

# Optimizing Fulfillment Operations Before a Major Capital Equipment Decision

**A Case Study in Operational Analysis,  
Inventory Strategy, and Capital  
Decision-Making**

How GSE helped a multinational company avoid an unnecessary equipment replacement by transforming the operations around it.



# Overview

GSE was contracted by a multinational company to help evaluate a major capital asset decision involving a critical piece of fulfillment equipment. The machine had been in operation for more than 11 years, was nearing the end of its supported life, and was running at approximately 94% capacity. That level of utilization raised concerns for the inventory and warehousing teams, particularly given the machine's importance to secure, high-efficiency picking and packing operations. The client needed to determine whether to invest in a replacement system or pursue other options that would support the business long term.

## **11+ Years in Operation**

Machine nearing end of supported life with aging infrastructure.

## **94% Capacity Utilization**

Running near maximum load, raising concerns for inventory and warehouse teams.

## **Critical Fulfillment Role**

Central to secure, high-efficiency picking and packing operations.

## **Replace or Upgrade?**

Client needed a data-driven path forward for a major capital decision.

# The Challenge

At the surface level, the question appeared to be about replacing aging equipment. But the deeper issue was whether the machine itself was truly the problem. The fulfillment system played a central role in improving picking and packing efficiency while also maintaining security for stored components and products. Because of that, any investment decision needed to be based on how the equipment was actually being used, what products were flowing through it, and whether the surrounding inventory and warehouse practices were aligned with the machine's intended purpose.

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**Determine whether the machine — or the process around it — was the real problem.**

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**Understand what products and components were flowing through the system and whether they were the right fit.**

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**Evaluate long-standing inventory policies that elevated stock levels and misaligned purchase orders with actual demand.**

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**Assess how legacy fulfillment practices were affecting machine utilization and warehouse efficiency.**

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**Build a foundation for a capital decision grounded in operational data, not assumptions.**

- ❏ The company was operating under long-standing policies designed to support rapid customer delivery, including elevated stock levels and purchase orders that did not always match actual demand. As the analysis progressed, it became clear that these legacy practices were affecting how effectively the fulfillment equipment and broader warehouse system were being used.

# Our Approach

GSE approached the project by first gathering information from every department and operator with either direct or secondary interaction with the equipment. We also mapped the workflow of machine inputs and outputs to identify bottlenecks, delays, and inefficiencies. This allowed us to move beyond assumptions and build a complete picture of how the equipment supported daily operations, how efficiently it was being used, and where capacity pressure was really coming from.



## Cross-Functional Interviews

Gathered input from every department and operator with direct or secondary interaction with the equipment.



## Workflow Mapping

Mapped machine inputs and outputs to identify bottlenecks, delays, and inefficiencies across the fulfillment process.



## Root Cause Analysis

Identified that the system was processing products not suited for that type of fulfillment equipment, creating unnecessary capacity pressure.

# The Solution

To support both the upgrade-versus-replace decision and broader operational improvement, GSE built a robust set of requirements for the machinery and the surrounding fulfillment process. A key part of that effort was developing a database that classified products and components based on average monthly demand, weekly and monthly touch frequency, and dollar value — creating a more objective method for identifying which items should actually be managed through the fulfillment machine.



## Demand-Based Classification Database

Built a database classifying products by average monthly demand, touch frequency, and dollar value to determine which items belonged in the fulfillment system.



## Strategic Inventory Placement

Enabled physical placement of components based on departmental usage patterns, with backup and replenishment stock locations identified and inventory relocated to optimize flow.



## Revised MOQ and Stocking Levels

Identified misaligned minimum order quantities and defined more appropriate minimums, maximums, seasonality planning, approach zones, and overage zones.



## Improved Purchase Order Discipline

Created more realistic release points on purchase orders grounded in actual demand data rather than legacy forecasting habits.

# Technical Highlights

Our analytical approach focused on building a complete operational picture — from machine-level workflow to inventory strategy — to support a capital decision grounded in data rather than assumptions.

## Cross-Functional Discovery

Interviewed all departments and operators with direct or secondary interaction with the fulfillment equipment.

## Workflow Input/Output Mapping

Mapped machine workflow to identify bottlenecks, delays, and inefficiencies in the fulfillment process.

## Product Classification Database

Developed a database using average monthly demand, touch frequency, and dollar value to determine optimal machine candidates.

## MOQ Realignment

Identified and corrected minimum order quantity levels that were too high relative to actual demand data.

## Stocking Level Optimization

Defined revised minimums, maximums, approach zones, and overage zones with seasonality planning built in.

## Inventory Relocation

Repositioned components and products based on departmental usage patterns and restocking requirements.

## Receiving and Quality Improvement

More realistic PO release points improved throughput in receiving and quality inspection.

## Capital Decision Support

Provided the data foundation needed to evaluate upgrade versus replacement with confidence.

# Results

By re-engineering the inventory strategy and fulfillment logic around the equipment, GSE delivered measurable operational improvements and changed the outcome of a major capital decision.

## **Faster Picklist Fulfillment**

Picking operations became faster and more accurate with better inventory placement and data-driven stocking.

## **Reduced Hot-Shot Shipments**

Fewer emergency shipments and unnecessary overtime as orders began shipping ahead of due dates.

## **Fewer Errors and Complaints**

Operations ran more smoothly with fewer mistakes and a reduction in customer complaints.

## **Improved Cycle Count Accuracy**

Inventory placement and movement became more disciplined and data-driven, improving count accuracy.

## **Utilization Reduced from 94% to 60%**

Correcting what flowed through the system freed up significant capacity for higher-priority items.

## **Upgrade Instead of Replace**

The client chose to upgrade the existing equipment rather than replace it, extending its useful life for years to come.

# Business Impact

This project demonstrated that large capital decisions are often best solved by first understanding the process around the equipment, not just the equipment itself. By analyzing workflows, aligning inventory strategy with actual demand, and redefining what should move through the fulfillment system, GSE helped the client improve throughput, reduce operational waste, and avoid an unnecessary replacement decision. The end result was a stronger fulfillment operation, better inventory control, and a more sustainable path forward for both the equipment and the business.

**What began as a question about replacing equipment became an opportunity to transform how the business fulfilled orders, managed inventory, and used one of its most critical warehouse assets.**

