



Apex Tool Group Addresses Labor Needs With Lucas

Simplifying and streamlining processes makes work better for workers, “and that’s better for the business.”



Introduction

Apex Tool Group (ATG) is one of the leading global manufacturers of professional hand and power tools. The company's half million square foot central distribution center in North Carolina serves multiple channels, including direct-to-consumer fulfillment, B2B distribution to retailers, as well as shipments to other ATG DCs throughout the world.

According to Chris Rufa, Senior Director, Global Distribution at ATG, "We can ship a single ratchet for warranty replacement or a full pallet of ratchets to a big box store DC."

Like other DCs, ATG is operating in a tight labor market. "We offer competitive pay, but unemployment in the greater Raleigh area continues to be around three percent, which can make it hard to attract new talent." To help alleviate labor challenges and more efficiently meet stringent quality demands of its customer base, in 2019 ATG implemented the Lucas solution.

The Lucas solution includes AI-based optimization that is embodied in Jennifer™, the brain, voice, and orchestration engine of the solution. A cornerstone of the project was AI-based batching and path optimization. In addition, RF and pick-to-light technology was replaced with multi-modal picking using Lucas mobile applications.

Before Lucas, "consistent overtime was standard," says Rufa. As ATG implemented the Lucas solution "we were also challenged by a number of open jobs across our distribution center. But the productivity and efficiency gains from Lucas allowed us to continue to deliver the levels of service our customers expect." In addition to improved productivity, picking errors have been slashed, leading to dramatic savings in retailer fines and other accuracy-related costs.



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Legacy Technology and Processes Before Lucas

The DC receives product from ATG manufacturing plants in the U.S. and elsewhere in the world, and processes 3,000-4,000 outbound shipments per day. The facility has 28,000 pallet locations and more than 16,000 individual pick faces, including case pick and each pick locations across multiple zones with a variety of picking processes and technology.

Prior to installation of the Lucas solution, the warehouse management system (WMS) provided RF-based work execution for all DC processes. The WMS also integrated with conveyor and sortation systems, and a pick-to-light module for each picking.

Despite using RF and pick-to-light, “The picking processes were complex and inefficient,” says Rufa. “Everybody was working overtime.”

In addition to suboptimal picking, work release was also highly manual. The WMS would print the labels for all orders for the day and a planner would sort the labels by carrier and shipment. The pickers would ultimately decide the sequence in which orders were picked, which sometimes caused items to ship late, among other issues.

Errors and late shipments are especially costly when shipping to big box retailers, Rufa notes. “Some companies impose fines on the total value of an order for any single error.”

To address the issues, Rufa led a project to revamp their picking processes with voice technology. “Picking is the main driver of the DC,” Rufa explains, “so the goal was to streamline the picking processes, reduce complexity and improve accuracy while extending the life and functionality of the WMS.”

“We wanted to improve quality and have consistent processes across all areas, which would in turn reduce training time for new workers. We could train them once and they could do any picking job in the DC.”

The Lucas Solution

ATG teamed up with Lucas to implement an optimization solution to help transform their complex processes. The solution provided flexible work creation to support alternative batch picking strategies, and voice-directed processes for all warehouse zones: each pick to carton on cart, each pick to carton on conveyor (replacing pick to light), case pick to conveyor, non-conveyable picking (pick to pallet), and post-pick sortation.

The solution also includes a post-pick QC/Audit application that uses barcode scanning to replace a manual visual audit process. Some customers require 100 percent audit, and ATG is also doing random audits across other orders.

In the new system, the Lucas system uses order, inventory and task information from the WMS, and Jennifer™ manages the creation and release of work assignments across the DC. Workers in each area are given the highest priority work assignment and Jennifer™ sends a message to the WMS to print the required carton and/or pallet labels on demand to a printer at the head of each pick line or area.

The Lucas solution includes a web-based management console that provides performance management, work status updates and exception notifications. With the management console, line leads have objective, real-time performance data that can be shared with workers. In addition, leads are able to respond to stock outs immediately, which contributes to improved quality.



Optimizing Pick to Cart Processes with AI

“A big focus for operational improvements was in Zone 10, which we call the shopping cart area,” explains Rufa. The area includes 7,000 static bin locations and accounts for 35 percent of picking. Workers in the area pick less-than-case quantities to cartons on carts. Prior to Lucas, a single cart type was used in the area.

To maximize efficiency across different order types and profiles, Jennifer™ creates assignments for three different types of picking carts: a three-bin cart, a six-bin cart and a three level, 5 position per level cart with mail slots. “Using different cart configurations allows us to consolidate pick to cart and do a much more efficient batch picking process, using Lucas for batch optimization.”

Through AI-based algorithms, Jennifer™ creates intelligent batch picking assignments in real-time to maximize pick density and minimize travel. Jennifer™ creates batches of work as workers ask for their next work assignment based on the cart type the workers are using.

Through the Lucas voice-directed mobile application, Jennifer™ also directs users through the assignment following an optimized pick sequence. In addition to voice and speech recognition within the mobile application, users scan barcodes, where appropriate, and are able to see useful screen-based information. Jennifer™ significantly reduces travel compared to rule-based or FIFO (first in first out) batching and traditional aisle-bay pick sequences.



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Replacing Pick To Light and RF In Other Areas

In the previous PTL area, cartons were diverted into a zone with relevant picks and the worker would pick to one carton at a time. According to Rufa, “That was one of the worst areas for pickers as they had to hunt for the lights within the area.” The Lucas process supports batch picking to multiple cartons in a train which increases pick density for each trip through a given zone. In addition, the voice-directed process with Jennifer™ is easier, faster, and more accurate.

In case pick and non-conveyable areas, the biggest change is that workers no longer handle a scanner to perform their tasks. Likewise, the post-pick dock sortation process is hands-free, and the Lucas system supports a follow-the-leader staging process that is also easier for users.

“The big advantage in the non-con and sortation process is to work hands free, without a scanner. The cartons are packed up to 45 pounds each, so the ability to do that without having to handle a scanner is huge.”

System Go Live and Training

Well before rolling out the new system, managers and ATG’s trainer started developing a training process and communicating with workers about the new technology. Among other things, they shared videos of other Lucas users to show associates how the system would work from a hands-on perspective.

ATG did a mock go-live two weeks before for testing purposes. And then all areas went live over five days in stages across the five main picking areas.

“Roll out of the system was excellent,” Rufa concludes.

Results

Improved quality was the main driver for the Lucas solution, and ATG's 63 percent reduction in picking errors exceeded their goals, leading to a sharp reduction in fines and other error costs. In addition, the Lucas QC/Audit process is more efficient and accurate than the previous visual inspection process, so they are able to do more audits in less time, freeing up staff for other tasks.

Overall warehouse productivity has increased and the DC is operating with 10 percent less man hours across all activities. Direct picking productivity gains were greatest in the shopping cart area.

"The big change is that the Lucas system drives user behavior and activities," says Rufa. "And the simplicity and consistency of the process across all areas makes it better for associates. In general, simpler processes are the ones people can follow the best."

He adds that users "love the system."

"You rarely implement a new system and have users tell you 'It's made my life so much easier.' Making the process better for associates makes them more productive. And that's better for the business."



About Lucas Systems

Lucas Systems helps companies transform their distribution center operations and continuously adapt to changing market dynamics. We dramatically increase worker productivity, operational agility, and customer satisfaction.

Our solutions are built on 23-plus years of deep process expertise and smart software using AI and voice technologies. Our solutions feature Jennifer™, the brain, voice, and orchestration engine that drives performance improvement gains. Make the smartest moves at the lowest cost with Jennifer™.