

CASE STUDY / **MIDWEST AEROSPACE MANUFACTURER**

# INCREASING EFFICIENCY THROUGH AUTOMATED WAREHOUSE OPERATIONS

A confidential client sought to consolidate and automate its warehouse to improve the efficiency and accuracy of order fulfillment. Using an integrated design-build approach, our team implemented an automated storage and retrieval system (ASRS) to streamline picking and putting, reduce errors, and shrink the warehouse footprint.



# AUTOMATED STORAGE AND RETRIEVAL SYSTEM INCREASES ACCURACY AND EFFICIENCY

Bringing 400,000 square feet of vertical storage and more than 100 shuttles together to simplify order fulfillment.

## PROJECT STATS

### CLIENT

Confidential

### LOCATION

Midwest

# 75K

STOCK-KEEPING UNITS

# 60K

PIECES PROCESSED DAILY

# 47%

REDUCTION IN TOTAL WAREHOUSE SIZE

# 50%

REDUCTION IN LABOR NEEDS

## CHALLENGE

A large aerospace manufacturer in the Midwest utilizes an on-site distribution center to receive parts from its large supply chain and ship them to the manufacturing line in the form of kits. These kits are composed of open-top containers with foam cutouts, which present the parts in an organized and protected manner for mechanics on the factory floor. The client processes 60,000 pieces and 4,000 kits each day.

Until recently, the company was using a manual warehouse operation that required over 300,000 square feet of facilities and employed around 450 operators. As is often the case in large manual picking operations, order fulfillment was slowed due to long operator travel distances on the warehouse floor. Accuracy was impacted by the vast number of stock-keeping units (SKUs) and complexity of orders. To improve efficiency and accuracy, the company needed to consolidate and automate its warehouse.

## SOLUTION

The client turned to us for design-build delivery of an effective automated storage and retrieval system (ASRS). To consolidate the warehouse, we designed a solution that maximizes vertical space and can move multiple tote sizes, including totes up to 33 inches by 26 inches by 12 inches.

This eliminates walking, manual parts storing and manual picking for most kit requirements.

All totes are managed by a warehouse control system (WCS) that provides dynamic inventory control. The WCS sequences orders based on their contents to optimize picking operations. It also reduces double-handling by processing picks and puts within a single operating step. With the new WCS, the client can initiate a mass freeze on any product impacted by quality assurance issues. Both storage and active order totes can be locked down within the ASRS in real time.

To further improve accuracy, operator picks and puts are visually directed via various lighting systems and dynamic user interface screens. These elements physically guide and confirm completion of operator actions. This allows the system to







track performance parameters for each operator by hour, day and month, while also improving safety as machine movements are initiated by strategically placed human-machine interface points.

## RESULTS

The new warehouse, which was completed on plan and on budget, included approximately 400,000 square feet of automated rack shelving. This shelving is arranged vertically in 28 levels and consolidated into a warehouse footprint of around 25,000 square feet.

In the current racking configuration, the client can store 50,000 totes, including 20,000 kit boxes and 30,000 donor totes.

Automation allows operators to pick and put from an ergonomically optimized position, thereby reducing repetitive stretch and strain injuries and increasing the overall safety of warehouse operations. ASRS control system and analytics dashboards provide improved visibility into key performance indicators for parts and order inventory.

Today the automated warehouse stores more than 75,000 SKUs in a dense vertical footprint. Utilizing more than 100 shuttles, a half mile of conveyer, and multiple receiving and kitting stations, it processes the required 60,000 pieces per day with around 50% fewer operators and more than a 300% increase in fulfillment rate.

The facility, ASRS rack and ASRS work stations were strategically designed so that they can be expanded by 20% or more with little impact to operations.



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14153-MAM-0420