

Pallets Stack Supply Chain Advantages

From integrating with automated equipment to providing sustainability benefits, pallets provide steadfast support to supply chains while making gains in technology and versatility.



Unknown billions of pallets circulate around the world, making millions of shipments possible. Pallets are an often overlooked and undervalued component of the supply chain, but advancing supply chain technology, increasing focus on sustainability, and high-pressure market conditions mean it's time for pallets to take center stage.

Companies are beginning to realize that smart pallets, connected to technology such as RFID tags, can provide valuable data about their supply chain and consumer habits.

Pallets that track dwell time in a warehouse store, for example, provide feedback on the sales rate of the product on that pallet and consumer engagement. The technology could connect the pallet to consumer coupons to boost consumption and loyalty.

"If retailers can understand their product is sitting longer than they prefer, they can tie that information to promotions to entice customers and improve product throughput," says Jeff Pepperworth, president and CEO of iGPS Logistics. "These data sets are becoming a valuable tool for retail managers."

SMART PALLETS DELIVER VALUABLE DATA

Data can lead to using pallets in new ways to drive operational improvements, such as reducing dwell time and eliminating product handling to make store replenishment more efficient.

Walmart turned toward plastic pallets to support automation in their distribution centers and to save labor at the store level. Walmart plans to stock inventory at the distribution center for individual aisles so workers can shelve products directly from pallets. That eliminates the labor of breaking down incoming inventory in the receiving area and moving goods to the aisles for stocking.

"A connection of different worlds is happening right now, and data, information, and automation will help improve efficiency and reduce costs

for users who adopt the technology," Pepperworth says.

Pallets are the center of that connection, spurred by the adoption of warehouse automation. Ongoing labor shortages are forcing the idea of a lights-out warehouse to come to reality, and pallets must be able to fit into the automated equipment, from remote-controlled forklifts to automated storage and retrieval systems. Plastic pallets are often deployed in highly automated operations.

"Go into an 800,000-square-foot facility, and there is not a person in sight," says Sam Dunham, director of operations for Plastic Pallet Pros. "Automation is going to be a huge driver for that."

Accelerated adoption of technology like pallet tracking and tracing and warehouse automation means there's a growing demand for workers with

specialized skills. Due to labor shortages, companies are looking for new and innovative ways to streamline operations, increase efficiency, and reduce costs.

"While these technologies offer significant benefits, companies must understand the need for new skill sets and investments in infrastructure to get the most benefit from the technology," says Alison Zitzke, senior project manager of pallets at ORBIS Corporation.

SUPPORTING SUSTAINABILITY

In recent years sustainability has become an increasingly important focus. While reusable packaging solutions have been common in the food, beverage, and automotive sectors, the conversion rate is growing, and the range of industries is expanding.

Consumers prefer to buy from companies with sustainable goals, such as reducing their carbon footprint and slashing manufacturing and packaging waste. Making progress on these goals can bolster a company's brand image in the marketplace.

The sustainability trend has encouraged companies to seriously investigate plastic pallets and other reusable solutions as replacements for their expendable packaging.



Pallets underpin product movement in the supply chain, making millions of shipments possible. To support automated operations, they must be able to fit into equipment such as remote-controlled forklifts and automated storage and retrieval systems.



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iGPS Logistics offers recyclable plastic pallets. Its pallet pooling and intelligent shipping solutions are designed to help shippers meet sustainability goals while also improving automation and lowering total cost of business.

“Customers are demanding more environmentally friendly solutions, leading to a shift toward reusable and recyclable materials,” Zitzke says. “Companies in the sector must adapt their products and processes to meet these demands.”

Plastic pallets not only reduce the amount of lumber waste but also reduce the emissions and water required to manufacture or recycle wood pallets after use.

Plastic pallets are typically lighter, reducing fuel consumption during transport and allowing more products to be shipped, decreasing the number of trips needed.

Wood pallets are reusable and recyclable, but because the price points were low, it became common practice to think of them as one-way. A wood pallet may be re-loaded, could wind up in the landfill, or be repurposed for something else.

Due to the emphasis on sustainability and tight supplies, companies are looking to create a circular economy for their wood pallets.

“Now the challenge is how do I get the pallet back?” says Dunham. “How do I use it multiple times?”

Plastic pallets are known for their

recyclability. A damaged pallet can be ground up and reformed many times to reduce the amount of virgin resin needed to produce new pallets.

In addition to recycling pallets, some companies divert waste plastic from their manufacturing process into new pallets.

“Plastic as a whole is not the enemy to the environment; waste plastic is the enemy,” Dunham says. “Being able to capture that plastic and reuse it in the production of pallets is good for the environment.”

POST-COVID ADJUSTMENTS

The pallet market has reached a new normal in terms of pricing and availability post-COVID. Raw material prices remain higher, and the demand for pallets grows as consumer spending rises. Some manufacturers have not recovered to pre-COVID levels, constraining supply.

“The pallet industry is still stricken by a scarcity of assets,” Pepperworth says. “That’s something we will continue to deal with for the next several years.”

Prices for raw materials for wood pallets and the cost of labor mean prices have remained higher than expected. That pricing pressure has increased demand for used pallets as well.

For pallet suppliers, the goal is to provide the best solution for the customer. With a perspective from both sides of the industry, Dunham doesn’t see it as a wood vs. plastic debate.

“We really don’t see it that way; we see it as just the best solution to accomplish what you need to accomplish,” he says. “Sometimes that’s plastic. Sometimes it’s wood.”

iGPS INNOVATIONS LEAD THE INDUSTRY

A confluence of trends highlights the value of plastic pallets equipped with technology that connects them to the larger supply chain ecosystem. Jeff Pepperworth, president and CEO of Florida-based iGPS Logistics, sees customers shifting toward connected plastic pallets to meet various objectives.

“The growing focus on sustainability and emission reductions, coupled with the elements around the compatibility of pallets with automation, is leading to customers adopting our assets,” Pepperworth says.

From the company’s beginning, iGPS pallets have encapsulated an RFID tag. Warehouse automation technology has advanced to the point where companies can take full advantage of the real-time location information from the tags.

The lights-out warehouse is coming closer to reality with automated guided vehicles (AGVs), automated storage and retrieval systems, and RFID-equipped pallets.

An RFID-equipped pallet allows the asset to be tracked throughout its journey, with insights into its current location, how many times it has been handled, and the number of trips the pallet has been on. The data could be used to track products for recalls or other purposes, as well as inventory management.

“The useful technology curve is starting to come into play, especially with the interaction of automation, AGVs, and other assets that are now being deployed in the supply chain from a materials handling standpoint,” Pepperworth says.

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Consistent pallet dimension is another factor that supports warehouse automation. Plastic pallets are typically dimensionally consistent with close tolerances in terms of external dimensions and weight. Wooden pallets may be out of dimension by a fraction of an inch, which could foul automated equipment, leading to shutdowns and product damage.

“With the asset able to maintain a certain size and weight, it can flow more easily through these automated systems,” Pepperworth says.

SPURRING PRODUCT INNOVATION

iGPS has followed its own advice, building a highly automated, vertically integrated environment to manufacture pallets. In-house manufacturing helps spur product innovation, such as a new generation of pallets that are stronger and easier to pick up with forklifts.

“We will continue to push innovation to find ways to reduce waste, reduce movement, and ultimately have an asset that can outperform in the supply chain,” Pepperworth says.

Shippers of all sizes can take advantage of plastic pallets for their own reasons, such as automation, sustainability, safety, or ergonomics. The flexibility of pool programs, both public and private, allows users to outsource that aspect of their operations.

“We work with the biggest retailers and some of the smallest retailers and CPG companies, so with iGPS, it’s not just a single solution our customers are looking for,” Pepperworth says. “Our customers are discovering new solutions using our pallets that we haven’t thought about.”

For example, consumer packaged goods manufacturers that ship products to retailers rely on iGPS to manage that pallet supply chain and the relationship between the trading partners. Pooling helps shippers simplify and take costs out of the supply chain.

Plastic Pallet Pros ensures its plastic pallet meets the demands of each customer’s specific application, budget, and timeline.

“They don’t have to operate a pallet supply chain within their supply chain,” Pepperworth says. “Our customers and their partners can leave the pallet issues to iGPS so they can focus on what they’re good at.”

PLASTIC PALLET PROS DELIVERS CUSTOMER SERVICE ALONG WITH PALLET

Plastic Pallet Pros began eight years ago as a division of Robbins Resource Management, a wood pallet supplier for more than 25 years. Over the past several years, the company has ramped up the plastic offerings for pallets, crates, totes, collapsible bins, and other materials handling products. The company is also a stocking distributor for many other manufacturers.

The company prides itself on customer service, which was the impetus for its formation in the first place.

“When we began looking for plastic pallets, it was a struggle to receive the level of service that we’re used to providing our customers,” says Sam Dunham, director of operations. “We saw an opportunity to service accounts and companies the way that we would expect to be serviced.”

Part of that focus on service is being flexible and creative for customers. As a distributor, Plastic Pallet Pros offers value-added services, such as stocking pallets for customers and providing warehouse space and services as needed.

“We have the ability to source solutions from multiple companies, so we’re not tied to one

product that we might manufacture,” Dunham says. “It may take leveraging two or three different relationships to provide the right solution for that customer.”

OFFERING A BUYBACK PROGRAM AND OTHER SERVICES

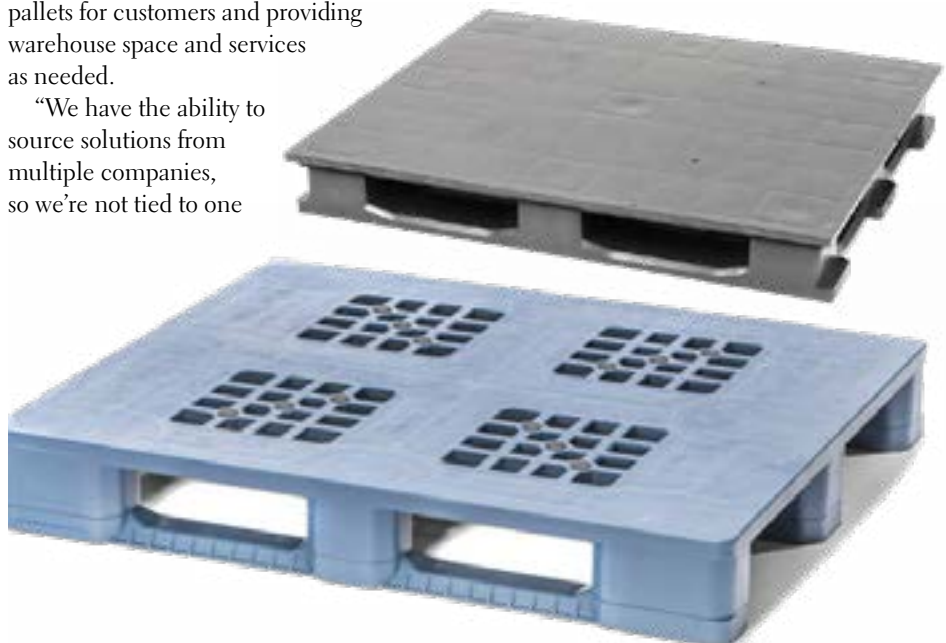
Plastic Pallet Pros offers a buyback program for damaged pallets to support recycling, so customers get credit toward replacements. Other services include sorting and repair and may expand to repairing and washing pallets.

“In a multi-trip environment, the plastic pallet can last up to 200 trips compared to six or eight for a wood pallet, so the cost per trip is much less for the plastic option,” Dunham says.

Also, wood pallets require more management and handling, ordering new ones to replace damaged units, cleaning up wood chips in the warehouse, and potentially dealing with damaged products.

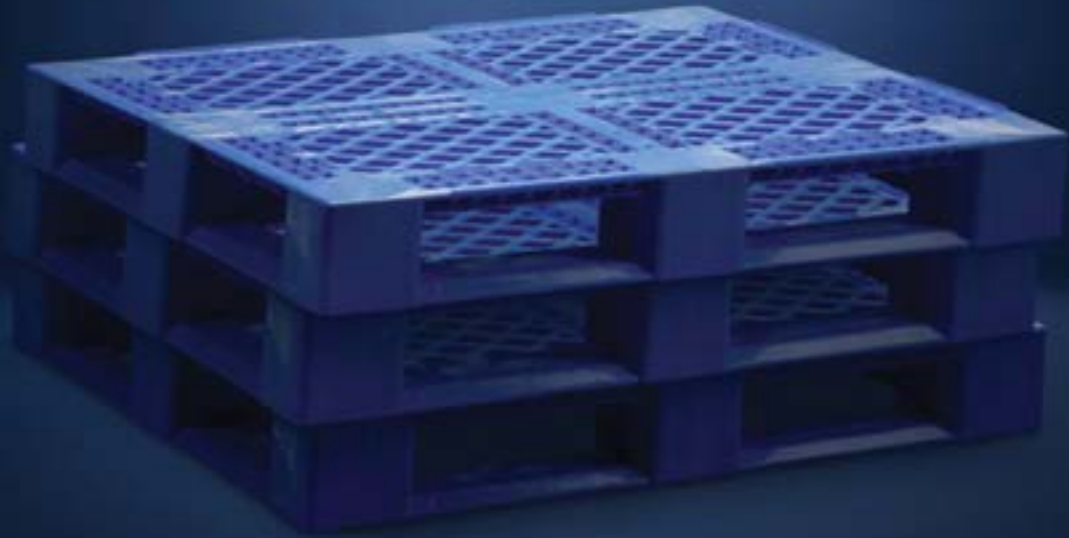
As pallets move from the warehouse to the retail floor, the customer experience is another factor in favor of plastic pallets.

“There’s an advantage to sending your product to your customers on a pallet that will keep it from being damaged and provide the right impression on the retail floor,” Dunham says.





PLASTIC
PALLET PROS



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- **Sustainability:** Plastic pallets are recyclable.

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With rising prices for wood and labor, wood pallets aren't always a low-cost option. Some wood pallet builders have shaved fractions of an inch off of deck and stringer dimensions, so they may not be as durable as in the past.

"When some pallet builders cut corners, the quality diminished over the years," Dunham says. "The quality shift along with environmental and sustainability concerns have pushed plastic to the forefront."

With roots in both sides of the pallet industry, Plastic Pallet Pros can provide experienced insight as shippers consider their options.

"We use our knowledge and expertise to help customers find the right solution and understand how to implement it, looking at the processes to help them transition successfully," Dunham says.

ORBIS POSITIONS PLASTIC PALLETS FOR SUSTAINABILITY

As companies embrace sustainability in all aspects of the supply chain, companies seek solutions from ORBIS Corporation for reusable packaging, including bulk containers, pallets, handheld totes, carts, racks, dunnage, and custom solutions. Some companies are switching from wood pallets to plastic pallets to reduce waste, improve supply chain efficiency, and lower overall costs, says Alison Zitzke, senior product manager of pallets at ORBIS Corporation.

"Customers care more about buying from companies with sustainable goals, such as reducing their carbon footprint and manufacturing or packaging waste," Zitzke says. "This trend has encouraged companies to seriously investigate plastic pallets and other reusable solutions as replacements for their expendable packaging."

All of ORBIS' plastic pallets are fully recyclable at the end of their service life, and many of them, such as the Odyssey pallet, are made from 100% recycled materials. Customers are getting in on the recycling efforts as well.

"We have several customers who are requesting to repurpose their internal



ORBIS Corporation provides reusable packaging solutions, from pallets to handheld totes and custom solutions. ORBIS plastic pallets are available in various materials and include features such as X-ray compatibility, FDA compliance, and FM approval.

plastic scrap into their plastic pallets to achieve sustainability initiatives," Zitzke says.

ORBIS plastic pallets are available in various materials and include features such as X-ray compatibility, metal detection, FDA-compliant, FM-approved, UL-approved, ocean-bound plastic, and more.

Companies can outsource their pallet operations to ORBIS' pallet management services to improve asset efficiency and reduce loss. ORBIS' RPM service handles inbound and outbound pallet movements, significantly reducing the time and effort needed to track, retrieve, clean, and inventory them.

MANAGED PALLET SERVICE PROVIDES RELIABILITY

With a managed pallet service, shippers can eliminate premium freight spending associated with packaging stockouts, maximize return truck utilization, and ensure packaging availability across the supply chain.

In addition, a management service provides visibility into areas of the supply chain where packaging is damaged or lost. This visibility allows companies to address these issues to extend the lifetime of an asset and reduce replacement costs.

As supply chains become more automated, plastic pallets are able to interact with technology in the warehouse. Track-and-trace technology can pinpoint the location of a pallet and the goods it carries to improve supply chain efficiency.

Because plastic pallets are dimensionally stable, they work well with warehouse automation systems. The growth in automation helps companies overcome labor shortages and streamline their operations.

"As companies look for innovative ways to increase efficiency and reduce costs, plastic pallets are a part of the solution," Zitzke says.

ORBIS pallet designs, such as the 40-inch x 48-inch Odyssey, can be customized with optional steel reinforcements and molded-in frictional elements to help improve load handling. For many users, load stability can be a factor. These frictional elements ease the transition from wood to plastic pallets by helping with load stability and minimizing pallet slippage off fork equipment.

While plastic pallets have been widely used in automotive, consumer goods, food and beverage, and pharmaceuticals, other industries are adopting these



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*In FasTrack testing completed at Virginia Tech, using the 40 x 48 Odyssey® pallet.

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solutions wherever dimensionally stable, cleanable equipment with a long service life is required.

“In today’s complex supply chains, it is critical the right packaging is available when and where it is needed,” Zitzke says.

BUY PALLETS ON THE INTERNET WITH PALLETTRADER

What’s one of the few things you can’t buy online? Wood pallets. That was true until the launch of PalletTrader in October 2022.

After years in the industry, John Vaccaro, president of Bettaway Supply Chain Services, which operates a national pallet supply network and provides materials handling and transportation services, knew there had to be a better way to manage pallets. As a 3PL, Bettaway fully embraces supply chain technology. In the world of white wood or general exchange, non-rental pallets, business is still done by phone and fax with local pallet depots.

“The pallet world is very decentralized, and there are no national providers, so we wanted to provide a single source for national shippers,” Vaccaro says.

Bettaway funded the creation of the PalletTrader site, which incorporates elements of Amazon, eBay, and LinkedIn. Vaccaro decided against creating a nationwide pallet brokerage.

“We built a neutral online platform as a collaborative ecommerce site for managing commercial pallet supply, supporting a single, efficient transaction process for sourcing, buying, and selling pallets,” he says.

BRINGING TOGETHER SHIPPERS AND DEPOTS

The goal is to help shippers connect with depots, allowing thousands of pallet producers, recyclers, and distributors to streamline their business processes.

“It’s much like in the trucking world where brokers and shippers use online load boards to match available trucks with freight,” Vaccaro says. “We are bringing the convenience and efficiency of online commerce technology to the world of pallets.

“We also are providing a common set of tools and processes that everyone can share to manage and optimize pallet inventory as a renewable asset, not discarded as a throw-away piece of wood,” he adds.

The platform has transacted nearly 1 million pallets in the first few months of operation. Bettaway has also listed its nearly 500 pallet depots nationwide on the platform.

SUPPORTING PALLET BUYERS AND SELLERS

Pallet sellers and buyers can sign up for the platform. The site is built on a subscription model, but the fee is being waived for early members to encourage usage. The site charges a nominal fee for each transaction.

Sellers can offer pallets at a fixed price, ask for an offer, or open up for bid. Sellers get paid within two days. Buyers can make offers or post a request, and sellers can compete to fulfill it. The platform already contains information on various pallet types and sizes.

“It’s all up to however the person wants to buy or sell,” Vaccaro says.

Buyers and sellers must provide identification and method of payment to ensure the transactions are legitimate.

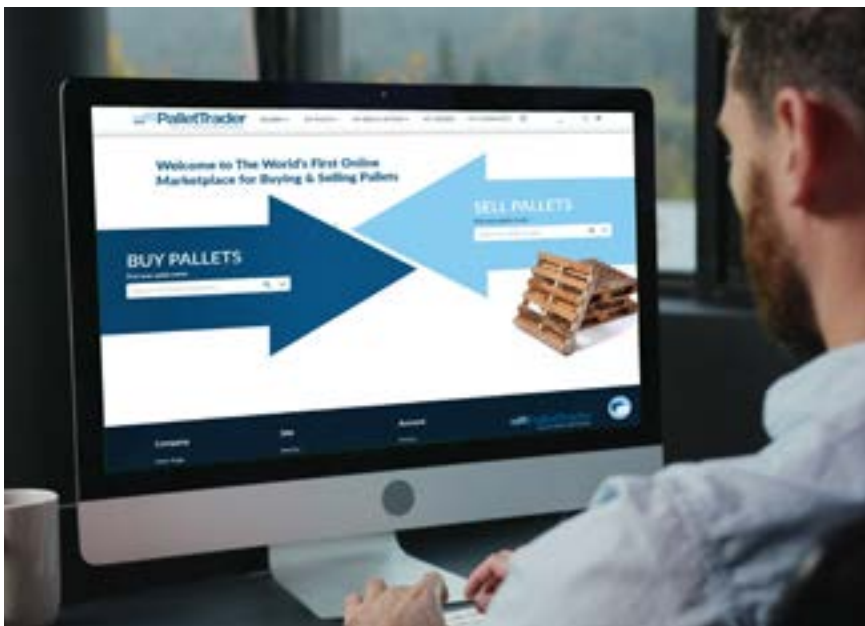
Companies that already have their preferred providers can set up private groups to limit interactions to their favorites.

In response to customer requests, Vaccaro says they are setting up PalletTrader+. Under this offering, the platform acts as a managed service for pallets, where a company can input pallet orders, and Bettaway will handle fulfillment.

Other developments in the pipeline include arranging pickup and delivery of pallets and connections to third-party financing.

Like many innovators, Vaccaro saw a gap in the marketplace and decided to fill it himself. He was afraid a tech company or venture capital firm that knew nothing about the business could disrupt the industry. He didn’t want to take over the pallet industry. He just wanted to make it more professional and profitable for everyone.

“From the beginning, the concept was a free marketplace,” he says. “I wanted to build a platform where all people and all things pallet could converge.” ■



The PalletTrader marketplace is designed to meet the needs of pallet buyers and sellers, helping shippers connect with pallet depots. The online platform—built by 3PL Bettaway—incorporates elements of Amazon, eBay, and LinkedIn.

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