Numina Group Crafts a Superior Pick, Pack, and Ship Operation for Premier Needle Arts!

Premier Needle Arts Doubles Ecommerce Order Throughput Capabilities and Lowers Labor Costs with Numina Group's RDS™ WES-WCS Warehouse Automation Solution

Background

Premier Needles Arts (PNA), a provider of direct-to-consumer high quality arts and crafts products, supplies products to millions of passionate enthusiasts in the knitting, crocheting, and sewing communities around the world. Its six brands are sold via its own e-commerce sites, Amazon, and select partners.

PNA has enjoyed double-digit year-over-year growth, by focusing on attracting and retaining customers through high quality products and customer service that enhances the experience of long-term, repeat buyers.

> *It's all about our customer. We serve millions of enthusiastic crafters by providing them with outstanding support, information, pride, motivation, and products regardless of whether they purchase from our sites, or through any of our retailer and e-tailer partners.*
>
> —Mark Hyland, CEO of PNA.

Vital to this commitment is PNA's ability to pick, pack, and ship orders fast, accurately, and complete, which ensures that their customer's expectation for the timely delivery of their projects is always met.

Challenge

Early in 2020, e-commerce sales surged, challenging PNA's ability to keep up with the growing daily order demand. This resulted in an increasing backlog of orders that delayed customer deliveries. As volumes spiked, PNA incurred more overtime and had to rely on temporary labor, but were limited in their ability to find reliable workers due to the COVID-19 pandemic.

"We had been planning to enhance our operations by investing in automation and new technologies, but the sudden surge in order volumes due to the pandemic pushed us to accelerate the timeline," said Hyland.

With capacity already stretched to the maximum, and its annual peak shipping season looming in just five months, PNA knew it needed a system integrator with a scalable warehouse automation software platform that could streamline the current order fulfillment operation, accommodate order volume surges and handle future long-term e-commerce order growth.

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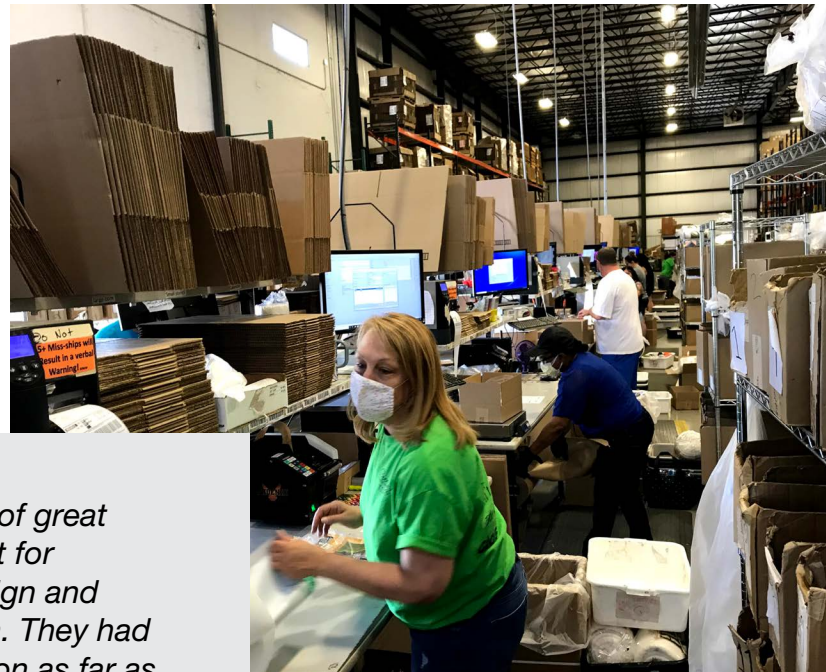
Premier Needle Arts has a knowledgeable team of great logisticians and operation managers, a perfect fit for our client partnering model to jointly define, design and implement a more efficient warehouse operation. They had stretched the output of their existing DC operation as far as they could with manual processes and needed a leaner, low touch operation combining the right blend of automation technologies to manage their order fulfillment growth.

—Andy Recard, Numina's COO.

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Creating the Road Map to Success

PNA interviewed three system integrators and selected the Numina Group due to their combination of warehouse design know-how, and software and automation expertise. Their feature rich Real-time Distribution Software, RDS™ an industry-leading WES-WCS software platform, includes a high-performance order fulfillment automation module.

RDS™
Real-time Distribution Software

" *Numina's design team defined a solution aligned with PNA's customer value propositions. It was really critical for us to find the right partner, whose solution had the right fit and functionality we needed, at a compelling price and a reputation to deliver on their commitments.*

—Mark Hyland, CEO of PNA. "

Step 1: Warehouse Design Study Created an Optimized Workflow.

Numina's engineering team first performed a data analysis to define the warehouse design and outline the process improvements. They then reviewed technologies with the customer and together selected the right blend of warehouse automation technologies that would maximize order fulfillment throughput, eliminate the existing paper-driven operations, and optimize the order release, picking, packing, and shipping operations.
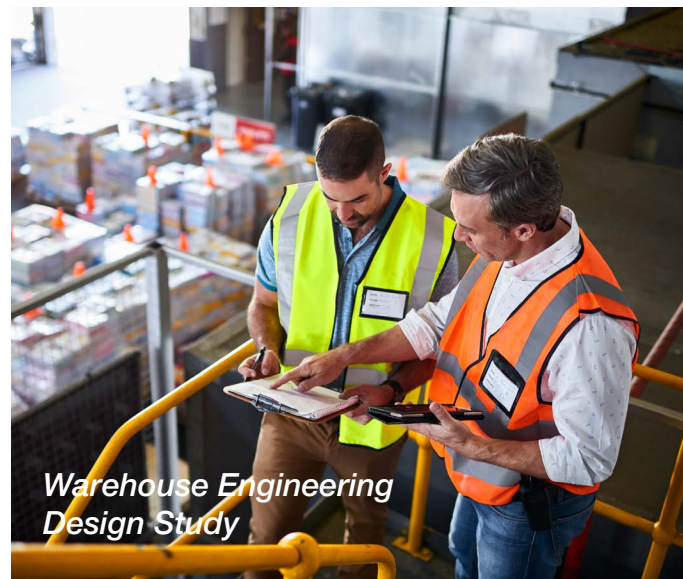
Warehouse Engineering Design Study

Step 2: RDS Warehouse Execution and Control System Orchestrates the Automation.

Single Touch Voice Directed Pick and Pack Drives Higher Productivity and Accuracy
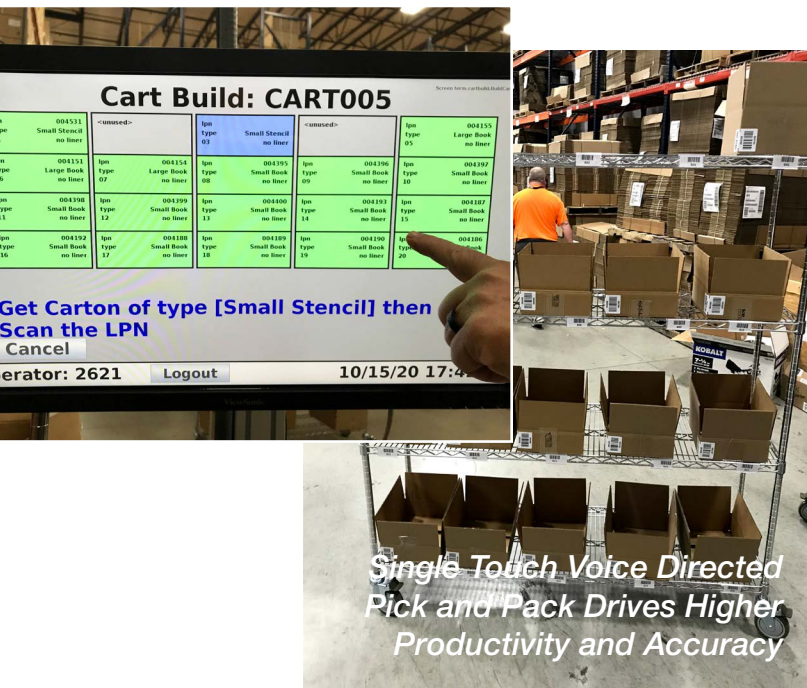
RDS™ is a modular Warehouse Execution and Control (WES-WCS) software platform that manages all the warehouse automation technologies and has the interface APIs to seamlessly integrate with PNA's ERP-WMS system. Together Numina and the PNA Team defined the process improvements and selected the material handling automation and conveyor system best suited for their DC operation. Today, with the new warehouse automation, order release software, and single touch voice directed pick and pack to shipper process, PNA's optimized batch cart picking process efficiently picks 10-15 orders at a time. Operator picking rates have significantly increased to 160 to 170 lines per hour.

Advanced Order Release Management

RDS™ includes a sophisticated order release module that selects and releases batches of orders based on priority, shortest travel path, and reduced operator pick location visits during the picking process. RDS™ receives orders from Premier Needle Arts' ERP-WMS, cartonizes orders and selects the right size shipping cartons or polybag. RDS™ then directs orders to batch cart assignments using a workstation to direct an operator to place up to 15 cartons and totes onto the cart. The totes are used for batch picking 15-20 single-line orders as a "speed-pick process" on the same cart trip to further increase the lines per hour pick rate. RDS™ pick by voice was chosen by the customer due to its ability to reduce touches, increase primary pick accuracy and improve picking speed 30% or more in order picking and other warehouse work activities.

"We still rely on the WMS for core inventory functions," said Hyland. "But now we basically give all the orders to RDS™ to calculate how to efficiently release, pick, pack, and deliver orders in the most effective means to enhance our customers' experience."

Single Touch Voice Directed Pick and Pack Drives Higher Productivity and Accuracy

RDS™ Voice Mobility, the pick by voice software module, directs item pick and pack directly to shipping cartons using voice commands with barcode scan validation of the shipping carton and totes. RDS Mobility combines the pick and pack process into a single operation. By selecting optimized groups of orders, the operator's travel path is reduced and picking density is increased, resulting in an increased picking performance of 160-170 lines per hour.

Numina Group is a Zebra Technology Partner and supplies their latest family of Android based mobile wearable computers with its pick by voice solution. Numina's pick by voice system uses wearable mobile computers, blue-tooth hands-free camera-based barcode scanners and headsets, so picking and other warehouse work tasks are performed in a hands-free, eyes focused, step by step directed manner. Combining voice commands and responses with screen message displays and hands-free location and product barcode scan validation consistently delivers the industry's highest single touch pick and pack productivity.

At cart pick completion, the operator is directed to unload cartons at the automated pack and ship conveyor system. The conveyor includes inline scan-weigh QC audit, print-and-apply of the shipping label, and automated high-speed sort to parcel carrier destination.
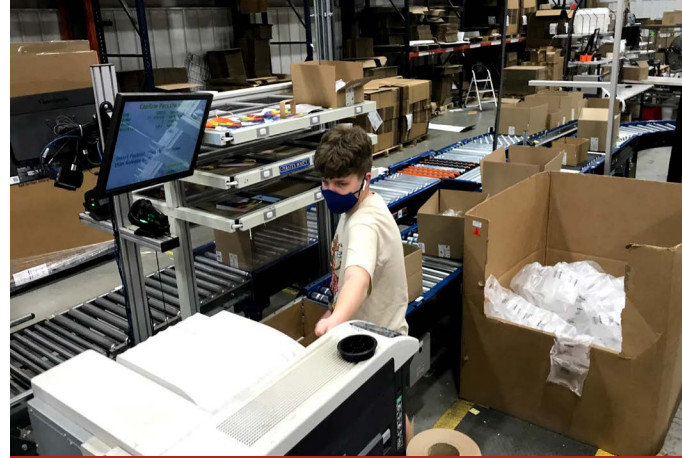
RDS™ WES Automation Components:

1 Orders are downloaded from ERP/WMS to RDS™, which acts as a real-time hopper to receive orders and optimally batch releases for picking.

2 The Release Optimization algorithm prioritizes, cartonizes, and batches orders.

3 Cart Build Workstation directs operators to place right size cartons on the mobile batch pick cart. Pick by Voice uses hands-free scanning to direct operators throughout the Pick & Pack Process, enforcing high speed, accurate picking directly to the shipping carton.

4 Pack and Ship Conveyor System includes in-line QC weight audit, pack stations with PTL Directed VAS, high speed pack sheet print-insertion, inline void-fill, and semi-automatic carton sealing.

5 Inline scan-weigh-dimensioning and automated print and apply of the shipping labels enables automated manifesting.

6 Sort to carrier, gaylord, Dock Door, or LTL.

Operation Benefits

Optimized Order Release Yields Dramatic Improvements in Pick, Pack, and Ship Efficiency

Previously, printed paper pick tickets were used for picking. The tickets were manually sorted by a supervisor to create the workers pick routes, which was a time-consuming and labor-intensive process. Now, RDS™ analyzes available orders and determines the most efficient group of orders to release for optimizing the pick process. Order release combines several operational rules, such as, travel distance, orders with like SKUs, pack class, order priority, shipping cut-off times, and inventory availability.

Executing Faster with 99.9% Order Accuracy

The RDS™ Voice directed pick and pack operation uses voice commands to guide the workers to the required pick locations and directs picking while validating each SKU was correctly picked and put to carton/tote using Zebra wearable barcode ring scanners, virtually eliminating errors, and providing a primary pick accuracy rate of 99.9%.

Reduced "Touches" Increase Order Throughput

PNA's old paper picking process required a pick to tote process and the order items being double touched with scanning and manual packing at 15 manual workstations. The pack operators scanned and transferred items by estimating the size of the shipping cartons and then manually constructing the shipping cartons. The pick to carton process eliminated the majority of tote handling, and the operator manual packing workstations, freeing up valuable warehouse floor space while reducing 10 operators from the packing operation.

RDS Cartonization Reduces Shipping Costs

Instead of relying on workers to guess and estimate the best carton or polybag for shipping the order, RDS™ Cartonization software analyzes the item's cubic volume and automatically determines the optimal size carton or polybag size required prior to the order release.

The RDS™ Cartonization logic uses multiple algorithms to perform "industry-best" 92 to 93% cube utilization. The pick to shipper process eliminates touches in both picking and packing while increasing accuracy, eliminating 30 seconds of wasted time per shipment and lowering parcel shipping costs due to a reduction in cube size of both cartons. Additionally, RDS™ shipping container selection logic has resulted in a higher daily percentage of orders shipping in polybags reducing both material costs and a dramatically lower parcel carrier rate than carton shipment.

In-Line Weight and Vision Audit Ensures Quality Control

At the automated pack and ship conveyor system, an inline scan-weigh-vision audit system first checks each carton to the order's expected weight, and a digital camera captures a time stamped picture of the carton content for improved customer service.

If a carton is outside of the expected weight limits, the carton is diverted to the QC audit workstation for inspection. RDS weight and vision audit is a powerful tool that can catch a miss-picked order from leaving the distribution center!

The NuminaGroup

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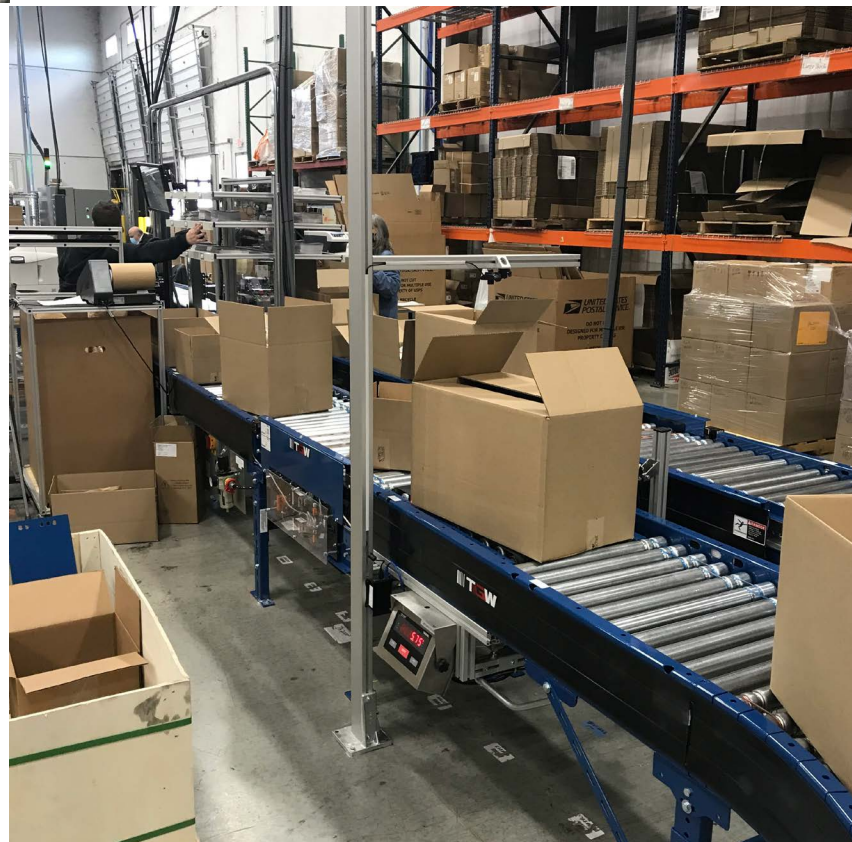
Branded Pack Sheets with on demand Print and Documentation Insertion

RDS™ technology provides automatic or semi-automatic print and insertion of customer specific packing list documents, including customer logos. Also, each in-line pack station has an RDS touch-screen workstation, laser printer and a pick-to-light system for marketing insertion materials. Packers are directed to insert pre-printed catalogs, marketing and promotional information into a specific customer order. The operator then adds add void, folds the carton flaps, and the semi-automatic taper automatically seals the carton.

Print and Apply Labeling with Sort to Carrier Shipping Destinations

Packed and sealed cartons exit the tapers and convey to the scan-weigh-dim (SWD) and print and apply labeling system that automates the shipping manifesting process and eliminates manual packing workstations.

Dual top-apply label applicators are provided for both peak throughput and system redundancy. The applicators are located over the conveyor system. The system captures the carton's shipping weight and dimensions, automatically print and applies, and verifies the carrier shipping label, or other required labels such as an Amazon ASN label. At the exit of the second label applicator are dual camera-based barcode scanners that validate that the carton order barcode and shipping label are correct prior to entering the shipping sorter used to sort cartons to both carrier gaylord or dock door trailer loading lanes.

The print and apply labeling system, along with the shipping sorter, eliminated several manual touches throughout the shipping operation. Additionally, critical carton shipment history is time-stamped, recorded and tracked in the RDS™ database. RDS™ included web-based real-time viewing and reporting tools and hourly and daily operation critical data capture from order release through picking, QC audit, packing, labeling, and shipping transaction history.

48% Gain in Outbound Efficiency with a 33% Increase in Order Volume

Not only did the investment in automation reduce direct labor costs by 30% or more, but it also had a positive contribution to the business's overall profitability. PNA obtained a scalable order fulfillment solution that reduced current per order processing costs. RDS™ provides the tools to efficiently manage yearly order volume growth and most importantly, meet customers' quality and same day delivery expectations.

"Comparing last year to this year, we've gained a 48% increase in outbound efficiency, even while we had a 33% increase of individual item shipments in each of those quarters," said Hyland. "So, we were picking 33% more, but we're getting out 48% more compared to the previous year."

Reduced Cost to Fulfill Orders

"From February 2020 to February 2021, we have decreased our per item fulfillment cost by 9%, and our cost per overall order by 4%," he said. "This takes into account all orders and includes actual expenses including annual wage increases and bonuses."

Ready to Handle Double Order Volume Growth

Hyland is confident that armed with the Numina Group's automated order fulfillment solution, the company can efficiently handle double or more growth, than 2021's order volume, while still meeting its customers' delivery expectations and maintaining higher profitability levels on future order shipments.
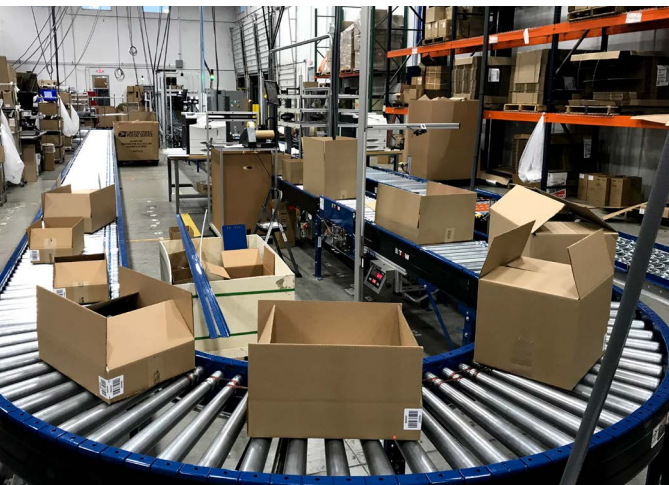
Numina Group Solution

Contact the Numina Group to learn more about how we help customers streamline warehouse order fulfillment operations by designing lean more efficient processes magnified by the latest blend of warehouse automation technologies.

Sales@Numinagroup.com or call **630-343-2600**.