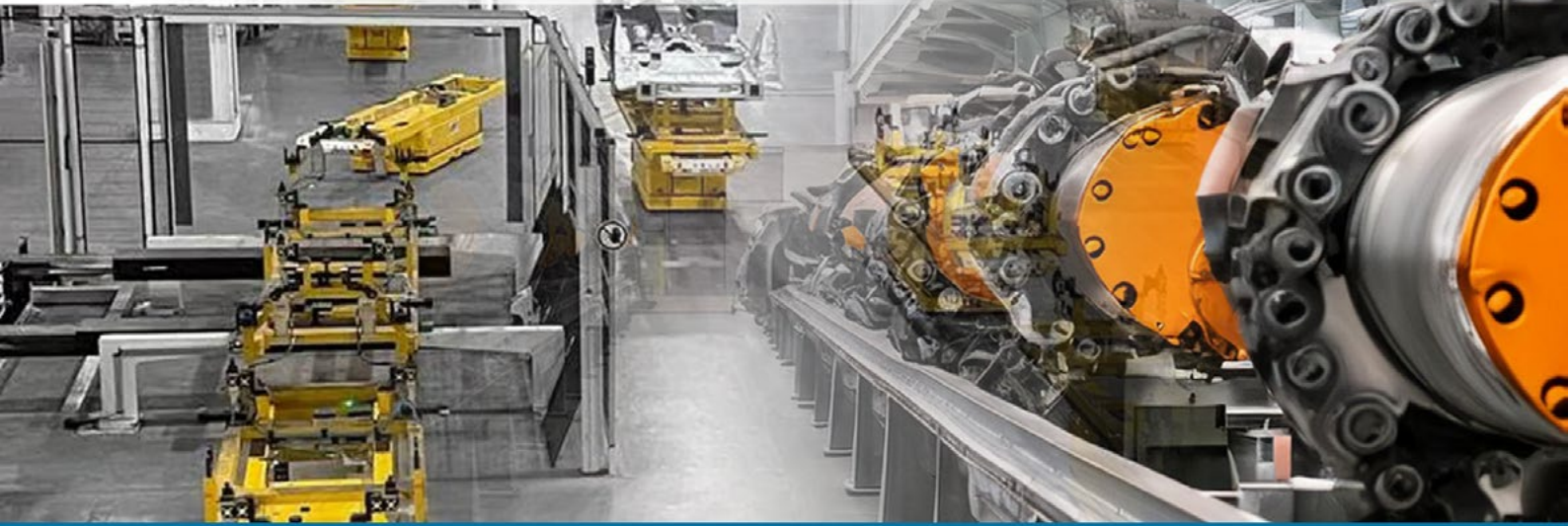


THE EFFICIENCY EDGE



MANUFACTURING: WHEN NOT TO USE AN AGV

Today, the automated guided vehicle, or AGV, is a common sight in warehouses and factories worldwide. It's both a practical and flexible transport solution for applications from logistics to manufacturing.

In this article, we take a closer look at the specific use case of AGVs in a production environment.

In this age of agile production, manufacturers are increasingly under pressure for their production lines to perform optimally in response to ever-shifting market demands and product volumes. Flexibility has become an absolutely critical component of success.

However, trying to impose flexibility on a traditional assembly installation with its heavy, fixed conveyor systems can be a nightmare. That is why many manufacturers are turning to easily re-routable AGVs to move product from station to station, especially in multi-variant production scenarios.

But while an AGV can pose significant advantages, there are some things to consider before rushing to adopt it as your preferred transport platform.

Not all production environments are created equal

In a conventional manufacturing environment, the traditional conveyor system employs motorised rollers or belts to transport materials along a set path, with components loaded, moved and unloaded at each stage in the assembly process.

For every working station, there is a buffer station in between, with a pre-loaded pallet waiting to move the next component into that station once the current operation is completed.

The pre-loaded pallet is there to reduce the time it takes to move the waiting part into the working station, and by extension the overall cycle time.

Without a buffer station, the overall cycle time would increase dramatically for two reasons. Firstly, because the pallet can only be released once the previous station's operations have been completed. And, secondly, because the greater distance between working stations will add to the travel time.



Consider these practical constraints

Now, superimposing this buffer station model on an AGV set-up sounds like a reasonable alternative but that's where things get a little more complicated. Here are 3 practical considerations that could impact your decision:

1. **Cost:** AGVs are a substantial initial outlay, therefore most manufacturers will not invest in double the number needed on a line in order to create buffer AGVs behind every working station.
2. **Increased cycle time:** The AGV still needs the operator at the station to complete their task before it moves on. In the absence of a buffer, it also has to travel all the way to the next station.
3. **Speed and safety:** Because the operator is standing in that space, the AGV can't move at full speed for safety reasons. So, its speed is significantly reduced – slower, in fact, than the speed of a pallet on a conveyor system.

So, when exactly should you put the cart before the conveyor, and choose the AGV?

Putting the cart before the conveyor

At Jendemark, we recommend AGVs as an option for customers assembling highly complex products, with a

minimum cycle time of two to three minutes. This kind of manufacturing scenario can accommodate the eight to 20 seconds it takes for the AGV to move between stations, without a significant impact on the cycle time.

For manufacturers with a sub-one-minute production cycle, AGVs simply don't make sense from a time and cost perspective.

AGVs are useful for assembly processes involving heavy load bearing, such as off-highway equipment or automotive component assembly. Modern AGVs can now carry or tow significant payloads.

When dealing with large loads, AGVs usually feature front and side safety scanners and emergency stop buttons for ensuring operator safety. When the AGV arrives at an automatic machine station, the docking mechanism ensures precision parking to allow the machine to do its job accurately.

Where the production line needs to be adapted to accommodate either a change in variant or fluctuations in volume, AGVs provide flexibility.

Or if a production line requires a complex routing that sends a product to either machine A or machine B, guiding an AGV to the correct option is as simple as changing a rail or a painted/tape line on the floor.





5 reasons to go the AGV route

In this article, we've outlined when not to use AGVs, so let's conclude with some reasons why you should consider them in instances where they might work your production environment.

1. **Flexibility:** AGVs allow for more modular layouts in manufacturing facilities as they can navigate around existing obstacles. Paths can also be modified for efficient production flow and layout changes.
2. **Scalability:** AGVs can easily scale up or down to accommodate changes in production volume or process requirements.

3. **Adaptability:** AGVs can be programmed to perform various tasks, to navigate various routes, making them suitable for products that require different assembly processes.
4. **Accessibility:** AGVs are designed with accessibility and ergonomics in mind, allowing the operator to walk and work right around the product.
5. **Affordability:** AGVs are expensive but they do not require fixed paths or extensive conveyor systems, reducing the need for infrastructure investments.

As with all technology, there is hype and there is reality. Our advice is to understand the reality before you jump on board with the hype.

Steering you in the right direction:

Choosing the right AGV is important. Your production transport system should be designed with your specific requirements and future scalability in mind. It should also allow for modular upgrades - you may opt for a manual push trolley-based system today but require a more advanced free-ranging AGV or rail-guided vehicle (RGV) tomorrow. Customisable options, with bolt-on modules and attachments, to meet your changing needs - with minimal downtime - are essential.

Subscribe to our Newsletter:

If you found this article useful, and would like to see more content on smarter manufacturing solutions, don't forget to [subscribe to our newsletter](#).

Talk to Jendamark about your specific production requirements:

enquiries@jendamark.co.za
www.jendamark.co.za