

# AGV versus AMR

Automation through driverless transport vehicles in material handling systems

## SUMMARY

What if an improvement in operational performance is needed and a solution must be found to move forward? How do you choose between new technologies? Here, CSi details two options: the AGV and the AMR.

In this white paper, we explain the differences between the two alternatives, and how they can be of great benefit.

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# Introduction

Due to increasing consumption demands, production plants and their logistics chains are under pressure. New technologies are constantly being sought in order to improve operational performance. AGVs (automated guided vehicles) have already been in use for several years in many industries and applications. In recent decades, new technology has improved the concept of the AGV. The AMR (autonomous mobile robot) is the next step in factory automation through self-driving vehicles. We explain the differences between AGVs and AMRs, and explain the applications in which they distinguish themselves from each other.

## History

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





tasks.

In the early 1990s, the first commercially viable AMR became available. It was called the HelpMate Robot, and its primary function was to move different items around in a hospital. It used sonar, infrared and vision systems to navigate. In the last 30 years, AMRs have progressed dramatically, and modern AMRs are capable of performing different tasks in various industry sectors. For their navigation, they do not have to rely on externally installed hardware, but instead use Lidar technology to map their surroundings to create a layout. Within this layout, they can move autonomously to complete

## Differences

The major difference between an AGV and an 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, and can navigate around obstacles by calculating a new route. This makes AMRs highly suited to surroundings where flexibility is needed. When this flexibility is not needed, and speed and accuracy are more important, an AGV remains a good solution.

The most important benefits of using AMRs or AGVs are:

- The ability to keep the floor space more open, compared with when using fixed conveyors;
- Fewer or no more movements of manually operated transport equipment, such as forklift trucks;
- 24/7 operational performance.

# At a glance

## AGV

Routes are fixed. Changing routes can require additional externally installed hardware.

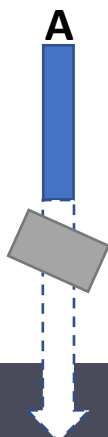
When adding AGVs to a fleet, the prefixed layout must accommodate extra vehicles or must be altered.

AGVs are unable to pass obstacles on their own. The obstacle needs to be removed manually.

AGVs are designed to perform simple tasks in a repetitive way.

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

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



## AMR

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

Additional AMRs can be added easily to a fleet. The layout needs no maintenance.

AMRs 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.

AMRs need to calculate their own routes. This process enhances flexibility, but takes time.



# How can we help you?

Please click on the video and see for yourself.

<https://youtu.be/JZ007NCnJrA>

<https://youtu.be/FTISwaEiXeE>

If you would like to receive more information, please do not hesitate to contact our sales department.

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