner height and stored as such in the navigation map. The physical principle is laser triangulation, which allows precise orientation in space based on the travel times of the waves. Our goal is, to not need reflectors in the near future anymore at all and therefore use the contours of the existing surroundings.

Q: At good inbound area you can use forklift AGVs to pick up pallets from the floor. How would you do so with tugger trains or do you only use them to supply production lines?
A: Basically, this is possible with a different kind of frame. Therefore, we would use our C-frames including telescopic forks. But we have to ensure that we have access to the pickup location from a kind of main path. Generally, it makes no sense to have a tugger train pick up directly in the inbound area in the normal process. They always move through a warehouse.

Q: Where can I read more about the AGVs?
A: Please go to our STILL website or contact our local STILL contact and we will be happy to support you.

Q: Are there also STILL lift rollers that can handle pallets & roller containers?
A: We can handle either palettes or trolleys but not both on one frame. If the process is the right one for you, trolleys are maybe the better choice because they can move deeper into the production.

Q: Depending on the customer's needs, would a combination of the different technologies be a good solution?
A: Yes. Mixing of concepts is certainly possible, depending on the application itself.

Q: Does STILL have its own production platform (control system for production and logistics)?
A: Yes. All our technology is developed and/or co-developed in our group.

Q: Can you compare maintenance, maintenance costs and lifetime of different solutions?
A: All automated solutions have similar costs and great lifetime compared to their manual equivalence. Given the short return on investment, the total cost of ownership is great.

Q: Are the underride AGVs also presented on the Still website?
A: As we are still in the pre-start of sales phase, as of yet there is no further information published on our website. However, we are happy to answer your questions already today, to check your enquiries and work out solutions/proposals.