

AGV versus AMR

Automation by driverless transport vehicles in
material handling systems

SUMMARY

What if improvement of operational performances is needed and a solution must be found to move forward? How to choose between new technologies? CSi has listed two options: the AGV and the AMR.

In this white paper we will explain what the difference between the two possibilities is and how they can be of great benefit.

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Introduction

Due to the increasing consumption demands, production plants and their logistic chains are under pressure. They are constantly looking for new technologies to improve their operational performance. AGV's (automated guided vehicles) are already used for several years in many industries and applications. In the past decades new technology has improved the concept of the AGV. The AMR (autonomous mobile robot) is the next step in factory automation by driving vehicles. We will explain the difference between AGV and AMR; in which applications do they distinguish themselves from each other.

History

The first known AGV was introduced by Barret Electronics in 1953. Since then AGV's have been used to simplify logistic and material handlings processes in industrial environments. They are often used in industrial applications to move materials around the manufacturing floor or in a warehouse. They navigate with the use of external installed hardware (guiding) as tape, reflectors or magnetic strips. This makes the AGV accurate in navigating but not very flexible in changing the movement layout.





In the early 1990's the first commercial viable AMR became available. It was called the HelpMate Robot. Its primary function was to move different things around in a hospital. It used sonar, infrared and vision systems to navigate. In the last 30 years AMR's have changed dramatically. Modern AMR's are capable of different task in various sectors of the industry. For their navigation they don't have to rely on external installed hardware. They use Lidar technology to map their surroundings to create a layout. Within this layout they can move autonomously to complete tasks.

Differences

The big difference between an AGV and AMR is the way they navigate. An AGV needs external hardware and can only move over fixed routes. It can detect obstacles but cannot navigate around them. An AMR does not rely on external hardware. It can autonomously navigate from point to point. It can navigate around obstacles by recalculating a new route. This makes the AMR very deployable in surroundings where this flexibility is needed. When this flexibility is not needed, and speed and accuracy is more important, an AGV is still a good solution.

The most important benefits of using an AMR or AGV are:

- The possibility to keep the floor space more open instead when using fixed conveyors;
- Less or no more movements of manual operated transport equipment. e.g. forklift truck;
- 24/7 operational performance.

At a glance

AGV

Routes are fixed. Changing routes can ask for additional external installed hardware.

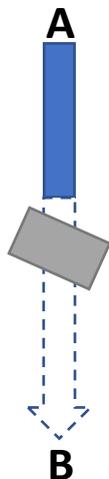
When adding AGV's to the fleet the prefixed layout must accommodate extra vehicles or must be altered.

AGV's are unable to pass obstacles on their own. The obstacle needs to be removed manually.

AGV's are designed to perform simple tasks in a repetitive way.

AGV systems are more costly to maintain due to the lack of flexibility and external installed hardware.

With the help of external installed hardware an AGV is able to achieve greater accuracy in a short timeframe.



AMR

Routes are not fixed. No external installed hardware is necessary.

Additional AMR's can be added easily to the fleet. The layout needs no maintenance.

AMR's can easily pass obstacles. They can still operate in a changing environment.

Due to the flexibility an AMR can perform more complex tasks in a non-fixed order.

AMR systems have little need for maintenance during operation.

AMR's need to calculate their own routes. This process enables the flexibility but takes time.



Flexibility

Scalable

Intelligent

Usability

Operational costs

Accuracy

How can we help you?

Please click on the video and see for yourself.

<https://youtu.be/JZOO7NCnJrA>

<https://youtu.be/FTISwaEiXeE>

If you would like to receive more information, please don't hesitate to contact our Sales department.

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