MEDIA RELEASE

On the Road with RTLS (Real Time Location System) in Vehicle Production.

The intricacies of vehicle production are not just confined to the assembly line. The assembly of the final component part into the vehicle triggers a sequence of quality and logistical processes. Depending on the operating environment and procedures used, this can lead to inefficiency, backlogs and bottlenecks, all of which reduce turnover speed and profit. Car manufacturers have for years been confronted with handling the fall-out of such inefficiencies in their production. In an attempt to improve the situation, many vehicle manufacturers instinctively turn to quality control methodologies such as 5S, 6-Sigma etc. However, in this article we will explore a somewhat different solution, an end-to-end hardware/ software location system.

So, where do the problems begin? How can it be that companies, who have been producing vehicles for generations, are still facing these challenges? The assembly of a vehicle involves a carefully defined sequence of assembly processes, which are controlled by finely tuned automation systems. During this phase of production, the vehicle is confined to the conveyor belt and, therefore, cannot deviate from the assembly line. However, once the vehicle gets wheels and can be moved freely around the facility,

inconvenient situations can and do regularly occur. These situations are common in two main areas, namely finishing and logistics. Let's take a brief look at each one.

What problems can occur in the finishing area?

Following assembly, the vehicle must undergo several quality control procedures. These procedures include - but are not limited to - visual inspection for damage, testing of mechanical and electrical systems, performance testing, fine tuning/ adjustment of parts etc. These checks are carried out at inspection stations throughout the finishing hall. Should the vehicle pass all the checks, it is handed over to logistics. If, however, the vehicle does not meet the required quality standards, it must be routed through a repair/rework process specific to the quality deviations. It is then the job of the manufacturer to define the schedule for carrying out repairs and/or adjustments. Such procedures may require the vehicle be relocated to other areas within the production facility.

With many modern car plants producing more than 1,000 vehicles per day, it is a very common occurrence to lose the overview, even temporarily lose the vehicle! The resulting confusion has a direct impact on the overall efficiency of the production flow. Should the vehicles in question need to be available for final delivery by a certain date, any delay in finishing can result in the schedule not being fulfilled and ultimately a dissatisfied end customer.

What problems can occur in the logistics area?

Once finishing is completed and the vehicles meet the quality criteria of the manufacturer, the vehicle is handed over to the logistics division. It is regardless if the vehicle logistics are managed by the car manufacturer itself or an external logistics specialist, the problem is one and the same: Where to temporarily store the vehicle prior to shipping, how to log the location of the vehicle and how to find the vehicle again? Maybe this sounds straightforward, but simply parking the vehicle in the first available parking spot out of many thousands and logging the row and space number is very often a flawed strategy. What if the driver writes the wrong number or, worse still, forgets to log the data? What if the vehicle is moved again and the new location not logged? There are many things which can happen resulting in the vehicle becoming temporarily lost. Incidentally, this is not that difficult if you consider that many car manufacturers have parking facilities for thousands of vehicles! Should a vehicle become temporarily "misplaced", the logistics team is faced with the challenge of finding the vehicle in time for final dispatch. Sending a team out to the vast parking areas in order to locate just one vehicle is extremely inefficient and can cause nothing short of chaos.

So, what is RTLS?

Now that we know the challenges faced by the car manufacturers and where the problems arise, it raises the question of what can be done. A solution which is gaining more popularity is a so-called "Real Time Location System". This technology works by temporarily equipping the vehicle with a tag or transponder, which is capable of communication on one or several frequencies. The transponder communicates with an installation of hardware "infrastructure", located throughout the facility. By analysing the communication logs between transponder and infrastructure, it is possible to determine the position of the vehicle. This is a very simple description of a sophisticated process. There are various systems

available on the market, each using their own methods of communication and localisation; however, not even a handful are suitable for the complex task of finding vehicles.

Location accuracy, cost, ease of use, maintenance of the system are examples of important factors to consider when deciding on an RTLS solution. Many companies claim accurate location, but under what conditions? In what environment are the claimed accuracy figures defined? A system which performs acceptably in an outside environment, where a clear line-of-site communication between the components of the system can be pretty much guaranteed, may not work so well in an indoor environment, where the system must perform in the presence of structures, materials, machines, products. All of these obstacles reflect electromagnetic signals and result in reducing the accuracy of the location.

Important differences between the systems currently available on the market, however, lie in the details. Imagine you must find one vehicle, you approach the general area, where you think the vehicle must be parked, only to find 50 vehicles of the same make, model and colour. In this situation, a transponder with a flashing LED located inside the vehicle will allow immediate visual recognition (Pick-by-Light). Communication with third party ERP systems is very often another important factor. Car manufacturers require seamless integration of a location system in order to receive bookings automatically. This can drastically increase process efficiency and reduce the need for manual data processing.

In Conclusion

"A place for everything and everything in its place", is an important philosophy in automotive manufacturing, which can only be fully achieved with the necessary control and monitoring systems. A well thought-out and cleverly implemented RTLS can go a long way to providing the transparency necessary for eliminating bottlenecks caused by the inefficient routing or misplacement of vehicles and achieving a remarkably quick return on investment and increased profit!

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