6 Lessons Learned from the Installation of Autonomous Guided Vehicles (AGVs)

Reduce Your Risk of a Failed AGV Installation with These 6 Tips

The implementation of Lean Manufacturing Systems, the drive to reduce waste along with human 'steps', and the need to connect islands of automation, have all increased the interest in and implementation of Mobile Robots such as Autonomous Guided Vehicles (AGVs). AGVs are changing the game as they are becoming more affordable. For example, their implementation requires minimal infrastructure (no wires on the floor) which reduces the overall cost of ownership. However, there are still some lessons learned during a recent implementation that are worth sharing

#1: Make a Robot Lane

While an Autonomous Guided Vehicle (AGV) has the ability to navigate around obstacles in its path, it will be most effective if it has its own lane. If carts, forklifts, ladders, and people are constantly in its preferred path, this will slow down the Mobile Robot.

Suggestion: Make a robot lane which can be shared by other traffic but will alert workers to potential lane interaction with an AGV.

#2: Goal Areas Need to be Sacred

AGVs are programmed to take their payload from one location to the next. These destinations are called "goals." If the goal area is occupied by another object, such as a cart, the Mobile Robot will not be happy! It will need a way to alert someone to move the object preventing the AGV from reaching its "goal."

Suggestion: Clearly indicate that the goal area needs to be kept clear and that it is not a storage location. This is best handled with a combination of worker training, signage, and outlining the goal area on the floor.

#3: Add Low Walls to 80/20 and Creform Racks

An AGV is designed to create a map of the factory floor. In order for it to create its map, it will scan the area using built-in sensors. For objects such as 80/20 or Creform racks, which have legs but not walls, the scanners will pick up just the legs. This isn't a huge deal but will require the programmer to identify racks of this style

as structures that cannot be moved or passed through. The AGV needs to be told that it cannot pass through the legs of the rack.

Suggestion: Add walls to the racks at the height of the robot scanner.

#4: Driving in Reverse and Zero Turn Radius
AGVs, depending on the manufacturer, will have the ability to drive in reverse at various speeds. If the AGV has rear facing sensors, it can back up faster than one that needs to be speed limited in order maintain safe operation. Some AGVs have a zero turn radius which allows them to change direction without the need for traveling extended distance in reverse.

Suggestion: Know your Mobile Robot's operation and arrange its payload pick-up and drop-off locations to allow for the most efficient use of its time

#5: AGVs Cannot Flee
AGVs do not have the ability to avoid forklifts or other vehicles which are on a collision course with them at a high rate of speed. If the AGV senses something dangerous, it will stop and try to change course to avoid the collision, however, it can only do so within its speed limitations. The AGV does not have the ability to flee or run away from danger. If you have a forklift that is bound for collision with an AGV, it will win the battle and you will be down one AGV.

Suggestion: Keep AGVs and forklifts in separate locations or minimize their overlapping areas as much as possible.

#6: Use Ceiling Lights for Guidance
Some AGVs have the ability to perform guidance and mapping through tracking ceiling lights. This works best when the lights are the same height and shape, with rectangular preferred over circular. It also works best when they are evenly and consistently spaced. This feature helps the Mobile Robot move through large warehouse areas with few consistent structures and where objects change location frequently, such as pallets and shipping containers.

Suggestion: If this feature is to be relied on heavily, have multiple robots which operate solely in areas with consistent overhead lighting

Prepare for the Future

Autonomous Guided Vehicles are here to stay. Innovative companies are exploring ways to improve their material flow through the use of these specialized Mobile Robots. Robotic solutions are no longer limited to stationary industrial arms. We even have applications where collaborative robot arms are being installed on AGVs to deliver material, combining the best of both worlds.

Please contact Cross Company for help with your Mobile Robot/AGV applications. Our lessons learned and trusted experience can lower your risk while still providing you with an innovative solution!