THE HIGH COST OF DELAYING INDUSTRIAL AUTOMATION

Did you know that investing in an autonomous DriveMod Tugger costs one-fourth as much as delaying your investment in automation?

AN INTRODUCTION TO INDUSTRIAL AUTOMATION

The rise of industrial automation has led global industries into an age of unprecedented transparency, flexibility, scalability, and efficiency. According to Fortune Business Insights, the global industrial automation market is projected to grow to $395.09 billion by 2029, offering immediate benefits and results to organizations across all sectors.

As a result, investing in this cutting-edge technology has become increasingly vital for companies to remain competitive. In fact, early adopters are carving out a competitive advantage and setting new industry process standards. Deloitte found that 86% of manufacturing leaders believe that investing in this technology will be the main driver of competitiveness in the next five years. As a result, around 12% of US manufacturers have already integrated autonomous vehicles into their workflows.

Many of these early adopters attributed cost savings as their number one reason for adopting industrial automation. Ironically, those who haven't embraced AVs cite cost as the main barrier to adoption. This behavior suggests a trend where a new technology is believed to be too expensive. However, in reality, failing to adopt industrial automation at this crucial juncture can ultimately result in even higher costs for your organization.

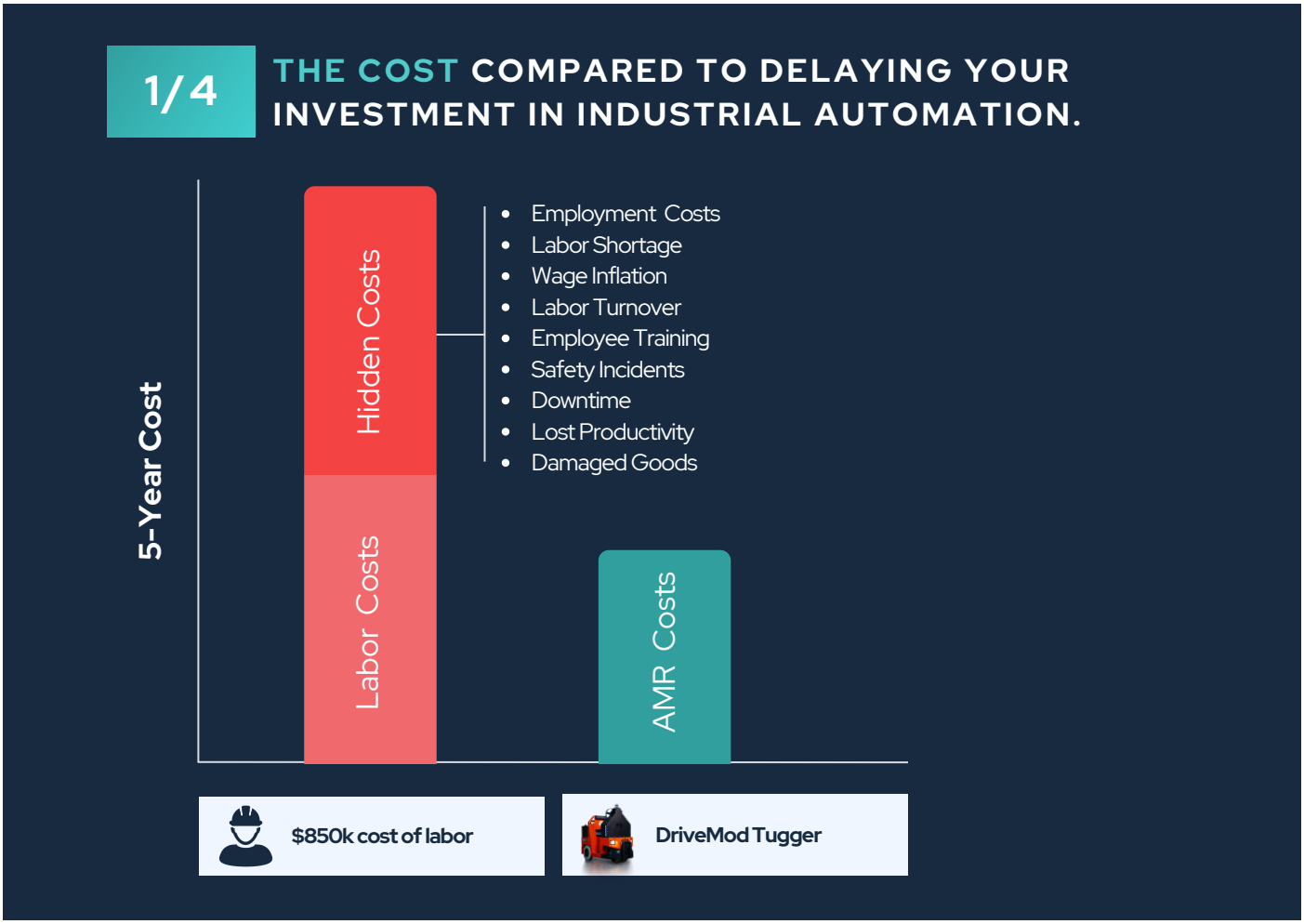
As a result, we have found that investing in an autonomous DriveMod Tugger costs one-fourth as much as delaying your investment in automation. In this article, we dive into the hidden costs of not adopting AVs, today.

THE HIDDEN COSTS OF NOT AUTOMATING TODAY

The cost of doing nothing is significant. By delaying investment in this technology, your organization will face additional high, hidden costs related to labor, productivity, and safety.

Our analysis shows that **an autonomous DriveMod Tugger operates at just one-fourth the cost of relying on human labor**. In this scenario, a manufacturer transports pallets across their facility and manually unloads them. A DriveMod Tugger automates the transport of several pallets per trip, streamlining material flow, reducing manual handling, and ensuring the constant movement of pallets.

By implementing automation, the facility can increase efficiency and safety, free up employees for more valuable tasks – ultimately saving over $850k in costs over the next five years. Our basic math shows that this investment is one-fourth the cost, offsetting both higher labor expenses and hidden costs.



1. LABOR

Labor is one of the biggest challenges currently faced by the industry, as it is not only costly but difficult to find and retain. By 2030, the manufacturing skills gap could result in 2.1 million unfilled jobs, potentially costing the industry $1 trillion in 2030 alone. This shortage is not a looming issue but a current crisis.

THE IMPACT OF MANUFACTURING JOBS THAT REMAIN UNFILLED COULD COST THE U.S. ECONOMY: **$1 Trillion +**

Yet despite common misconceptions, workers' salaries are not the only cost to weigh automation decisions against. In reality, there are numerous employment costs associated with hiring, retaining, and losing employees that are significant. These employment costs can include sick days, training costs, benefits coverage, recruitment expenses, employer contributions to healthcare, etc. Therefore, the more mundane human tasks that can be taken on by AMRs, the fewer employment costs an organization has to incur.

A. Labor Shortages and Wage Inflation

Specifically, labor shortages rank in the top 4 greatest challenges facing manufacturing, transportation, and supply chain leaders, with over 50% citing employee retention as their single biggest challenge. When we consider that it takes 30-60 days to fill an open position, the enormous impact of employee hiring and retention on productivity becomes clear.

Labor shortages rank in the **top 4 greatest challenges** facing manufacturing, transportation, and supply chain leaders...

Around **20.6% of manufacturing plants** in the U.S. that didn't reach full capacity pointed to labor shortages as a major challenge in production.

50% +

...and **over 50%** cite employee retention as their single biggest challenge.

The challenge of labor availability extends well beyond the pandemic. 77% of manufacturers say they have ongoing difficulties in attracting and retaining workers from 2021 and beyond. Furthermore, around 20.6% of manufacturing plants in the U.S. that didn't reach full capacity pointed to labor shortages as a major challenge in production.

Meanwhile, wages for manufacturing workers are steadily rising due to the labor shortage, with around a 6% salary increase for existing employees and a 6.8% increase for new hires. Moreover, labor costs in the manufacturing sector alone saw around a 5.3% increase in the third quarter of 2024. As a result, labor costs constitute, on average, 65% of most warehouse facilities' operating budgets. By delaying your investment in automation, your organization is only raising your operation costs.

6% Salary **increase** for existing employees.

6.8% Salary **increase** for new hires.

Labor costs constitute ~ **65%** of most warehouse facilities' **operating budgets.**

THE SOLUTION

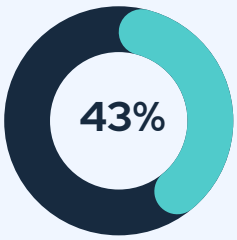
Fortunately, autonomous vehicles can address the labor shortage issue head-on by taking on repetitive tasks and transport routes, freeing up an estimated 30%-50% of a skilled worker's time. Companies can increase their production with fewer workers and at the same time assign their employees to more valuable and meaningful decision-making work.

In turn, organizations can further ease the impact of wage inflation on their business, improving production levels without increasing wages. Unlike human labor, autonomous vehicles do not increase their price quarter over quarter. For instance, at Cyngn, deploying a single autonomous vehicle at a warehouse facility led to a 64% reduction in human labor costs compared to a human-operated forklift.

B. Labor Turnover and Training

High labor turnover can also have a significant impact on a company's financial health, reaching as high as 49% in recent years. The costs linked to turnover can be staggering, as replacing a worker can be extremely expensive and time-consuming.

The cost of turnover can be calculated based on a range of expenses related to finding, hiring, and training new employees. However, the financial impact of turnover goes beyond these direct costs and also includes indirect costs, such as reduced morale, decreased productivity, and increased errors, which accumulate to hurt a company's bottom line.



IN 2022, THE AVERAGE TURNOVER RATE IN THE MANUFACTURING INDUSTRY AVERAGED AROUND 43% AND COST ABOUT $7,000 TO REPLACE A WORKER.

Assumptions:

- Costs ~$7,000 to replace a warehouse worker
- A warehouse has 100 workers
- Turnover Rate = 43%

Conclusion:

- Lose ~ 43 workers/year

Turnover = $301,000+ per year

The expenses associated with employee training can be particularly significant. Specifically, training a new warehouse worker costs an organization more than $1,000, or around 4% of an employee's total salary.

As a result, it's estimated that it costs a company around $7,000 to replace a single warehouse worker. To put it into perspective, if you own a warehouse with 100 workers, and the average turnover rate in the manufacturing sector is currently 43%, you could potentially lose 43 employees each year. Overall, turnover could cost you at a minimum, $301,000 every year.

THE SOLUTION

Industrial automation can help alleviate high labor turnover and in turn, training costs for organizations. More obviously, unlike human workers, these vehicles do not require extensive and costly training.

Additionally, by replacing tedious tasks with AVs, we not only reduce the number of employees that require training resources, but we also alleviate boredom in the workflows of current staff. This can reduce the likelihood of employee churn. In fact, a study at Wharton discovered that by improving the quality of work for existing employees, AVs can significantly increase worker retention. Furthermore, AI-powered predictive analytics can help identify employees at risk of leaving with up to a 30% accuracy.

2. LOST PRODUCTIVITY AND DOWNTIME

The numerous hidden costs related to labor ultimately contribute to lost productivity. According to the U.S. Bureau of Labor Statistics, labor productivity in the warehousing and storage industry has decreased every year since 2015, as increases in hours worked outpace increases in output.

As discussed, this decline in productivity can be attributed, in part, to dull and repetitive tasks, such as driving goods around huge facilities. Specifically, boredom associated with these types of tasks can be linked to errors, safety issues, lower morale, and employee turnover. A study by Vanson Bourne found that 23% of unplanned downtime is caused by human error alone.

Boredom associated with repetitive, mundane tasks can be linked to errors, safety issues, lower morale, and employee turnover.

As a result, **23%** of **unplanned downtime** is caused by **human error** alone.

Unplanned downtime can be particularly costly and disruptive to the productivity of a facility. Research shows that 98% of organizations say just a single hour of downtime costs over $100,000. For 33% of companies, that hourly cost exceeds $1 million. Altogether, unplanned downtime can cost manufacturers as much as a whopping $50 billion a year.

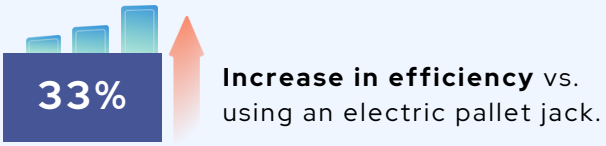
According to studies, this downtime, whether planned or not, can further waste up to 1-10% of available production time. This can lead to lost revenues or sales opportunities, tighter profit margins, lost product or materials, overtime labor, etc.

THE SOLUTION

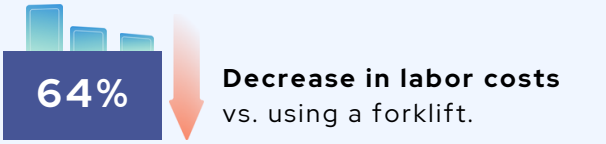
Autonomous vehicles can help companies achieve significant productivity gains by taking on tedious and repetitive tasks, improving throughput and operational efficiency.

AVs can specifically reduce the likelihood and duration of downtime by working continuously, responding quickly to unplanned events, and mitigating the risk of human error. According to McKinsey, investing in cutting-edge tech like robotics can reduce machine downtime by 30% to 50% and improve labor productivity by 15% to 30%.

Plus, this technology can also collect and analyze data to predict and prevent potential equipment failures, avoiding downtime altogether. Deloitte and McKinsey found that using performance management analytics driven by automation resulted in a 20-70% increase in productivity. In addition to reducing downtime, AVs can minimize product damage by ensuring consistent and precise material handling, lowering the costs associated with damaged goods and rework.



Increase in efficiency vs. using an electric pallet jack.



Decrease in labor costs vs. using a forklift.

Download the case study here.

According to Cyngn's research, the deployment of an AV at Global Logistics and Fulfillment's warehouse led to a 33% increase in efficiency when using Cyngn's autonomous vehicle compared to using an electric pallet jack. Additionally, the organization saw a 64% reduction in labor costs.

2. SAFETY INCIDENTS

Lastly, safety incidents represent another major hidden cost for organizations.Federal statistics show that 7,500 forklift-related accidents happen each year, including tip-overs, collisions, and other mishaps, while nearly 100 are killed.

However, this is just a part of the bigger picture: Osha puts this number closer to 62,000 accidents. On average, an industrial accident costs $42,000 per accident, without even accounting for associated production losses. This can add up quickly– for example, in 2019, the total cost of preventable workplace injuries in the US was $171 billion.

There were approximately **5 workplace injuries** for every **100 full-time workers** in 2020.

... And **an industrial accident costs ~$42,000**, not including associated production losses.

$171 Billion

= THE TOTAL COST OF PREVENTABLE WORKPLACE INJURIES IN THE U.S. IN 2019.

Additionally, a high portion of safety violations doesn't result in injury, such as a vehicle's mirror getting hit while turning a tight corner. While these are minor occurrences, they still require incident reports and slow the day's production, once again representing a hidden cost.

THE SOLUTION

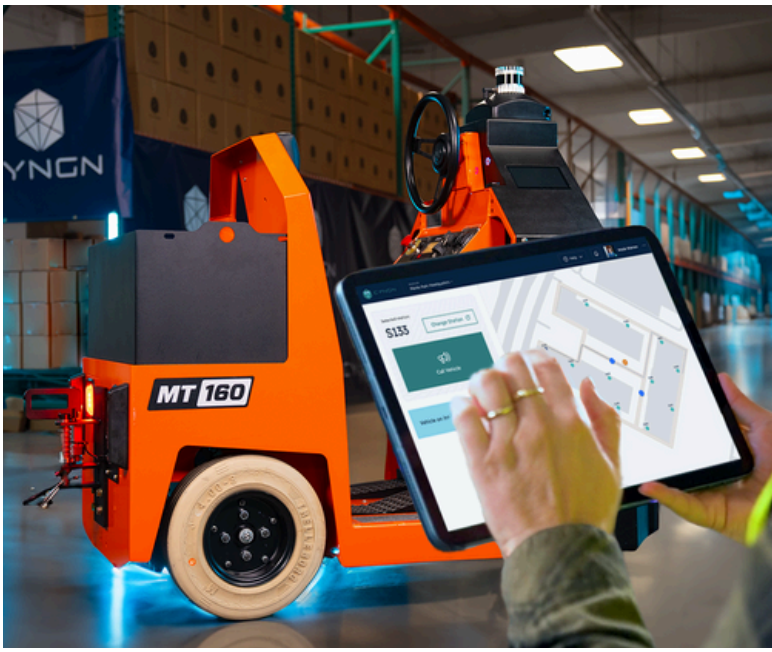
In stark contrast, AMRs can save organizations up to $1.69 billion annually in injury costs. Furthermore, a study by the Society of Automotive Engineers (SAE) found that the use of AVs in material handling reduced accidents by up to 90%.

Industrial AVs can greatly enhance safety by removing workers from hazardous tasks and dangerous situations. By prioritizing safety, organizations can decrease the costs associated with accidents, which can, in turn, enhance the quality of life for workers.

THE BENEFITS OF INVESTING IN INDUSTRIAL AUTOMATION

As you can see, by investing in industrial automation now, your organization can immediately realize the advantages related to labor, enhanced productivity, and increased safety. This, in turn, can make your business more competitive, scalable, profitable, and better equipped to handle ongoing labor shortages and ever-changing market shifts.

At Cyngn, we automate your repetitive hauling, enabling you to harness the advantages of industrial automation and drive your business forward. Our high-capacity industrial AMRs never take a vacation, don't make human errors, and always finish the job. As a result, your business can increase productivity, address labor variability, gain real-time visibility into your facility, improve safety, and scale and adapt.



Not to mention, with our streamlined integration process, we can have your vehicles up and running with an AV deployment in just a few days. And because we bring autonomous capabilities to vehicles that you are already familiar with, your entire team can get trained before lunch.

So this raises the question: why aren't your industrial vehicles driving themselves?

TO LEARN MORE ABOUT BRINGING SELF-DRIVING VEHICLE TECHNOLOGY TO YOUR ORGANIZATION, PLEASE REACH OUT.

CYNGN

CYNGN.COM/CONTACT-US