



AmbiStack Case Study: Inbound Palletizing

How AmbiStack Delivered 67% Labor Savings for a Leading U.S. Third-Party Logistics Provider

How AmbiStack Delivered 67% Labor Savings for a Leading U.S. Third-Party Logistics Provider



**AmbiStack dual system configuration installed at customer facility*

• Key Results at a Glance

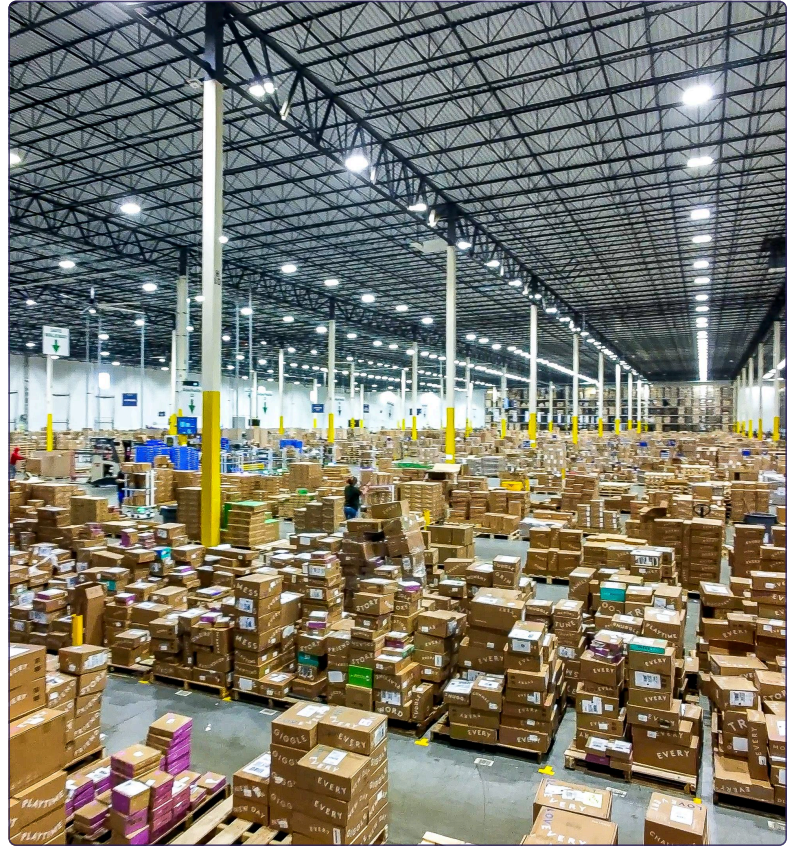
67%
labor reduction

1,050
units/hr peak

125K
pounds per day

3
trailers per day

The Challenge



**Manual palletizing operations at the customer facility*

Manual palletizing at the dock door: where labor costs pile up before a single pallet moves.

For high-velocity distribution operations, inbound palletizing is among the most labor-intensive steps in the facility and among the least automated. Trailers arrive on schedule. Cases are heavy, high-volume, and unforgiving. When receiving can't keep pace, the entire downstream operation feels it: putaway, fulfillment, outbound throughput, and the retailer SLAs that depend on all of it.

For one leading U.S. third-party logistics provider, this was the daily reality. Six associates were dedicated full-time to unloading and palletizing a continuous flow of goods — cases up to 35 lbs to 50lbs and 42 inches in length — at sustained rates exceeding 800 units per hour. Pallet patterns varied by shift. Serial numbers required individual item scans. Short shipments went undetected until after trailers had departed. Onboarding new associates to pattern standards took time the operation couldn't afford.

The cost extended well beyond headcount. Inconsistency drove rework. Manual verification created downstream blind spots. And with six associates anchored to a single function, the operation lacked the flexibility to deploy labor where it created the most value.

From the moment the dock door opened, costs were stacking up faster than the pallets.

The Solution

End-to-end automation. One software stack. No handoffs.

AmbiStack takes ownership of the entire inbound workflow – from the moment cases hit the conveyor to the moment labeled pallets leave the floor. Two associates load the line. The system handles everything else.



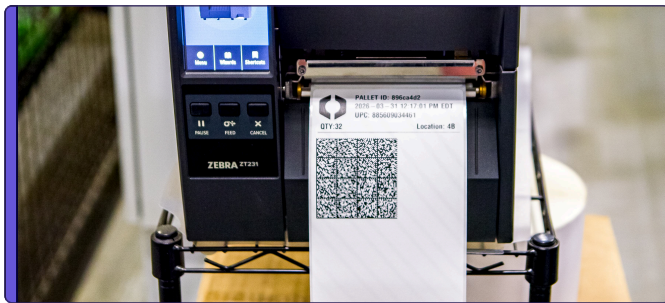
- Flex Conveyor Inbound Feed**

Cases are loaded by two associates and immediately enter the automated line. No manual routing, no decisions required on the floor.



- AmbiVision™ Scan Tunnel with AI-Powered OCR**

A scan tunnel reads the UPC and serial number of every item. Each case is identified and automatically matched to its customer-defined pallet pattern before it reaches the gantry.



- Automatic & On-Demand Label Printing**

Once a pallet is complete, all serialized items are compiled and a consolidated label is printed automatically. Receiving is confirmed instantly, without a single manual scan.



- Dual System, 24 Pallet Positions**

Two gantry systems, each serving 12 pallet positions, run simultaneously. The advanced multi-pick gripper picks multiple cases at once, sorting by SKU and handling items up to 35 lbs at a sustained rate of 1,050 units per hour, at 99% uptime.



- Divert Zone for Real-Time Load Balancing**

A smart divert system continuously splits case flow across both gantries, sustaining throughput even as trailer volume fluctuates.

Results and ROI



**Robot Operator entering safety zone to remove a complete pallet, while AmbiStack continues stacking to other zone*

From 6 people stacking to 2 unloading complete pallets from AmbiStack.

The impact was immediate and measurable. Palletizing headcount dropped from six associates to two, a 67% labor reduction, while unloading remained a two-person operation. For operations looking to go further, AmbiStack is fully interoperable with automated trailer unloading partners – enabling even greater labor savings at the dock door.

| | Before | After |
|------------------------------|------------------|-------------------|
| Palletizing | 6 associates | 2 associates |
| Serial scanning | Manual, per item | Automated capture |
| Shipment verification | Post-departure | Real-time |
| Total headcount | 6 | 2 |

At three trailers per day on a single shift, the ROI payback was immediate.

Truckloads of Additional Benefits



*Robot Operator using the human-machine interface



Consistency without supervision

Operations leadership defines pallet patterns once in software. Every associate, new or tenured, executes to the same standard on every shift. Onboarding time drops significantly, making new associates productive from day one without needing to learn pattern specifications manually.



Ease of use that generates unplanned savings

The system proved intuitive enough that the second shift independently began using AmbiStack for pallet rebuilds, correcting inconsistent inbound pallets to standard without being asked. No additional training, no scoped project. The capability was there and the team used it, generating additional cost savings that weren't part of the original business case.



Ergonomics at scale

The system palletizes approximately 125,000 lbs of product per day. That's a heavy physical burden shifted from associates to the machine – reducing injury risk, lowering fatigue, and supporting long-term workforce retention.



Seamless outbound QC

Previously, every item destined for a retail shipment required an individual serial number scan. Now a single label scan confirms the full contents on the pallet. The process that once took minutes per pallet takes seconds.



A hands-on operating partner

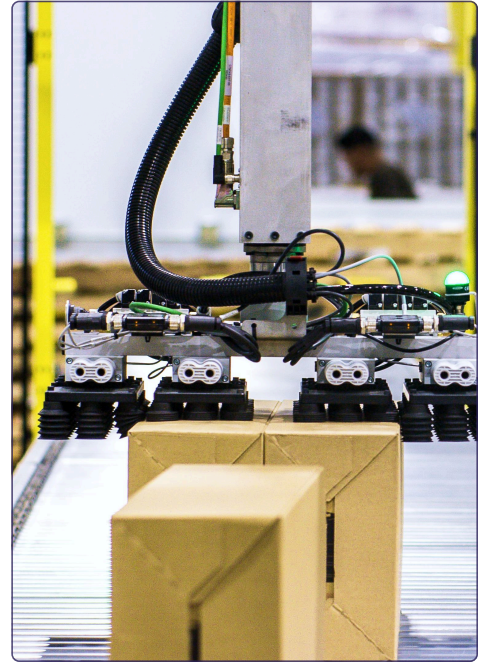
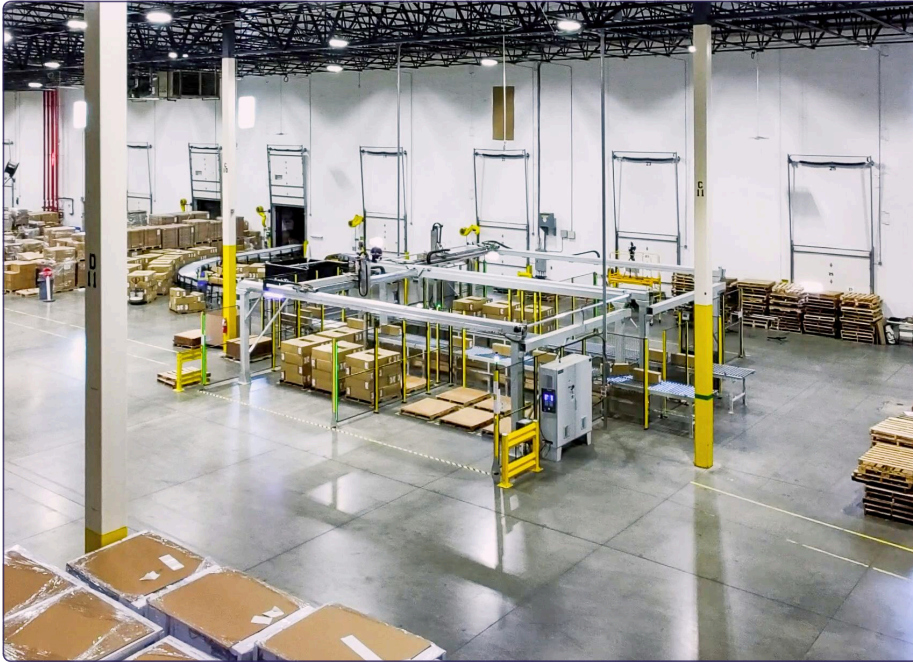
Ambi Robotics maintains a continuous improvement presence for every customer deployment. Throughput rates improve over time, reject rates decrease, and edge case handling – such as grouped items entering the scan tunnel – is refined through ongoing collaboration. No dedicated on-site maintenance team is required from the customer.



Real-time inventory visibility

Every case that moves through the AmbiVision™ scan tunnel is serialized and logged in real time. Short shipments and missing product are flagged the moment the trailer is unloaded, giving the 3PL a verified receipt before the truck pulls away.

Dominate The Dock Door

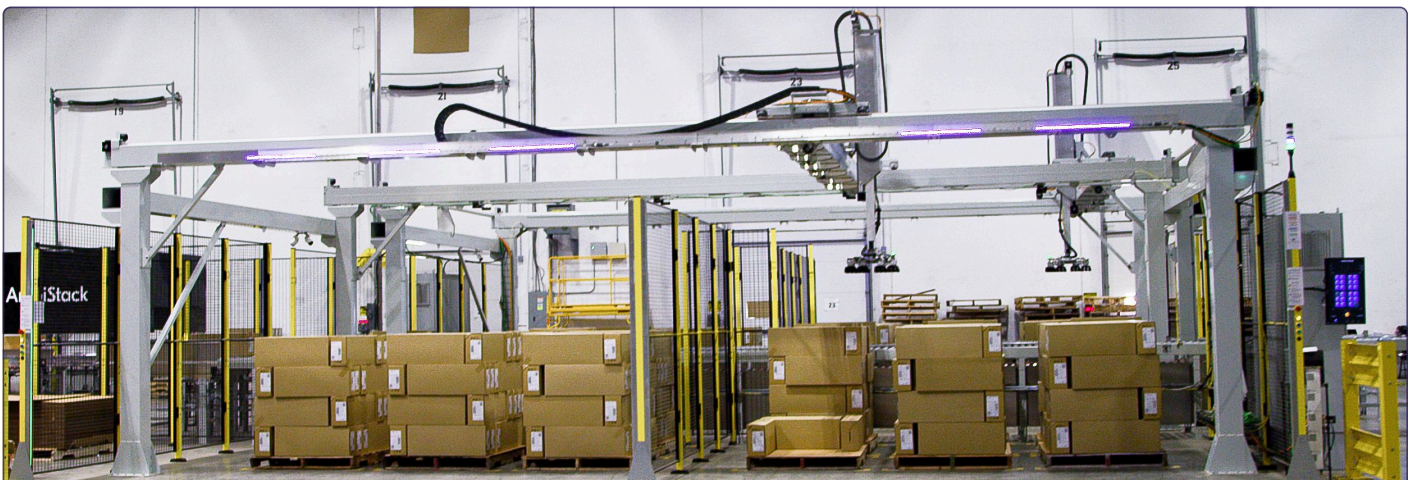


With AmbiStack, the dock door went from the facility's most labor-intensive bottleneck to its most efficient operation. Four associates were redeployed across the facility, serial capture was fully automated, and consistent pallet patterns were delivered reliably on every shift.

Three trailers. 125,000 lbs of product. One shift. The system never stops, and neither does the operation.

The return on investment was realized from **day one**.

See what AmbiStack looks like in your facility today.



Start stacking with AmbiStack today

 Sales@ambirobotics.com