

How Can Automated Guided Vehicles Reduce Costs And Increase Efficiency?

A Guide To Overcoming The Challenges Of AGV Implementation

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Automation Today.

Industries throughout the world are embracing automation. From self-guided technologies in automobiles to self-service home security, automation is drastically changing the way we live and work.

Autonomous technology like automated guided vehicles (AGVs) have been used in manufacturing facilities and distribution centers for decades. However, factors such as labor shortages and rising labor costs, increasing SKU's, delivery time expectations and safety requirements are further driving the need for automation.

This white paper will help guide you through the process and help you determine:

- Ideal processes for automation
- Which technology solutions are right for you
- How to calculate an ROI

Moving from your current workflow and processes to automation may seem daunting.

Calculating The Costs And Benefits

The highest cost to most operations is typically labor. Human capital is becoming difficult to recruit and retain, resulting in escalated acquisition costs.

Labor costs and longer-term indirect cost benefits are where AGVs can provide the most value for your operations. Using AGVs can help address labor challenges and scale your business to meet demands while ensuring profitability and productivity. Here is a simple example of the cost of labor for just one lift truck and the impact of labor.*

Capital Forklift Costs	Annual Personnel Costs	Personnel Cost Over 5 Years
\$30,000 one time	\$32,400 annually	\$162,000
\$30,000 (capital purchase)	<div><div>\$12.00 per hour 2,000 hours single shift</div><div>Hourly rate x 35% benefits / burden rate</div><div><div>+</div><div><ul style="list-style-type: none">• Damage• Service• Training• Retraining• Errors</div></div></div>	<div>Approximately 80% of the total cost of ownership is directly related to the operator on board.</div>

*Costs will vary by model type, company and/or market.

AGV Technology Solutions: From Semi- To Full-Automation



Stacking Technology

The EKS 215a Automated Guided Vehicle Stacker

The automated vertical order picker combines sound mechanical engineering with automation and navigation components.

Key Benefits

- **Safety & Efficiency**

The AGV system can be programmed to prioritize and process orders, improving operational performance. It includes enhanced sensors and reflectors to monitor for obstacles. Also, this pallet stacker uses laser navigation, for precise accuracy within millimeters, which is important for interfacing with conveyors for example.

- **Flexibility**

The EKS 215a NA can be used in mixed operations mode with manual trucks and pedestrians. The adjustable forks mean that the EKS 215a is also ideally equipped for the transport of special load carriers and pallets.

Specs at a glance

Capacity:	3,300 lb
Maximum fork height:	236"
Battery voltage:	48
Maximum speed in automatic mode:	4.3 mph



Horizontal Transportation Technology

The EZS 350a NA 11,000 lb. Capacity Automated Electric Tow Tractor

Using an AGV towing vehicle enables you to manage the automated handling of standardized transport processes. The EZS 350a NA can operate around-the-clock to increase the throughput of your warehouse.

Key Benefits

- **Greater productivity and flexibility**

The automated tow tractor provides consistent transport of materials by moving more product per travel cycle time. It has the ability to tow multiple carts. Despite the automation features, the EZS 350a NA can also function fully as a manual truck.

- **Operational Control**

With the AGV control panel, everything is at a glance. The visualization on the panel provides a rapid overview of the current status of transport tasks. Prioritized orders can also be entered and processed in the corresponding order.

- **Accuracy and Reliability**

Featuring precise navigation technology, this high degree of precision allows for pinpoint accuracy in the positioning of trucks and loads at defined stations. Different navigation types can be used for the EZS 350a NA, designed and specified according to the project.

Specs at a glance

Capacity:	11,000 lb
Battery voltage:	24
Maximum speed in automatic mode:	3.4 mph





AGV Integration Flexibility

Software integration is a key component for an AGV to communicate directly with your various business and management systems - from enterprise resource planning (ERP) to warehouse management software (WMS).

Jungheinrich's award-winning Logistics Interface facilitates a smooth connection to your host system.

- Easy AGV integration into your existing processes
- Flexibility for AGVs to operate as an autonomous system without a host connection
- Modular AGV system structure makes it possible to react to process changes
- Easy integration with more than 100 different WMS; off-the-shelf and customer-specific

Automation Considerations

AGVs provide the largest ROI when used in processes that have routine, predictable and repeatable movements. Identifying the most beneficial task for automation is the most critical first step.

When considering AGV implementation, Jungheinrich's technical experts can guide you through the process and help you identify best case scenarios and technology applications. Some key questions to know and understand:

1. What is the load/unit?
2. What is the volume or throughput of the product movement?
3. What are the temperature conditions?
4. How many shifts are you currently running?
5. What is the labor content?
6. What are the space requirements?
7. What type of Warehouse Management Software do you have?

New advances in lift truck technologies are continuing to drive methods for increasing efficiency, productivity and lowering overall expense.

Consult your local Jungheinrich lift truck dealer to define the best path for your business.

