How a Global Sporting Goods Manufacturer Designed a Scalable, Automation-Ready Warehouse Network

ALPINE
Supply Chain Solutions

1 Introduction

A global manufacturer of high-performance sporting goods, recognized for its innovation, product quality, and strong presence across both professional and consumer markets makes premium equipment and offers apparel, accessories, and customized services to support athletes and enthusiasts at all skill levels. As the organization prepared for aggressive multi-year growth and significant changes to its manufacturing and distribution footprint, it reached out to Alpine Supply Chain Solutions to support warehouse optimization and future-state facility design.

2 Challenge

The client's existing warehouse network and infrastructure were not positioned to support aggressive five-year growth targets across multiple product lines. Planned changes—including the startup of a new U.S.-based distribution facility and the return of overseas assembly volume—introduced additional complexity to labor planning, storage requirements, and service level expectations. Leadership needed a future-ready warehouse design that could scale while improving efficiency and reducing manual processes.

In addition, current layouts and storage strategies limited labor productivity and increased replenishment frequency, creating unnecessary touches and constraining throughput. Without a standardized, optimized design, the organization risked higher operating costs and the inability to meet customer SLAs as volumes increased. A flexible, automation-ready solution was required to support growth without over-engineering the operation too early.

3 Solutions

Alpine applied its warehouse optimization methodology, beginning with a best-practice assessment to understand operational gaps, business requirements, and future demand. This included a detailed storage type analysis and translation of business needs into multiple future-state CAD layout iterations for the new and existing facilities. Each layout was designed to improve flow, increase storage density, and support higher throughput.

To support long-term scalability, Alpine evaluated multiple automation options using a crawl-walk-run-fly approach. Multiple tiers of automation were proposed, including Autonomous Mobile Robots (AMRs), Pick-to-Light systems, and several Goods-to-Person solutions. Each recommendation was evaluated based on productivity gains, capital investment, scalability, and compatibility with a future Warehouse Management System (WMS).

4 Implementation

The client team moved forward with executing the recommended layout changes across both U.S. and international facilities based on the storage type analysis (STA) outputs. These changes focused on properly sizing and standardizing storage locations, improving replenishment strategies, and reducing unnecessary labor movement. In parallel, the organization began addressing best-practice recommendations identified during the assessment, capitalizing on quick-win opportunities to improve efficiency and ergonomics.

Alpine delivered conceptual CAD drawings across three layout iterations, each paired with cost estimates and operational trade-offs to support decision-making. The teams are currently in discussions around a Phase 2 engagement to support detailed automation implementation planning, including integration with a new WMS platform and sequencing automation investments in alignment with growth milestones.

5   Results

The optimized warehouse designs delivered significant operational improvements while positioning the organization for scalable growth. Storage density improved by 45% at the future-state U.S. facility, while replenishment frequency was reduced by 86% at one site and 68% at another—driving meaningful labor productivity gains. Standardized storage and improved slotting strategies reduced manual handling and improved service level performance.

The automation evaluation identified four scalable solutions with payback periods under seven years and projected total ROIs ranging from 2x to 6x, driven by increases in lines per hour and throughput capacity. Collectively, the project delivered a flexible, automation-ready warehouse network aligned to five-year growth plans, improved labor efficiency and ergonomics, and provided a clear roadmap for phased automation investment tied to business growth.