

Storage Type Analysis for Exotec Automation: Designing a Warehouse to Consolidate 5 Facilities into 1

1 Introduction

A global medical technology manufacturer was planning a major transformation of its distribution network to improve efficiency and support future growth. The organization operated multiple warehouse facilities that had evolved over time, creating operational complexity and inefficiencies in storage, picking, and inventory management.

Leadership made the strategic decision to consolidate five separate buildings into a single distribution center while introducing advanced automation technology to improve productivity and scalability.

To ensure the new facility would support both automated and traditional storage requirements, the company partnered with Alpine Supply Chain Solutions to perform a comprehensive Storage Type Analysis (STA). The objective was to determine the ideal storage strategies for the operation, including the optimal bin types for an Exotec goods-to-person automation system, the right mix of pick and reserve storage equipment, and which SKUs should remain onsite versus being stored offsite.



2 Challenges

The organization faced several complex planning challenges while preparing for the consolidation of five buildings into one facility. Leadership needed to determine the correct mix and quantity of storage equipment that would support both automated picking through the Exotec system and traditional racking for items that could not be stored in automation.

Additionally, the company needed to identify the ideal bin sizes and quantities for the Exotec system to maximize throughput and storage density. At the same time, determining which SKUs should remain in the new facility versus being stored offsite was critical to ensuring the consolidated building could accommodate the full inventory profile while minimizing replenishment activity and maintaining operational efficiency.



3 Solutions

Alpine began the engagement by finalizing all data inputs required to perform the Storage Type Analysis, including SKU dimensions, demand profiles, inventory levels, and operational assumptions. The team then configured multiple rack types within OptiSlot to model the optimal storage approach for SKUs that could not be stored within the Exotec system. These rack configurations included bin shelving, carton flow, wire decking, pallet locations, and pushback/pallet flow systems.

The analysis separated SKUs into two primary groups: items that could be stored within the Exotec automation system and items that required traditional storage solutions. Alpine conducted an initial STA iteration to determine the appropriate Exotec bin types and rack requirements based on the initial assumptions. Following the first model, Alpine performed additional iterations to refine the data, incorporate stakeholder feedback, and validate assumptions.

4 Implementation

To ensure accuracy and alignment with operational requirements, Alpine conducted five STA iterations, continuously refining the analysis based on updated data inputs and feedback from the client team. Each iteration included validation of SKU characteristics, storage assumptions, and rack configurations, allowing the team to progressively improve the model and consolidate rack profiles into a practical storage strategy.

Through this iterative process, Alpine developed four final facility design scenarios for the client to evaluate. These scenarios assessed different combinations of operating units and Exotec bin configurations, including whether to include certain product groups and whether to utilize all Exotec bin types or only a specific bin configuration. After reviewing the operational and capacity implications of each option, the organization selected Option 4, which included all operating units except one product segment and utilized a single Exotec bin configuration to streamline operations.

5 Results

The Storage Type Analysis provided the organization with a clear blueprint for designing its consolidated distribution facility. Alpine identified the optimal rack types and quantities required outside of the Exotec system, ensuring that items not suited for automation could still be stored and picked efficiently.

The analysis also determined the ideal SKU set and inventory levels to be stored within the Exotec system, maximizing the effectiveness of the goods-to-person automation. In addition, Alpine identified a set of SKUs that should be stored offsite, enabling the organization to reduce replenishment complexity and successfully consolidate inventory from five facilities into a single building while maintaining operational performance.

