

AGV vs. AMR

Automated Guided Vehicles (**AGV**) and Autonomous Mobile Robot (**AMR**) are often confused.

AGVs and **AMRs** are used to transport desired products.

The main differences are the sensors and technologies used for motion.

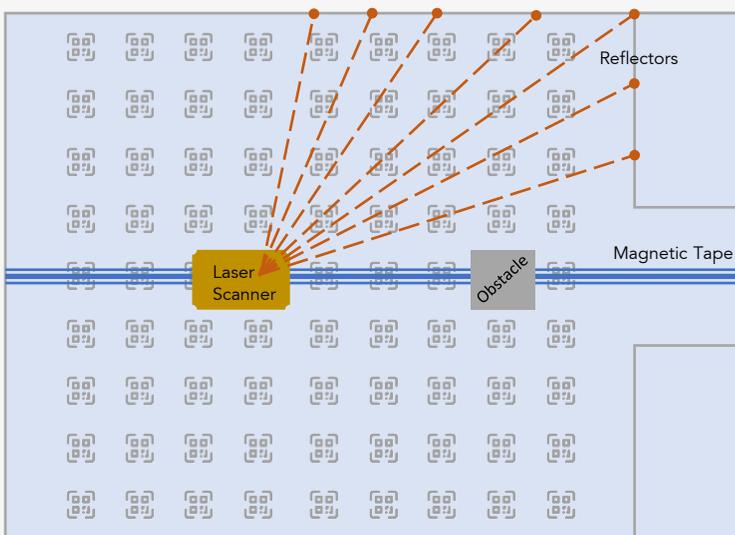
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AGV

NAVIGATION

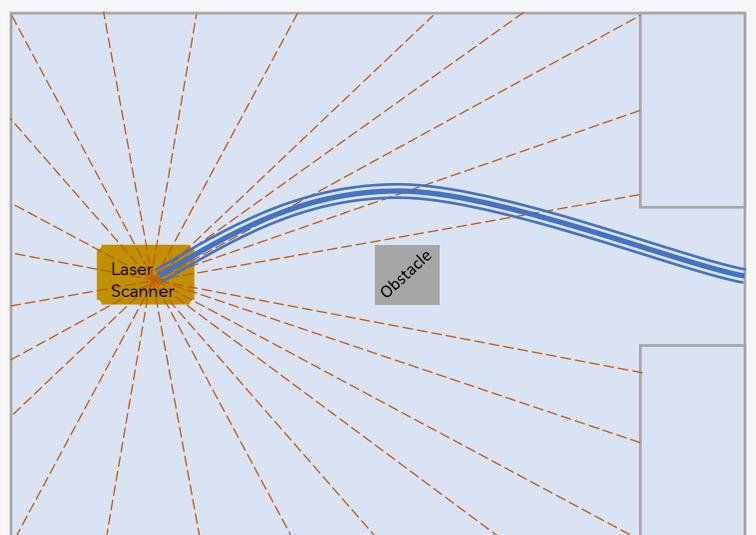
AMR

AGVs need orientation depending on the external environment. These directions can be made with ribbon tapes, magnetic tapes, data matrix, reflectors placed in the environment.¹



AMRs map the environment and then use that map to navigate naturally.

There is no need to place any material in the environment.



AGV

PREPERATION

AMR

In order for the robots to become operational, the materials must be placed in the environment and their controls must be made.

It only takes one mapping.

It can start working within a day.



SCALABILITY



Adding a new station to the environment or removing a station will require new operations in the environment.

In this process, editing magnetic lines or tapes requires serious changes in the infrastructure.

If a new station will be added to the environment or the location of a station will be changed, it is sufficient to notify the robot with the software.

When the AMR used in one building is moved to another building, it can be easily integrated there as well.



MAINTENANCE



Robots need regular maintenance.

Magnetic lines and tapes will wear out over time and need to be renewed.

Also the materials used for navigation need regular maintenance.

Only robots need regular maintenance.



FLEXIBILITY



It can detect obstacles with the laser ranging scanner or distance sensors on it and can stop for obstacles on its way.

Since AGVs are guided vehicles, the vehicles to be used by the AGV will follow a fixed route unless they are changed in the environment.

If an obstacle is found on that fixed route, the vehicle will detect the obstacle and stop thanks to the sensors it uses.

But since it cannot create a new route, it will stay where it is unless the obstacle is removed by a personnel.²

AMRs make route and movement planning according to the current dynamic environment. Sensors such as laser scanner and camera are used to ensure safety during movement.

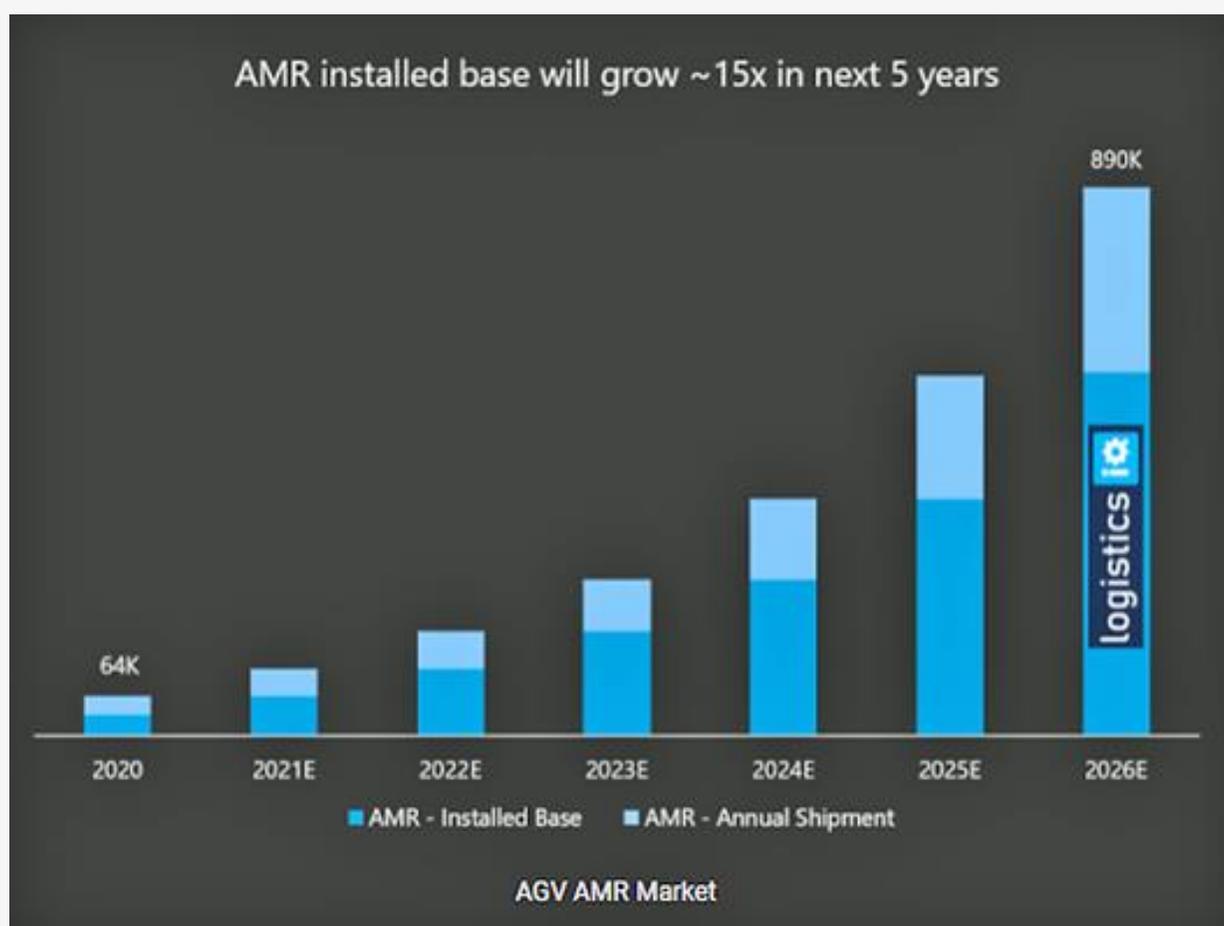
When obstacle such as a box or pallet appears on the mission route, it moves around it and proceeds to the target. If there is not enough space around the obstacle, it continues its task by creating a new route with the shortest path algorithm.

If there are prohibited roads or areas within the production facility of AMR, these areas can be defined via software and entry can be prevented.

According to the market research study on Research and Markets site;

By 2026, the AGV and AMR Market is expected to reach \$13.2 Billion with a growth rate of approximately 35%.

AMRs are expected to grow at a CAGR (Compound annual growth rate) of ~45% between 2020 and 2026 and will be a more attractive market by 2026 compared to AGVs.³



SOURCES

¹ L. Lynch, T. Newe, J. Clifford, J. Coleman, J. Walsh and D. Toal, "Automated Ground Vehicle (AGV) and Sensor Technologies- A Review," 2018 12th International Conference on Sensing Technology (ICST), 2018, pp. 347-352, doi: 10.1109/ICSensT.2018.8603640.

² Mobile Robot Guide, "What is the difference between an AMR and an AGV? ", Accessed: January 11, 2022, [Online]. Available : <https://mobilerobotguide.com/2021/08/06/whats-the-difference-between-an-amr-and-an-agv/>

³ Research and Markets, "AGV and AMR Market for Logistics, Manufacturing, Healthcare, Disinfection, Retail & Inventory Management, Security & Inspection, Agriculture, Hospital Assistance, Indoor & Outdoor Delivery, Tele-presence & Tele-operation, and Data Platforms & Remote Sensing - Forecast to 2026", Accessed: January 11, 2022, [Online]. Available:<https://www.researchandmarkets.com/reports/5398204/agv-and-amr-market-for-logistics-manufacturing>