



Stack It, Wrap It, Ship It: **How Robotic Palletizing Transforms Manufacturing Businesses**

RAPID
ROBOTICS

Learn how manufacturers can immediately boost productivity and cut costs using Robotics as a Service for palletizing automation.

Palletizing is a critical task for almost every manufacturer, as nearly 90% of domestically shipped goods in the US move on pallets at least once during their lifecycle. Yet this simple task - stacking, wrapping and strapping bags, boxes, cans and other items onto pallets - comes with its own unique set of challenges:



Palletizing is physically demanding. Palletizing-related injuries are the #1 cause of workers' comp claims in manufacturing, costing the sector \$1.9 billion annually.



Because of the physical demands of manual palletizing, multiple laborers are often required for a single shift. This pulls resources away from production tasks, raising the risks of backlogs and missed shipments. It also makes shift scheduling amid ongoing labor shortages much more complex.



Palletizing is necessary for a functioning business, but can be a drain on margin as workers who are packing and stacking boxes are unable to work on production lines.



Inefficiently stacked pallets can cause product damage during shipping, or lead to shipping a less than full trailer. Slowdowns due to labor issues can also cause products to pile up at the end of the line, eating up valuable storage space.

Robotic palletizing automation addresses all of these challenges, and provides many other benefits to the business. Manufacturers seeking to maintain high throughput, relieve staffing shortages, reduce operating costs, and make their entire operation more efficient should consider adopting robotic palletization. In this white paper, we will delve into the specific challenges that manual palletizing poses and explore how Robotics as a Service (RaaS) can help manufacturers overcome them.



How robots solve your challenges at the end of the line

The challenges of manual palletizing are straightforward, much like the task itself. But these challenges create persistent problems that inflict unnecessary risks and expenses on your business. Robotic automation can solve all of these challenges - and more - simultaneously:

1. Resourcing

According to staffing agency [Instawork](#), 64% of manufacturing and logistics businesses had to forgo 25% or more of potential revenue in 2022 due to labor shortages.

The labor shortage shows no signs of stopping. The latest information from the U.S. Chamber of Commerce indicates that there are [9.9 million job openings in the U.S. and only 5.8 million unemployed workers](#). By 2030, Deloitte predicts the labor gap will [expand to 2.1 million unfillable manufacturing jobs](#).

Continuing to manually handle an operation that requires 3-5 laborers per shift is an unacceptable drain on resources.

The automation answer: Robotic automation allows you to assign nearly every worker currently handling palletization to other, more productive tasks. This can have enormous effects on your business: some studies show that automated palletizing can improve overall operational efficiency by as much as 30%.

2. Injury risk

Manual palletizing is one of the most dangerous jobs in the country. [Liberty Mutual](#) reported in 2022 that palletizing related injuries cost American manufacturers \$1.9 billion in workers compensation.

Even worse: the types of injuries your staff sustain while palletizing are among the most likely to become chronic.

They frequently result in workers being forced to exit the manufacturing workforce, further worsening labor shortages.

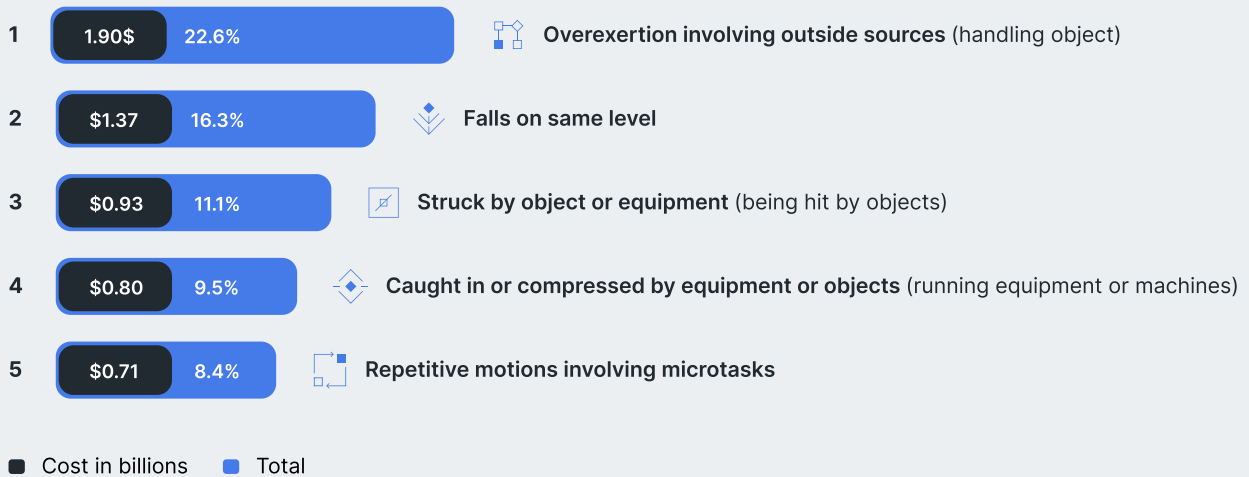
The automation answer: Manual palletizing hurts your people. Beyond the high cost of workers comp, you care about your employees, and don't want to see them injured. Automation almost entirely eliminates the risk of injury on at least one task.

Rapid Robotics recently spoke to one manufacturer who manually palletizes 25 lb boxes, stacked 7 feet high. They rotate workers on the operation once an hour to minimize injuries. This operation requires more staffing than any other single task in their facility



The U.S. manufacturing industry **loses nearly \$8.42 billion a year** to serious, nonfatal workplace injuries.

The top five causes



Source: Liberty Mutual 2022 Workplace Safety Index: Manufacturing

3. Consistency

Palletizing is simple, involving very little variation. But that doesn't mean it's easy to execute. In fact, you're probably seeing wildly inconsistent results depending on who you have assigned on any given shift. It can be difficult for even the fittest workers to maintain a consistently fast pace, and even more challenging to keep pace while also ensuring accurate, stable pallets.

As a result, you're probably seeing an unnecessarily high rate of product damage during shipping, which means your customers aren't happy. In fact, product quality is the #2 reason (after price) that OEM's and retailers switch suppliers.

Many manufacturers assume that product damage during shipping and customer churn is a cost of doing business, but it doesn't have to be.

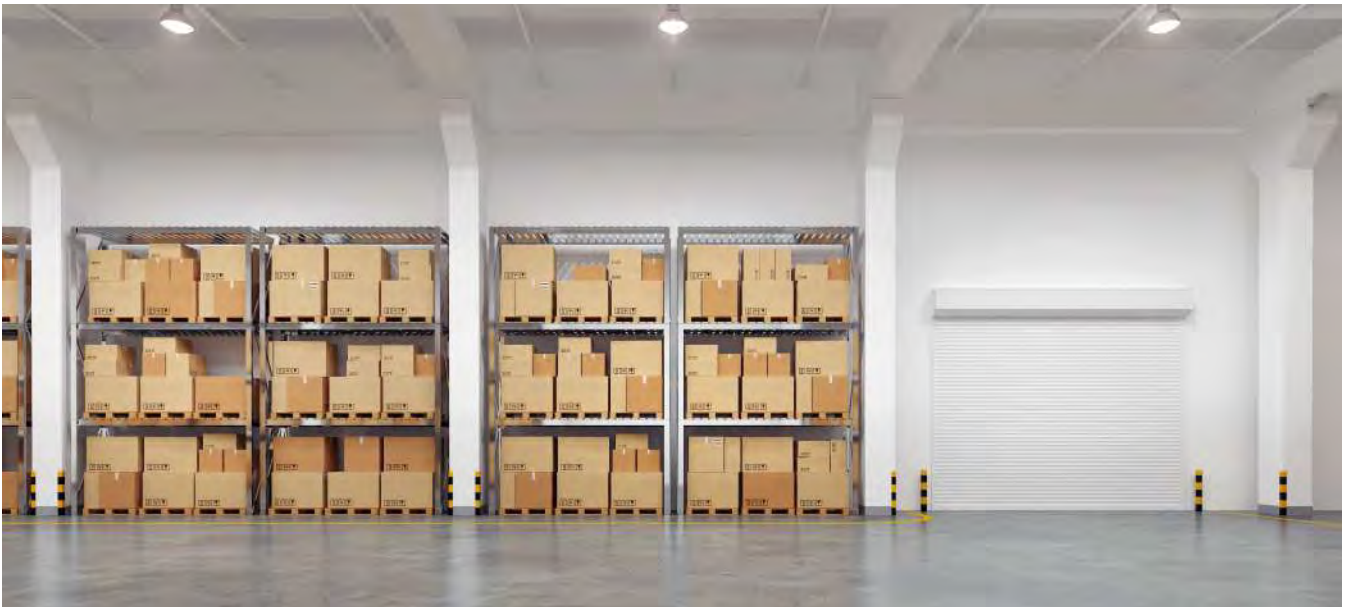
The automation answer: Robots palletize fast, and they do it exactly the same way every time. Building consistently stable pallets can reduce damage during shipping by more than 20%. That means happy customers, who will stick with you as a supplier.

4. Shipping & Storage Efficiency

Manual palletizing is inherently limited by the capabilities of your staff. They can only stack so high, and work so fast. As a result, you may end up with product sitting around waiting to be stacked. You may also be shipping empty space if your pallets aren't stacked high enough to completely fill a trailer.

The automation answer: According to a study by [Universidad Nacional Autónoma de México](#), more efficient pallet loading can reduce storage costs by 25%, and shipping costs by 30%. In addition, because of the speed at which they work, robots often pace production lines causing incremental increases in overall production speed.

Rapid recently met with a South Texas manufacturer who handles palletizing manually. In the summer, their loading dock regularly hits 120 degrees. In addition to the risk inherent in working in such conditions, and the high staffing levels the task requires, the large size of their product means human workers can't stack it high enough to fill a trailer. That means they regularly leave space at the top of their trailers for an entire additional layer of product, costing them hundreds of thousands of dollars every year.



5. Employee retention

Workers hate palletizing. It's too hot (or too cold, depending on the time of year and location), dangerous and boring. In many facilities, it's considered the worst job. You may even be finding it harder to retain the workers you assign to the task.

The automation answer: While some workers might express dismay when they first hear you're considering adding robots

to your workforce, experience shows that bringing on robots actually improves worker retention. Once your employees are relieved of a task they hate, and given the opportunity to upskill by working with robots, you'll find they're actually happier and more likely to stay with you.

Case Study: How A Dry Goods Distributor Reduced Injury Rates & Saved Money

The Challenge

One nationwide distributor of dry goods palletizes and ships hundreds of cases of food every week. Manual palletizing helped keep their shipments going out on time, but made a significant negative impact on their staff with as many as three back strain injuries being reported every week. Not only did the frequent absences due to injury slow them down and impact other areas of their business, the resulting worker's comp costs added up to hundreds of thousands of dollars a year.



The Solution

A single Universal Robots cobot on a Robotiq 7th axis allowed them to reassign workers to safer, value-added tasks while still hitting their shipment goals. Aside from the obvious benefit of eliminating a major source of injuries for their valuable human staff, this robotic solution from Rapid Robotics also allowed the distributor to reduce labor rates, and reduced crushing damage to some items that had resulted from poorly stacked pallets.



Eliminated palletizing-related injuries



Lowered labor rates



Reduced product lost to damage



Four ways RaaS makes palletizing automation possible

No matter what size a manufacturing operation is, robotic automation with Robotics as a Service delivers four big benefits over other approaches to automation. RaaS instantly turns palletizing from a chronic challenge to an engine of efficiency, and delivers ROI in days or weeks, rather than months or years.

Speed & scalability

The deployment timeline for traditional robotic automation averages more than nine months. A RaaS solution from Rapid Robotics, however, can be deployed in just a few weeks.

In addition, our palletizing solution is designed to be quick to configure, program and deploy, which means we can do so at scale. What's more, thanks to the immense benefits of automating palletizing, manufacturers can unlock the ability to scale up productivity and automation in other areas of the business, thanks to the labor and capital freed up by our solution.

Lower costs & improved margins

RaaS solutions can be implemented without substantial CapEx, and operate for an equivalent labor rate between \$4-\$7 per hour at full utilization. A single robotic palletizing workcell can allow manufacturers to reassign 3 or more workers per shift to more value added tasks.

The relatively low onboarding and operating cost, plus savings in storage, shipping, and damaged product, combined with getting more out of existing staff means that palletizing automation can make manufacturers more profitable and more efficient.

Service

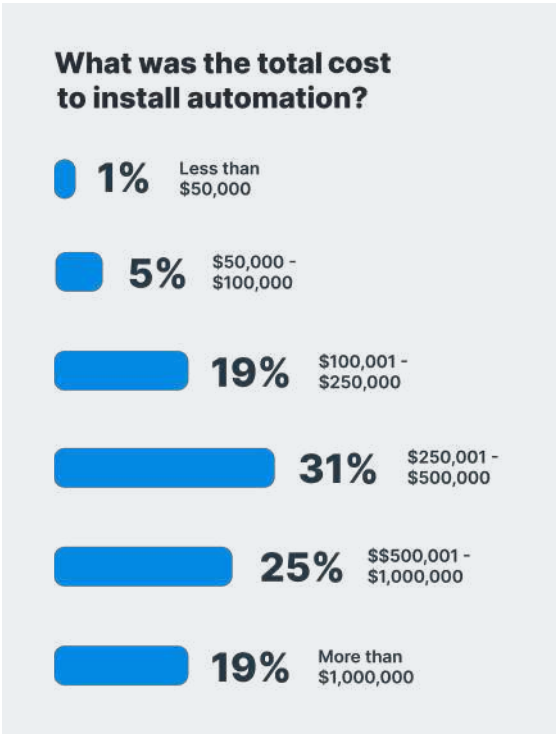
Purchasing and integrating robotics is just one part of the equation. Once a robot is working, it needs to be serviced and maintained. Rapid Robotics provides 24/7 remote support, and complete maintenance and repair coverage – parts included – for the lifetime of every deployment.

RaaS providers like Rapid are also invested in the long term effectiveness of the solution. That means that if a manufacturer needs to add or change a SKU or pallet pattern, we'll be there to help, ensuring that the robot continues to deliver results.

Risk-Free

Purchasing and installing a robot costs on average more than \$250,000 per deployment, before the robot even starts working. If the implementation fails, or doesn't meet their needs, manufacturers are stuck with an expensive but useless piece of equipment.

The Rapid Robotics solutions require very little upfront cost. Instead, it works on a subscription model that includes the cost of the hardware, software, controls, setup and maintenance. Manufacturers pay the same predictable operating cost, never have to worry about repairs or maintenance, and if it doesn't work? They don't pay.



Get started right now

Manufacturers can make their workers safer, reduce costs, and increase margins in just a few weeks with palletizing automation from Rapid Robotics. Get in touch now for a free 30 minute automation consultation, and learn how you can automate palletizing and see immediate ROI.

Schedule a free automation consultation
at rapidrobotics.com/contact-us

