



a TOYOTA ADVANCED LOGISTICS company

CAPABILITIES GUIDE

MATERIAL HANDLING
SYSTEMS INTEGRATION &
INDUSTRIAL EQUIPMENT

BASTIANSOLUTIONS.COM



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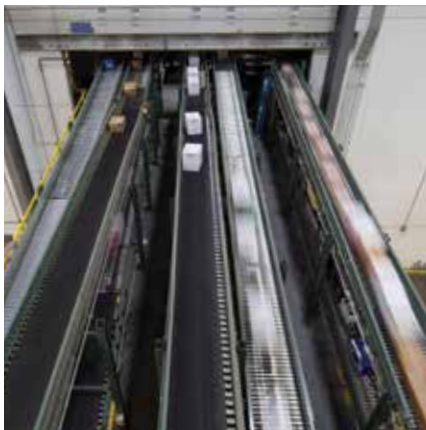


We are a trusted supply chain integration partner committed to providing our clients a competitive advantage by designing and delivering world-class distribution and production solutions.

Our people are the foundation of this commitment. Our collaborative culture promotes integrity, inclusion and innovation providing opportunities to learn, grow and make an impact.



We're engineering your competitive edge.



Bastian Solutions, a Toyota Advanced Logistics company, seeks out leading technologies in both material handling equipment and information systems, coupled with proven operational strategies.

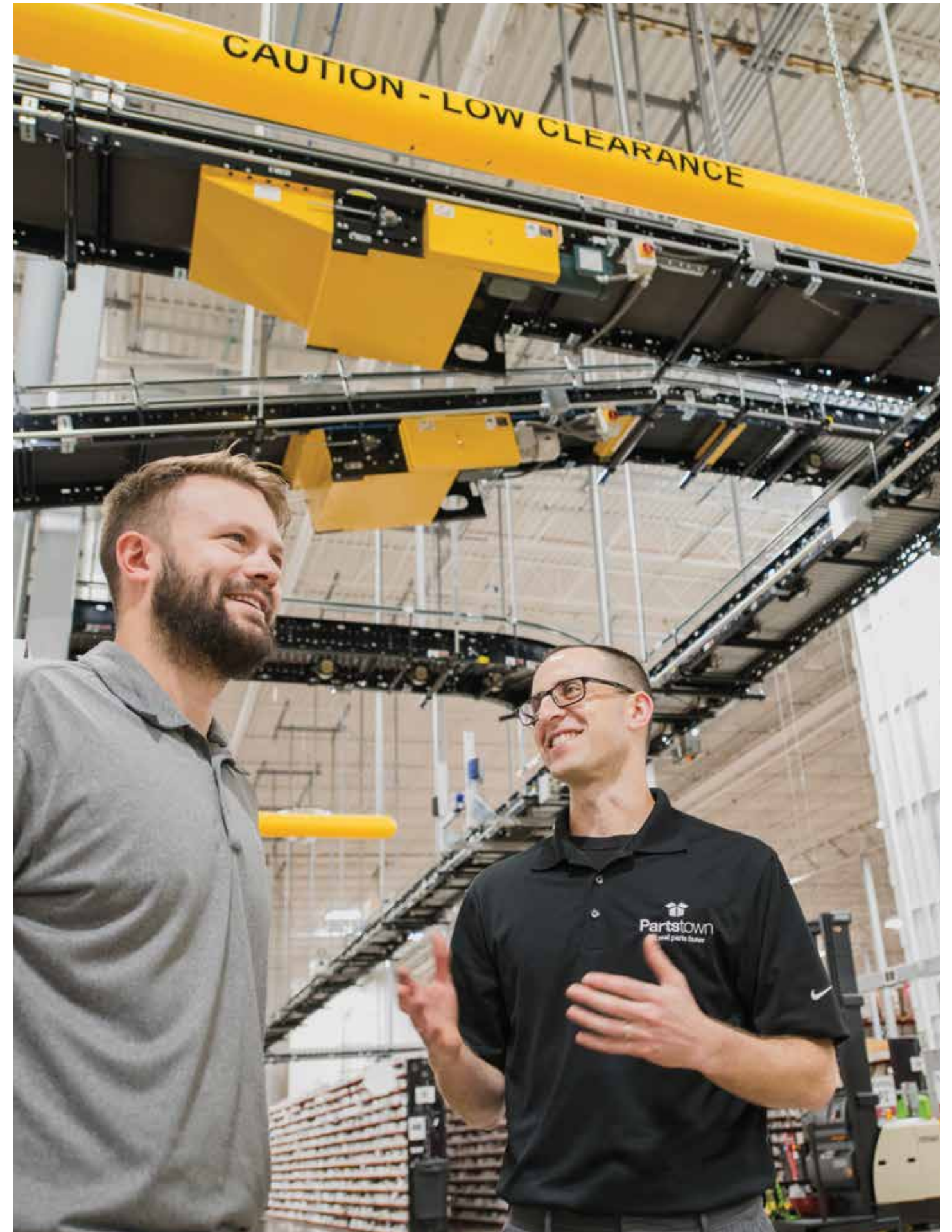
The expertise we deliver includes exceptional results through a proven process of analytical consulting, engineering and design, simulation, project management and installation services, while sourcing the best material handling equipment and automation technologies available.

Consulting & Design

Our independent consulting group provides engineering support for companies looking to improve their supply chains. Using detailed research, extensive data analysis and creative concept development, strategic recommendations are presented based on your business goals and requirements.

If you are considering enhancing or changing your operations – optimizing your supply chain network, improving your distribution center, streamlining your manufacturing processes or implementing a new material handling system – hiring the Bastian Solutions consulting team ensures you get the most effective operation with the highest return on investment.

PHOTOGRAPH: Parts Town Case Study



Operations Planning:

Operations Assessment

An operations assessment is a tested method of identifying improvements to your operation. During the effort, our consultants perform an extensive review of your operations and offer improvements for consideration, both no capital and capital required options.

Research our case studies for yourself at bastiansolutions.com

PHOTOGRAPH:
Knipper Case Study



Operations Plan

The goal of an operations plan is to take a holistic approach to determine the best over-all long-term configuration for a new or retrofitted facility, assessing its economic and operational viability to meet your company’s vision for the future. Bastian Solutions consultants will develop the end state facility design and implementation plan to achieve that state, developing budgets, business cases and staffing plans as appropriate. We will then source suppliers, manage requests for proposals, implement each facet of your project and assist in your selection of suppliers, etc., providing a truly turnkey solution. Displayed below are details within each phase of work:



PHASE 1 ASSESSMENT

- Review current state & prepare data
- Analyze data & define requirements
- Review data & requirements



PHASE 2 CONCEPT DESIGN

- Identify potential concepts
- Evaluate conceptual alternatives
- Prioritize alternatives
- Present recommendations



PHASE 3 SOLUTION DEVELOPMENT

- Conceptual design development
- Equipment engineering
- Finalize, configure & design



PHASE 4 VALIDATION

- Develop WCS pricing
- Determine equipment & install costs
- Develop business case & implementation plan
- Complete final deliverables & presentation

Operations Engineering

Bastian Solutions consultants are up to the task of optimizing the overall efficiency of your operations. We evaluate various aspects of the business such as manufacturing and shipping, to see that they work properly and utilize best practices. We help clients learn how to efficiently run their operations by providing assessments, advising on possible changes to management, training employees on equipment and coordinating with other department heads to fine-tune their processes and systems.

PHOTOGRAPH:
Puma Case Study



PHOTOGRAPH:
Hudson Bay Operations Master Plan



Supply Chain Network Design

Companies face the challenge of achieving an efficient supply chain that is flexible enough to respond to constantly changing market needs. The implications of supply chain decisions can mean the difference between spending or saving millions of dollars. Companies change over time and that can drastically affect their volume and shipping patterns. Bastian Solutions uses state-of-the-art optimization software and a proven methodology that delivers the lowest cost for your supply chain network, while meeting all your service level requirements. Our analyses examine facility location, facility size, inventory levels, and inbound and outbound transportation.



Lean Manufacturing Study

Lean manufacturing studies implement Labor Management System standards that focus on identifying and eliminating waste within production environments. Using the TPS (Toyota Production System), our expert consultants identify and eliminate waste within your operations, creating a true lean manufacturing environment. Improve your process efficiency and ROI by focusing on what adds value and eliminating what doesn't.

Slotting Analysis

If your operation requires excessive amounts of labor, your SKU mix has recently changed, or picking cycle times are too high, let our engineers perform a slotting analysis. A slotting analysis will identify how your products move, where they should be located to optimize picking as well as where to store inventory in your facility to minimize cycle time to your customer.

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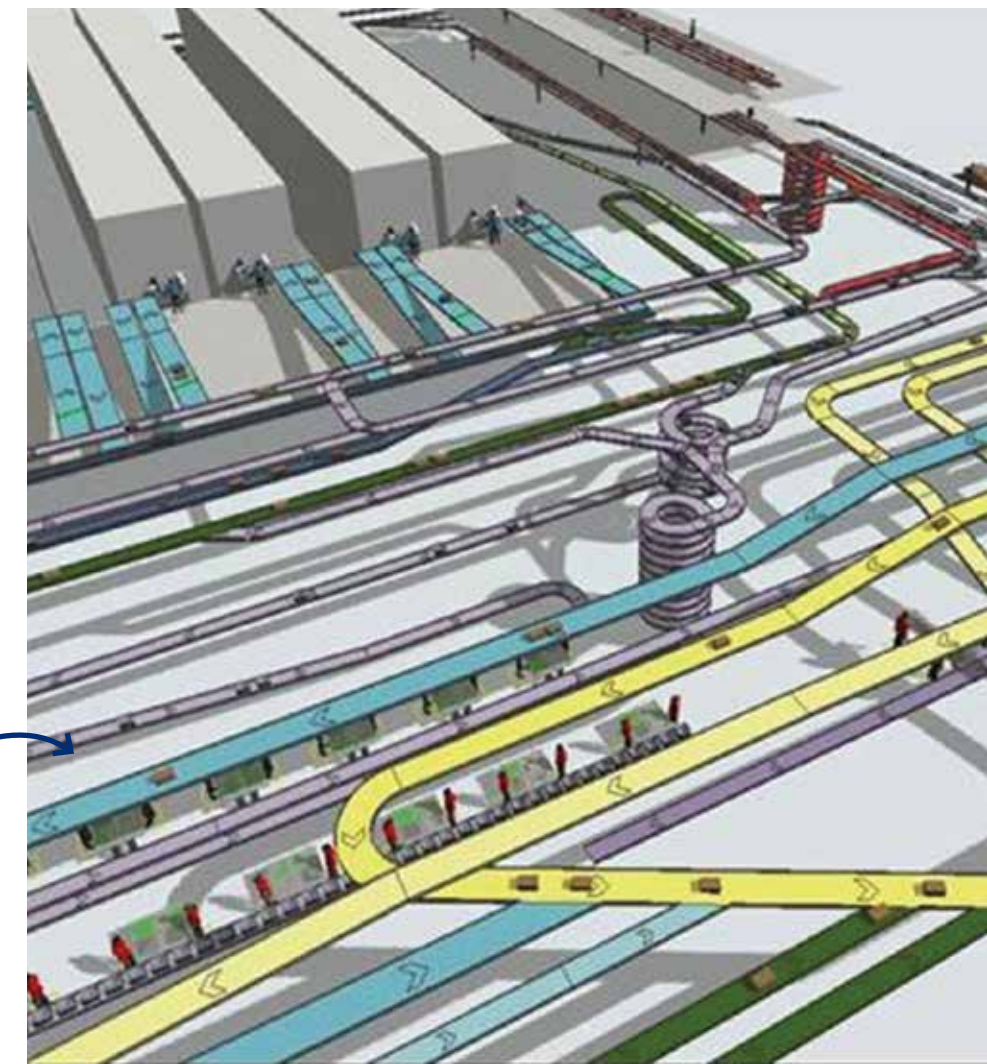
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Simulation

Computer simulation analysis helps visualize changes in layout and process as well as answer what-if questions before implementing automation technology, information management systems, or procedural changes. Computer simulation models can be used to help evaluate potential automation investments as well as changes to current operations. Results of a simulation can help determine throughput rates, staffing levels, design enhancements and system capacities.

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Our renders are extremely realistic and can be animated by request!



WMS Selection

Our independent consultants assist with finding the appropriate WMS (Warehouse Management System) solution for your operations using objective observation and a proven process. We follow a methodology that defines expectations by researching goals, processes, KPIs, any existing WMS or ERP functionality, restrictions and other points of interest that might help our experts define the best solution.

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Labor Measurement

Bastian Solutions can help you increase productivity by creating performance standards for labor in your facility. Our engineers are certified in the application of Maynard Operation Sequence Technique (MOST®); the trusted method for determining labor standards. MOST creates engineered standards by calculating the time it should take to perform tasks at a step by step level. With such standards, you can drive productivity improvements in your facility while containing and even reducing costs.

See page 56 for more WMS and pages 16-23 for more picking technologies.



Layout & Warehouse Design

Sometimes clients know what changes need to be made in their manufacturing or distribution facilities – they just need assistance in specifying equipment and drawing the solution. Armed with the latest CAD 3-D software, our warehouse design teams not only develop efficient systems but also have a detailed understanding of the technical components that comprise them. This allows our consultants to produce an optimal material handling system layout to support your business goals.

Facility design and layout in the material handling industry affects the productivity, profitability, and adaptability of your company for years. One of the best business decisions you can make is to engage an expert in material handling system design when planning your facility layout.



Sustainability

Bastian Solutions offers Greenhouse Gas Accounting and Clean Energy Adoption studies to support our clients' efforts to build resilient, competitive supply chains by reducing their supply chain's dependency on finite natural resources such as fossil fuels.

Once all on-site generation modeling and policy & market research is complete, Bastian Solutions will develop a final report of analysis, research findings and recommendations for the client. Additionally, Bastian Solutions will work with your team to develop appropriate Environmental Performance Indicators (EPIs). EPIs provide context to your supply chain emissions, and they serve to benchmark emissions performance across time and/or between logistics sites.

PHOTOGRAPH: Clean Energy Adoption - Solar Panels



Parts Town

Consulting Case Study: Automation
Integration of a Robotics
Goods-to-Person System



“

We sought Bastian Solutions' help to get us automated in whatever fashion would help ensure we could satisfy our same-day shipping promise to customers and continue to stock an ever-growing number of SKUs.

-Kenny William, Director, Parts Town

Case Study

Parts Town, a leading source for restaurant and food service parts, partnered with Bastian Solutions' independent consulting group to analyze its fulfillment operations and develop a plan and facility design that would support Parts Town's ambitious growth goals. With an increasing number of SKUs and a need for faster order fulfillment, the AutoStore goods-to-person system was selected for its high-density storage and scalability.

Bastian Solutions utilized detailed data analysis techniques and advanced modeling tools to provide Parts Town with a clear, methodical plan for current and future operations.

KEY SERVICES & TECHNOLOGIES

- Operations Plan
 - Detailed data analysis and modeling
 - Data-driven recommendations
 - System layout and design
 - Development of streamlined processes
 - Project management
 - Project implementation planning
- AutoStore goods-to-person system
- Exacta Warehouse Control system

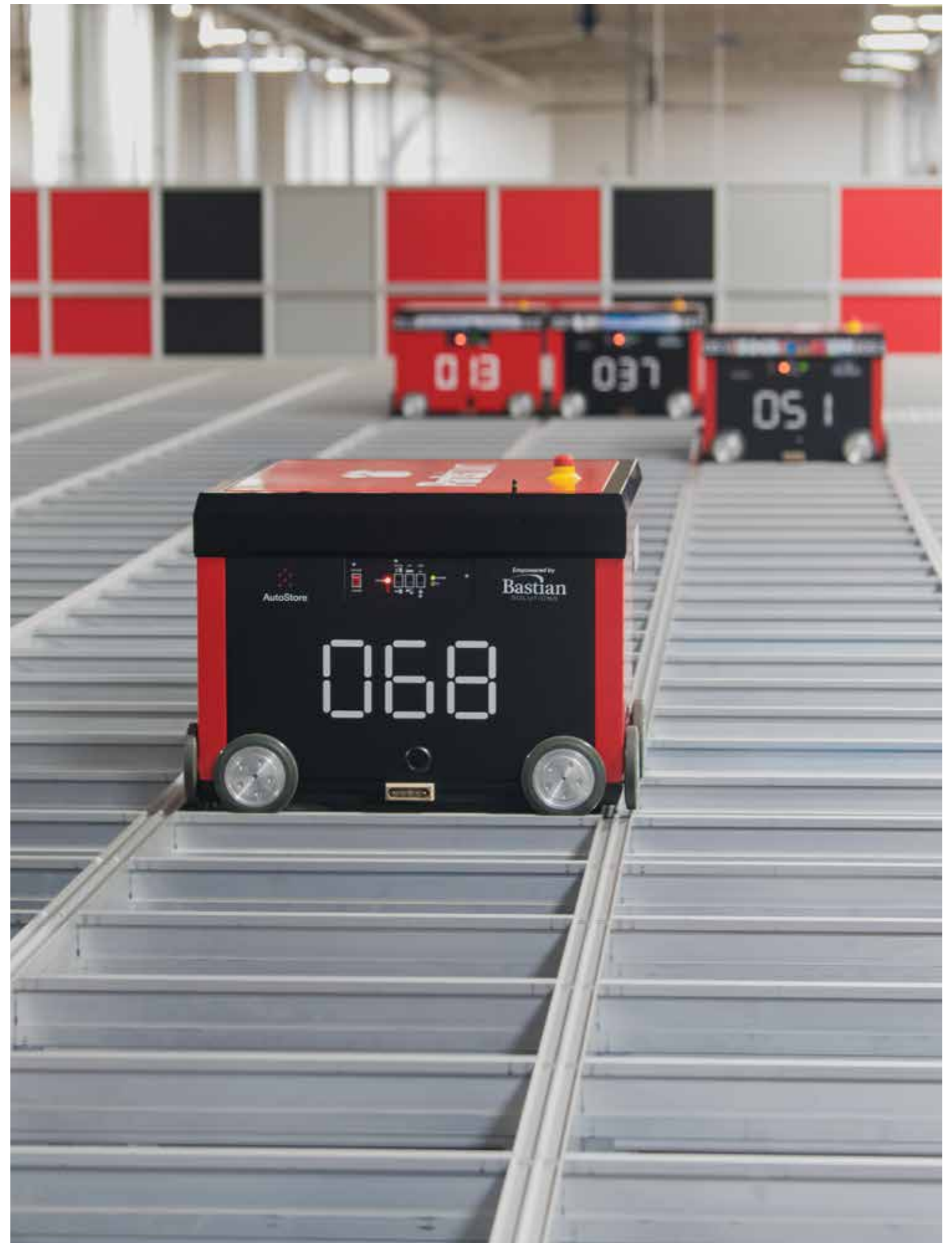
RESULTS

- Developed a process flow and layout to optimize the distribution center
- AutoStore was selected for its dense storage and scalability
- High-level SKU slotting was used to determine which products should go into each picking technology
- System layout and design was developed, planned, sourced and implemented
- A road map was created so Parts Town can effectively plan for the future as its operations expand

Picking Technologies

Looking for a technology to help meet the challenges of a growing fulfillment or warehouse operation? Increased product flow and more customer demands are difficult challenges for manual processes to overcome, which is where order fulfillment technologies such as voice, pick to light or goods to person solutions can help. Increased efficiency, reduced picking errors and improved customer service are just a few of the benefits that an automated solution can offer.

PHOTOGRAPH: AutoStore





Voice Picking

Voice picking is designed to keep an operator's hand and eyes free, allowing them to focus more on the task at hand. Each operator is equipped with a mobile device or voice dedicated terminal and a headset with microphone. A barcode scanner (wired or wireless) can be added to increase accuracy and productivity. Easy-to-understand voice prompts direct operators to locations and instruct them as to what task needs to be performed. Multi-modal feedback via an operator's voice, a barcode scan or direct text entry provides additional operational flexibility.

PHOTOGRAPH: Souther Glaser's Wine & Spirits

Put to Light

A put to light system is similar to a pick to light system, only instead of picking product to ship to consumers, it is designed to replenish stock to a store. Like pick to light, put to light systems are typically mounted on shelving or carton flow rack, with the individual open store shipping boxes placed above or below the designated put to light device. Common configurations have two shelves of 'put' locations within a put to light setup.

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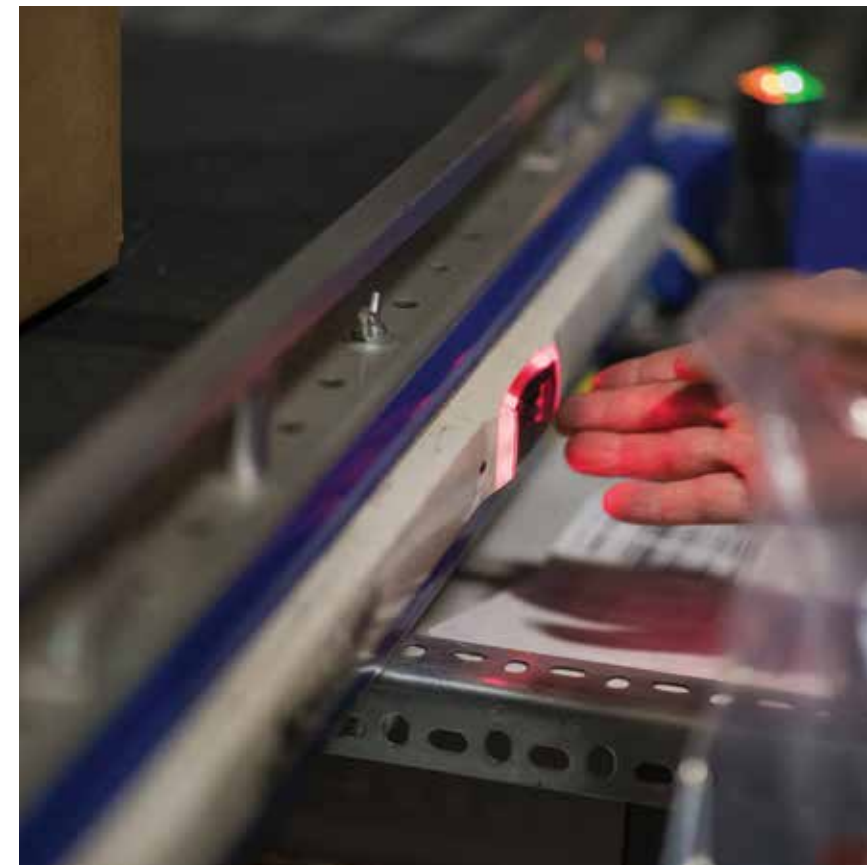
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RF Handheld Scanner

RF scanners are used in four ways (receiving, cycle count, putaway and picking) and communicates with the warehouse management system (WMS). The browser-based screens are configurable to deliver the most important information directly to operators. The Exacta Mobile software provides the ability to quickly and easily incorporate product images and can also be translated to support multilingual requirements.

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Pick to Light

Pick to light systems provide you with an efficient picking process that increases productivity and gives your warehouse the boost it needs. The Exacta pick to light software can be used on a standalone basis as an order fulfillment software solution or be integrated directly into the Exacta warehouse management system, your existing WMS or other existing host systems. Pick to light is an easy process to learn—training a picking operator can take between 30 and 45 minutes—which means you can quickly see the benefits of your system soon after implementation.

Put Wall

A put wall is an order fulfillment solution directed by warehouse software to handle large volumes of orders in a small footprint. This paperless process streamlines the supply chain by increasing efficiency and order accuracy. Put wall applications decouple the picking and packing process of order fulfillment, maximizing the efficiency of your operation.

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Autonomous Vehicles

Automated Guided Vehicles are used to consistently and predictably transport loads of material to places that might otherwise be serviced by forklifts, conveyors, or manual cart transport. They are typically used where high volumes of repetitive movements of material is required, but where little or no human decision making skill is required to perform the movement. They are especially useful in serving processes where change is constant, and barriers - such as conveyors - are undesirable.

PHOTOGRAPH:
M4A Mouse AGV

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Automated Storage & Retrieval Systems (ASRS) - Mini-load

Storing products doesn't have to mean compromising floor space — mini-load ASRS is designed to store small parts in less space with faster performance. These systems are designed with strong, lightweight alloys making the mini-load economical to install, operate, and maintain. More specifically, the lightness of these alloys allow for much faster performance, making these machines significantly more productive than their technical ancestors.

PHOTOGRAPH:
Dambach mini-load crane

Automated Storage & Retrieval Systems (ASRS) - Unit-load

Quick and reliable ASRS unit-load technologies are cost-effectively engineered to handle unitized loads in and out of high density storage. Dependable 24/7 operation comes as a benefit to common applications such as buffering of supply chain deliveries and finished goods, storing and controlling the inventory until it has been released from quality control or use in downstream processes.

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Goods-to-Person Technology

Goods-to-person is a modern method of order fulfillment. The product is moved directly to the operator, who can then pick what is needed to fulfill orders, allowing for an increase in efficiency and accuracy of the picking process. Ideal for ergonomic picking, easily scalable and offers a dense storage footprint.

ADAPTO Shuttle System

ADAPTO is a modular shuttle-based automated storage and retrieval system (ASRS) with sorting and sequencing technology built in. This system guarantees fast and accurate order picking with multidirectional shuttles and sequencing capabilities, which is especially helpful for meeting the high demands of ecommerce fulfillment.

PHOTOGRAPH:
Vanderlande ADAPTO



AutoStore

The AutoStore Black Line and Red Line systems are innovative storage solutions that allow complete configurability and flexibility. Bins are stacked vertically in a grid and retrieved by robots that travel on the top layer of the system. This makes it possible for the grid to be placed around columns, on mezzanines, and on multiple levels. AutoStore Red Line is the fastest-growing robotic warehouse system globally and has pioneered cube-based automation to revolutionize warehousing with a simple, reliable and flexible solution. To take AutoStore’s game-changing functionality to the next level, the company has now developed a new robot, bins and workstation to service the highest demand systems.

PHOTOGRAPH:
AutoStore



Servus Robotic Shuttle System

Servus Intralogistics offers an innovative material handling solution in which all processes run seamlessly from incoming goods to small parts storage (ASRS), picking, production, assembly, office and eventually to the shipping area. Additionally, the optimized flow of your production material eliminates unnecessary inventory, reducing your total cost.

PHOTOGRAPH:
Servus



Perfect Pick®

Perfect Pick is an energy-efficient solution for goods-to-person picking and stocking. Using proven iBOTS® technology to retrieve and putaway goods, it runs at up to 1000 picks per hour. This technology has a simple, flexible design allowing for complete scalability in both speed and size. A single aisle system can be easily expanded by adding modules or more aisles, and additional iBOTS® can be quickly introduced or removed from the system in a matter of minutes. This allows throughput rates to be easily adapted to ever-changing business demands and cycles.

PHOTOGRAPH:
Perfect Pick

Adore Me

Improves Shipping Times by Bringing
Order Fulfillment In-House

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bastiansolutions.com

Case Study

Adore Me, a women's intimate apparel and swimwear company, partnered with Bastian Solutions to bring their order fulfillment operations in-house, no longer relying on third-party fulfillment. To make the most of their space, the design started with the space-saving AutoStore goods-to-person system to consolidate and improve order fulfillment operations. Their new ecommerce fulfillment facility improved order shipping times and has the scalability and flexibility to adapt to this fast-growing company's needs for years to come.

KEY TECHNOLOGIES

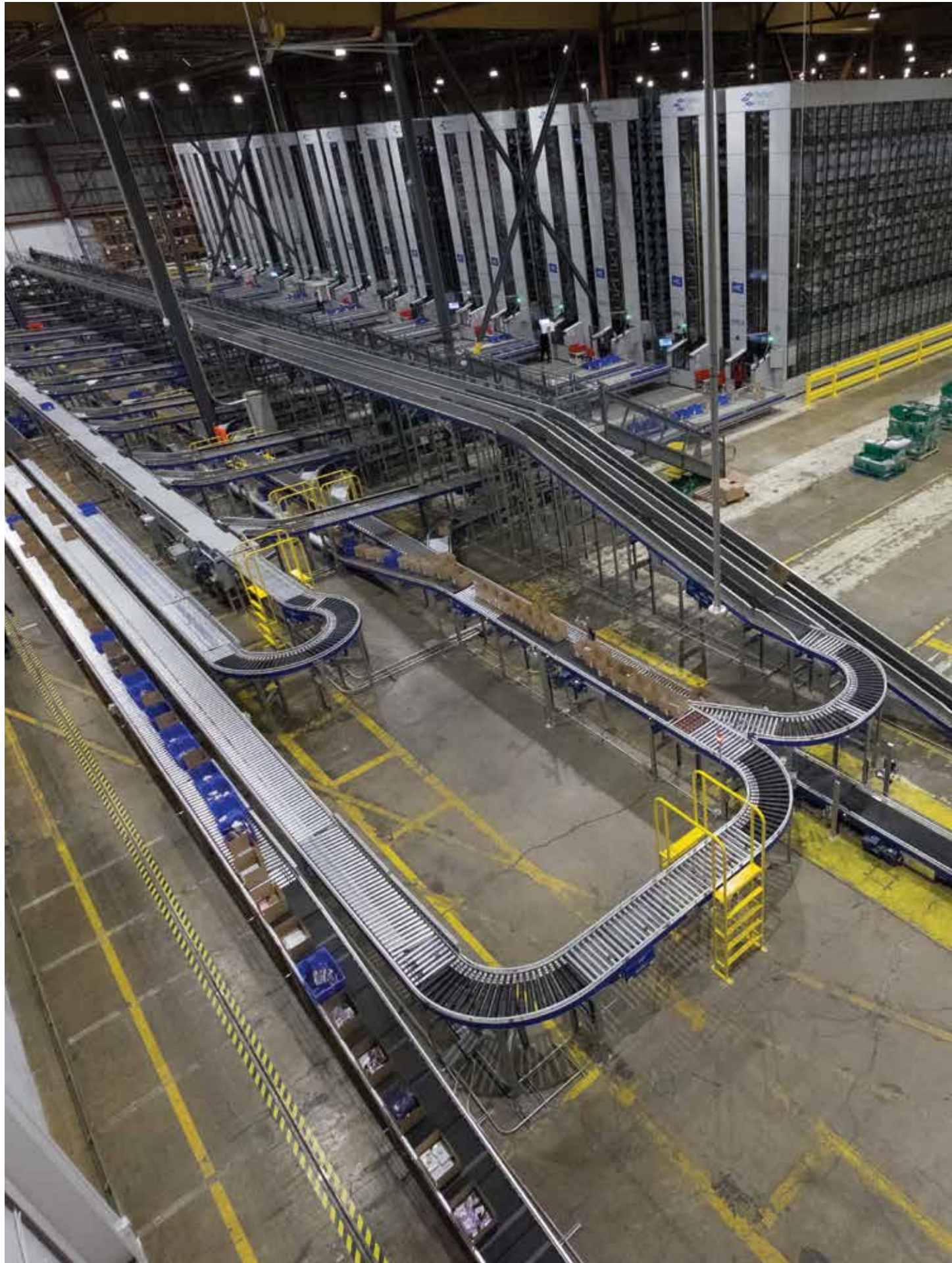
- In-depth engineering consulting study to maximize current and future operations.
- AutoStore goods-to-person order picking system
 - 73 Robots
 - 33,000 bin locations
- 11 AutoStore pick stations and 3 receiving stations with touch screen monitors
- OPEX Sure Sort small-item robotic sorting system
- Exacta warehouse execution system
- Put-to-light devices at picking stations
- Automatic labeling machines for empty shipping carton license plate labels
- In-line weigh check scale
- Print and apply labelers for shipping labels with an inline scale for manifesting
- Hytrol and Bastian Solutions Conveyor
- Pivot wheel sortation conveyor

RESULTS

- Two-day shipping on all ecommerce orders
- Order pickers are 2.7 times more productive thanks to Exacta batch picking organization
- The facility handles an average of 10,000 orders per shift and upwards of 20,000 orders per shift on peak days

“We have full control of how we change our systems, and the new AutoStore has that flexibility built in to allow us to change our business model or how we ship to our customer very efficiently.

-Krutin Shah, Distribution Director, Adore Me



Conveyor & Sortation

Whether you need a complete system or a single component, we will put our expertise to work for you. Bastian Solutions combines the best conveyor and sortation technologies for your project to create a tailored solution that exceeds expectations.

PHOTOGRAPH: Bastian Solutions Conveyor

Transport Conveyor

Moving items from point to point is common practice using transport conveyor. Depending on the application, there are a variety of models to choose. From belted to roller, inclines or declines, transport conveyor is a simple way to optimize manual operations.

PHOTOGRAPH:
Bastian Solutions Conveyor



Sortation Conveyor

Sortation systems are often employed when high quantities of products need to flow to different destinations for further processing or shipping. Sorters are the ideal solution for separating products from in-feed conveyor lines to shipping lanes, palletizing operations, packing stations and other sortation applications. Sorters are versatile and can sort a wide range of product sizes and weights to multiple divert lanes.

PHOTOGRAPH:
Bastian Solutions shoe sorter



Accumulation Conveyor

In a distribution or manufacturing operation, accumulation conveyors are commonly used to transport and accumulate cartons or unit loads so that they are efficiently queued up and fed into sorting, wrapping, palletizing, strapping or various other processes. Each zone uses a photo eye to detect the presence of a product. The conveyors provide a buffer zone where a steady supply of product can be oriented or held back when downstream processes are not ready. In addition, they can be used to smooth out fluctuations in production line rates.

PHOTOGRAPH:
Bastian Solutions Conveyor



Merge & Combine Conveyor

Merge conveyors and combiner conveyors are used to arrange products flowing from multiple infeed lines of conveyor. Typically, the merging process is needed to combine product from upstream pick modules with multiple lines, into a single stream of product on a single conveyor. The merging process then sends a single stream of products downstream for further processing often into a sorter, in-line scale or scanner.

PHOTOGRAPH:
Hytrol & Bastian Solutions conveyor



Vertical Spiral Conveyor

Space savings is one of the many benefits of spiral incline or decline conveyor. Spirals take up a fraction of the floor space of traditional conveyor, resulting in significant financial savings. Another advantage are the merging capabilities. Pick modules specifically benefit with vertically merging products from multiple levels onto one take away conveyor line. Spiral conveyors can also merge product, which allows increased buffer time while requiring minimal floor space.

PHOTOGRAPH:
Spiroveyor



Pallet Conveyor

Pallet handling conveyors are not a one-size-fits-all solution for manufacturing facilities, warehouses and distribution centers. Bastian Solutions integrates first-class technology that fits the unique requirements of your project to get operations running smoothly and efficiently. Our pallet handling equipment is trusted to increase throughput and flexibility while lowering overall costs of operations.

PHOTOGRAPH:
Hytrol conveyor

Gravity Conveyor

Gravity conveyors are non-powered solutions that use gravity or some external force to move products. Gravity conveyors may be metal or composite chutes, rollers, or skatewheel conveyors. They are one of the most economical material handling solutions and are easy to install and relocate since they do not utilize motorized parts. These can be installed on an incline or a straight line in a shipping or assembly area.

PHOTOGRAPH:
Hytrol conveyor



Conveyor Ancillary Equipment

A truly automated conveyor system often needs one or several pieces of ancillary conveyor systems equipment to make it just right for your needs. Ancillary equipment added to your conveyor system is often the place where you will see the largest return on your investment. These pieces of equipment are an inexpensive option when compared to the labor costs of manually performing these processes. Ancillary equipment can include in-line scales & scanners, print & apply labelers, case sealers, automatic stretch wrappers and more.

PHOTOGRAPH:
Carton Erectors



DICK'S Sporting Goods

The new system utilizes expansive conveyor and ancillary equipment integrated with Exacta software.



Peeling off the back stock product in receiving has been a big win for this facility. It's freed up capacity on the entire sortation system and the flows in the facility have really improved the overall efficiency of how we operate.

-Tyler Bronson, Senior Director Supply Chain Strategy & Support, DICK'S Sporting Goods

Case Study

DICK'S Sporting Goods, a leading sporting goods retailer, partnered with Bastian Solutions to improve order fulfillment speed and accuracy at their omni-channel distribution center in Conklin, New York. This facility is the company's fifth nationally with 650,000 square feet of space, 7.7 miles of conveyor, and servicing up to 160 stores.

KEY SERVICES & TECHNOLOGIES

- Exacta conveyor control system
- 38,000 ft+ of Hytrol conveyor
- Hytrol Prosort and pivot wheel sortation conveyor
- FMH accumulating extendable conveyor
- Pick-to-light devices at picking stations
- Put to light
- Cognex camera label scanners
- 4M semi-auto tapers
- Automated stretchwrappers

RESULTS

- 20% of product received is back stock – instead of sending these through the receiving sorter and clogging the system, they are immediately separated as they come in the door – increasing receiving sorter efficiency by 20%
- 182 lanes of pallet flow rack for staging outgoing store shipments, increasing vertical space usage and eliminating need for additional expansion
- Utilized gap and store, or reverse accumulation to improve conveyability of wide product mix
- Cognex camera label scanners improved read rate from 85% to over 98% – more labels being scanned correctly means more product flows to the correct destinations

Custom Automation

We specialize in providing simple, innovative solutions for your complex industrial problems. Our experienced engineers have created advanced automation systems for extreme conditions utilizing the latest technologies to produce high speed, precise results. Let us help you create a custom and innovative solution for your company's needs.

PHOTOGRAPH: Custom ASRS





Custom Platforms

We build ergonomically sound and safe platforms that lift people and products that might be too expensive or heavy to be manipulated by hand. Our custom platforms are built to help your operations to continue seamlessly. Bastian Solutions has the capabilities to work with any space allotted or specifications given.

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Custom Lifts

We have the ability to convey on a carriage to interface with conveyor systems on multiple elevations in order to utilize the vertical space of your facility. Our custom lifts are built to handle boxes, totes, tires, pallets and other items, and raise them multiple stories with ease and accuracy. These lifts can be built to handle heavy duty transfers of several thousand pounds, to lightweight speedy transports.

*PHOTOGRAPH:
Custom vertical lift*

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Custom Turntables

Conveyor turntables are used for a variety of applications in manufacturing and distribution centers. They are typically implemented to aid in operator ergonomics as well as increase overall efficiency. Wide arrays of variations are available for custom conveyor turntables, such as manual and powered. We specialize in low-profile conveying surfaces and can implement different types of powered or chain.

Custom ASRS

We customize these systems to accommodate product that is too large in length, footprint and weight for normal manufacturers to handle. Our designs can accommodate any specifications including temperature and being seismic zone approved.

“

This (ASRS) was designed to handle 20 aluminum trays weighing 300 pounds each for a total capacity of 6,000 pounds. The design was also required to hold these parts within a .1" flatness tolerance, and the entire system had to function inside a freezer at -15° F, requiring us to use special freezer-rated components.

*Nate Richter, Director of Sales,
Custom Automation*



Custom Equipment

Whether it's extreme environments, unique applications, excessive weight, specific temperatures or standard material handling solutions just don't meet your technical requirements, Bastian Solutions can help. We are capable of solving any material handling or automation problem to help you achieve your desired processes and fulfillment.

PHOTOGRAPH:
Mechanical cell



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Custom Conveyor Accessories

Conveyor accessories provide solutions and extra ergonomic equipment to a standard conveyor line. Bastian Solutions' custom conveyor accessories can be tailored to fit the customer's specific requirements. Conveyor accessories range from custom pushers, to blade stops and cross over ladders. Bastian Solutions will tailor your accessories to best serve the application or technical requirements.

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Custom Conveyor

Bastian Solutions has created custom conveyor for a variety of customer and industry needs. From plastic modular belting and stainless steel, to high pressure wash-down and corrosion resistance, we can build conveyor for your environment. Pallets, steel, automotive tires or even small blister packs – we can create the conveyor solution your operation needs.

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Custom Conveyor Transfer

Conveyor chain transfers are typically used in Chain Driven Live Roller (CDLR) conveyor to pick up the product and transverse it perpendicular to the CDLR Conveyor flow. Chain transfers come in many styles and variations such as between rail chain transfers, extended style chain transfers, and conveyor-to-conveyor chain transfers.



Custom Pallet Handling

Our custom pallet handling is usually comprised of drag chain and/or CDLR conveyor that can handle wood, corrugate, plastic and metal pallets. From destacking to downstream robot placement, we are able to create any pallet solution you need. This type of customization allows us to increase the efficiency of both distribution and manufacturing operations by automating functions that usually require dedicated forklift operators.

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Custom AGV Tops

Our customized automated guided vehicle tops can efficiently and accurately transport individual or multiple boxes, totes and even pallets, then safely transfer them to the other end of the facility for continued processing. This allows you to avoid adding miles of conveyor and safety costs while increasing throughput, reliability, and accuracy of deliverables. These AGV tops have flexible and easily changeable software programming that is more than capable of changing routes and maneuvering around your facility with ease. Our software can even wirelessly allow the AGVs to communicate with other functions in the facility, improving order and product tracking.



Tire & Wheel Handling

Our custom automation group provides you with highly customized solutions by implementing leading-edge technologies. We work with manufacturers on any and all specifications – different brand components, style of construction and paint color, just to name a few. We adhere to those customer specific requirements for conveyor, lifts, flippers, ASRS systems, AGVs and more. We know how to handle green tires with plastic modular belting made specifically to deal with the harsh conditions that uncured tires require. Our products are guaranteed to endure the high temperatures, corrosive elements and any other challenges of your manufacturing and distribution facility, while maintaining the high quality required by the industry. Our products help many businesses like yours turn out tens of thousands of tires a day.

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Robotics

Bastian Solutions uses a creative concepting and design process to ensure we implement the most appropriate solution for your application. The team also offers robotic services to help you get your robotics project up and running successfully.

PHOTOGRAPH: End of Arm Tool



Robotic Palletizing

Robotic palletizing provides our clients with highly robust and flexible solutions. Our internally designed and manufactured end-of-arm tooling is tailored to your application's exact needs to ensure that we handle all of the required products and materials in a gentle and reliable way.



The Bastian Robotics system is enabling us to maintain our throughput without an interruption. The [palletizing robot] keeps up with our two production lines which is critical to our customers' needs to maintain the supply chain.

*Richard Wood, Engineering Director,
Molnlycke Health Care*



End-of-Arm Tool

The key to every successful robotic work cell implementation is the robust and functional design of the end-of-arm tool. Bastian Solutions places a strong focus on our end-of-arm tool designs and are proud to have implemented some of the most innovative and reliable end-of-arm tools in the industry.

*Research our case studies for yourself at
bastiansolutions.com*

Interested in implementing robotic end-of-arm tooling in your facility, or simply want to know more about it? Give us a call at 888-725-3046!

Robotic Vision

We integrate some of the most cutting-edge 2D, 2.5D, and 3D vision components with flexible and robust end of arm tool (EoAT) designs to create robotic picking solutions perfect for goods-to-robot operations, pick and place applications, mixed load depalletizing or even quality inspections and machine tending. Our solutions are capable of picking even the most complex piles of products. These systems can be designed in a modular fashion allowing new products to be easily introduced into a system and identified by the robot.

From vacuum tools to the most complex hybrid tools, we have the experience to provide you the optimum tool for your application. Ready to take the next step? Give us a call at 888-725-3046



Robotic Packing

Robots can efficiently and accurately pick single or multiple items to pack single or multiple cases per cycle. Robotic packing solutions enable manufacturers to reduce labor and safety costs while increasing throughput, reliability, and accuracy of orders.



This system will help us serve our customers by improving our margin. Approximately 80% of our set volume will be able to be processed by a robotic cell and will produce a more accurate product to the customer, which is the most important thing.

*Jeff Maholic, Production Manager,
Rubbermaid®*



Pick and Place

High-speed pick and place robots take product from one location to another with pinpoint accuracy. Human pick and place applications can require repetitive motion over a long duration resulting in possible ergonomic issues. Highspeed pick and place robots can provide increased efficiency as well as decreased production costs and ergonomic issues.

Research our case studies for yourself at bastiansolutions.com



Machine Tending

Machine tending can be dangerous work and requires the consistency that a robotic solution can provide. Robots replace human interaction to move product from a supply position, transport it to a machine, orient it, and then interact with the machine. Our designs are capable of handling items as small as a dime and as large as a refrigerator presenting turnkey solutions.

Research our case studies for yourself at bastiansolutions.com

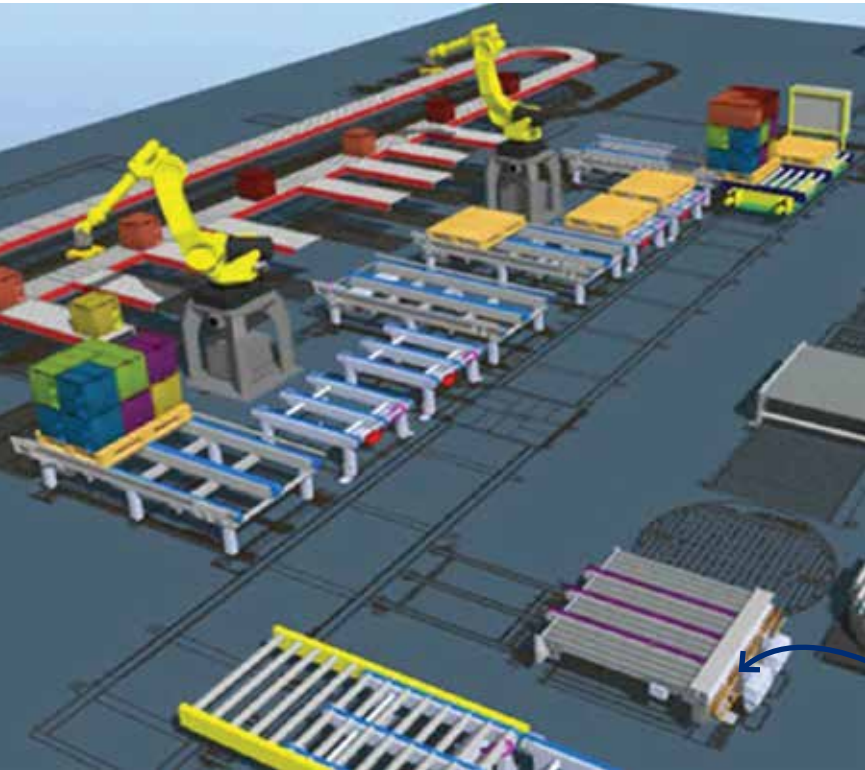


Mobile Robotics

Mobile robots are the future of automated order fulfillment. Bastian Solutions offers the best foot forward with these great solutions. Whether you are replenishing your inventory, picking case items, or delivering completed orders to loading docks, mobile robotics from Bastian Solutions have you covered.

PHOTOGRAPH:
Robotic Batch Order Picking

Replenishing your inventory, picking case items, or delivering completed orders to loading docks? Mobile robotics can take you to the next level! Give us a call at 888-725-3046



Robotic Simulation

Testing different run-time scenarios with actual robots is an expensive proposition. Robotic simulations with software tools from ABB, Fanuc, Kuka, are a great way to reduce time, cost, and errors for robotic systems. Simulations are performed on a PC with exact robot parameters built in as well as other cell components, so testing emulates the real world. This allows robot programs to be prepared in advance or in parallel. It increases profitability by letting you accomplish training, programming, optimization, and troubleshooting without disturbing production.

Robotic simulations are a great way to reduce time, cost and errors for robotic systems.



Robotic Document Inserter

Order fulfillment complexity in modern-day distribution centers has never been greater. Increased SKUs, limited inventory, omni-channel requirements, and same-day shipping have all placed substantial demand on operational teams. Placing the proper paperwork inside of a carton should be the least of your worries. Our robotic document inserter provides redundancy with 3 or more printers and utilizes a highly reliable 6-axis robot that accurately places the proper paperwork in the proper carton, every time.

PHOTOGRAPH:
Robotic Document Inserter

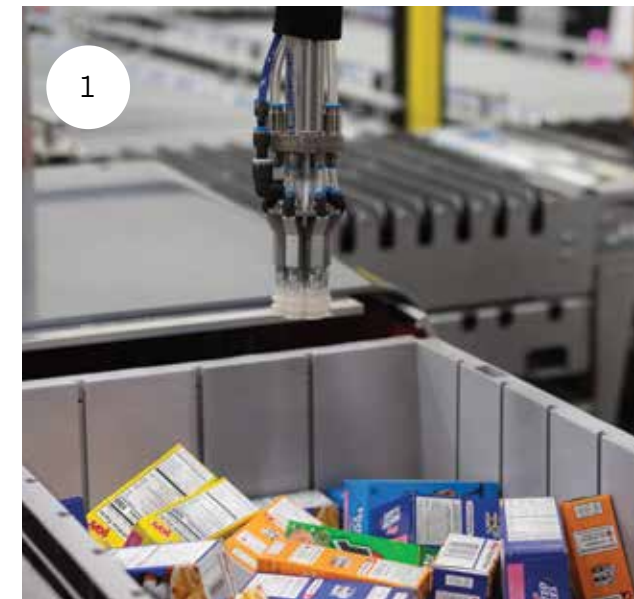
Robotic Sortation

Robotic sorting can offer unparalleled throughput and flexibility. These systems are completely customizable and fully modular, handling items of all shapes and sizes. Our solutions can provide tilt-tray or crossbelt sorters with independent, track-free robots. These sorting techniques are increasing return on investment by at least double and have no single point of failure.

Research our case studies for yourself at bastiansolutions.com



For more sortation solutions, check out pages 26-33!



For more picking solutions, check out pages 16-23!

Goods-to-Robot Picking

This automated order fulfillment system is an ideal example for companies looking to improve their e-commerce order fulfillment operations. These goods-to-robot, bin picking solutions help reduce labor costs, while simultaneously improving the speed and flexibility of custom order fulfillment.

PROCESS:

- 1. SCAN** - A tote containing randomly oriented objects is presented to the 3D camera system, and a series of photos is taken to map out the object orientations.
- 2. IDENTIFY** - Within a split second, the robot and vision controls identify the "most pick-able" object in the pile and release the robot to pick it.
- 3. PICK** - Controls manipulate the robot arm and EoAT inside the tote while using suction or a gripping technology to pick an object without encroaching on other objects or the tote walls.
- 4. PLACE** - The robot retracts from the bin and places the object in a secondary shipping carton and is ready for another pick and place sequence.

PHOTOGRAPHS:
Picking Robot at AutoStore Port

Rubbermaid®

Robotics Case Study: Robotic Automation improves efficiency for Newell Rubbermaid® facility

Research our case studies for yourself at
bastiansolutions.com

Case Study

Newell Brands is a leading global consumer goods company with a strong portfolio of well-known brands such as Rubbermaid®, Paper Mate®, Sharpie®, Calphalon®, and more. Previously, at the company's 850,000 square foot facility in Mogadore, Ohio, Rubbermaid® product kits were being manually assembled on a box line with 15-20 operators. With a focus on increasing productivity, improving consistency, and shipping a more accurate product to customers, Newell turned to Bastian Solutions to design and implement a robotic system for kit assembly.

KEY TECHNOLOGIES

- Product denesting device
- 10 FANUC LR-Mate 200iD Robots
- Bastian Solutions Conveyor for process & reject lines
- Robotic end of arm tool changer
- Hopper for twist and seal lids
- Case erector
- Automatic taper

RESULTS

- 99.8% of kits correctly assembled robotically
- Increased operating margins through productivity improvements
- Approximately 80% of set volume will be processed by the robotic system
- More accurate product shipped to customer - robotic automation accurately places the correct number of required products in each kit
- Improved ergonomics for the remaining operators on the line
- The robotic system can process one of two product lines at a time - one at about 800 parts/hr, and the other at 600 parts/hr
- No manual operation required for the part quantity aspect of the system

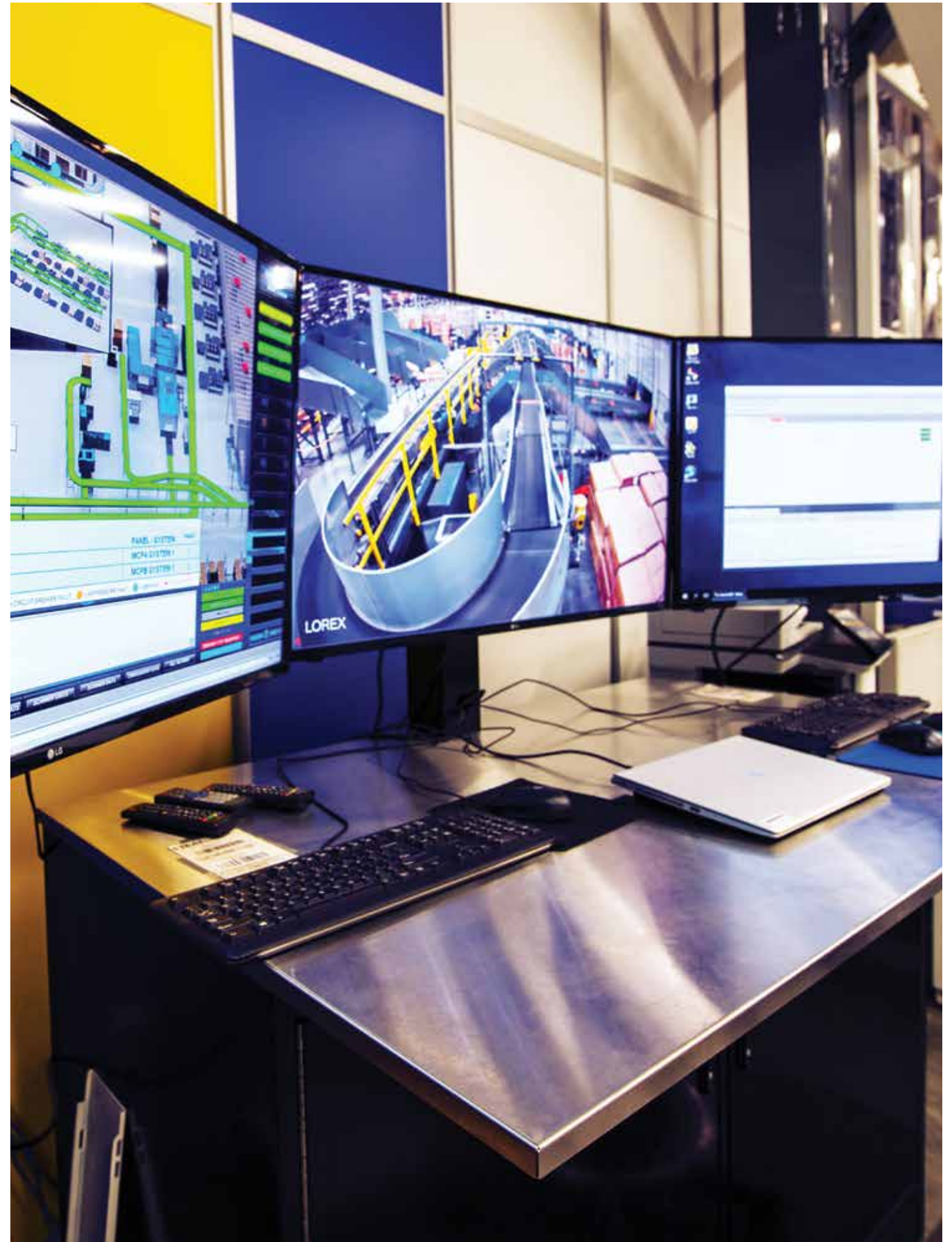
“Working with Bastian Solutions has been both positive and informative. Positive as in, I've seen the progress we've made on the robotic cells and the necessary improvements that are going to help us go to the next level.

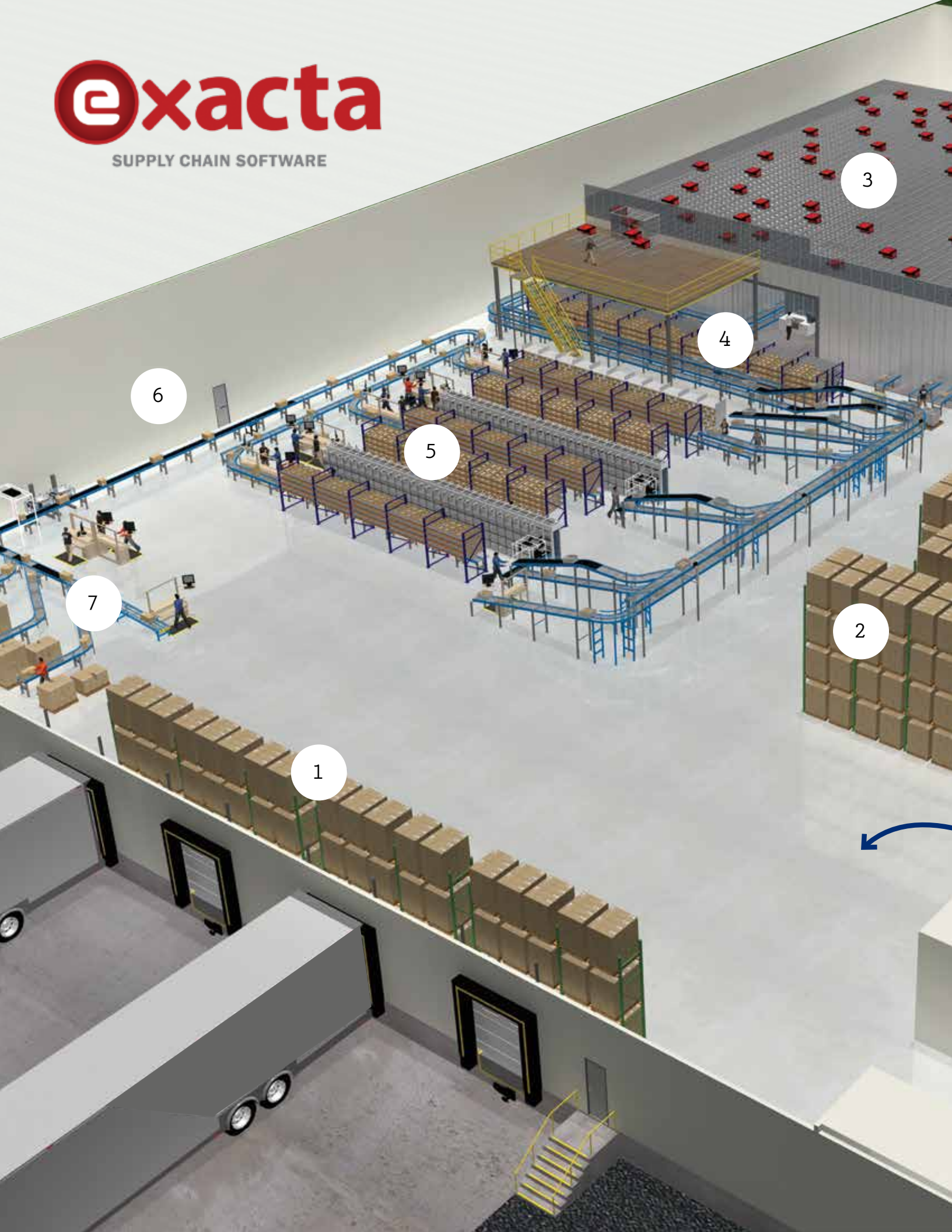
Jeff Maholic, Production Manager, Rubbermaid®

Software

As an independent integrator, we offer complete, scalable warehouse software solutions that can also be implemented as separate components. The Exacta[®] supply chain software suite can interface with other systems as well as be implemented as a complete solution to your business needs. As a result, Exacta reduces inefficiencies in the warehouse and the need for additional resources to monitor and support additional applications.

PHOTOGRAPH: Best Buy using Exacta WES





Warehouse Execution System

A Warehouse Execution System (WES) is a hybrid software system where a Warehouse Control System (WCS) shares functions from a traditional Warehouse Management System (WMS). The objective of a Warehouse Execution System (WES) is for highly automated facilities to coordinate labor and equipment through dynamic optimization through real-time inputs. This way the operator can apply the knowledge gained from the Warehouse Execution System (WES) reporting features to optimize the operations of the distribution center.

Research our case studies for yourself at bastiansolutions.com



“

We are able to control the flow of orders in a very regulated manner. If we had a spike in orders and we wanted to prioritize certain orders over others, we have the ability to do it [with Exacta WES].

-Krutin Shah, Distribution Director, Adore Me

Exacta Managed Order Lifecycle

- 1. INBOUND** - Orders are received and scanned into Exacta to log inventory of all items with the warehouse.
- 2. STORAGE** - Items are separated and placed into storage for optimal picking. Exacta can perform cycle counts to determine levels of inventory when replenishment is needed.
- 3. GOODS-TO-PERSON** - Dense storage combined with robotic pickers deliver SKUs to an employee for further processing. Exacta communicates with the goods-to-person system for inventory levels and picking tasks.
- 4. LIGHT-DIRECTED PICKING** - High velocity SKUs can be placed into pick to light modules. Exacta can determine the fastest pick route possible and batch common orders.
- 5. PUT WALL PROCESSING** - Manual or automated put walls can process batch picking and organizing orders for faster throughput.
- 6. PRINT & APPLY** - Completed orders are boxed and placed onto a conveyor where the boxes receive a shipping label from Exacta.
- 7. OUTBOUND** - Destinations for completed orders are diverted by conveyor and placed into their respective carriers to reach the end-user.

Warehouse Management System (WMS)

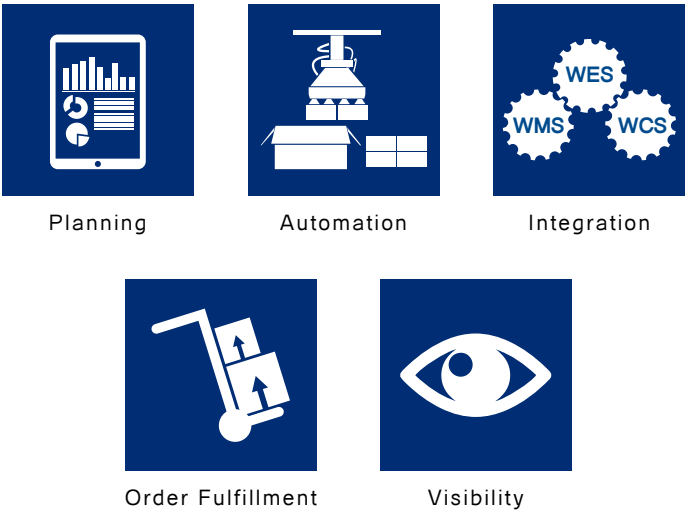
Having the right tools to manage warehouse operations and a distribution environment is essential for any supply chain professional. The Exacta WMS provides you with a suite of software applications that enable you to customize and view your warehouse system in ways that best benefit your business requirements. Exacta enables you to plan processes within the warehouse to increase operational efficiency.



Warehouse Control System (WCS)

The Exacta WCS orchestrates material and information flow to order fulfillment technology and material handling equipment. It includes several modules of functionality typically found in a WMS to efficiently direct and manage processing within your warehouse. The modular nature allows additional functionality to be easily added as the needs of your system or facility evolve.

Research our case studies for yourself at bastiansolutions.com



ExactaBev

The web-based ExactaBev portal provides route-waving tools that are flexible, rules-driven, and easy to use. ExactaBev organizes picks into waves of work that maximize picker efficiency while keeping picks for a single stop together. The rich graphical displays let users visualize the work to be done and the labor required in each area of the warehouse.

PHOTOGRAPH:
Southern Glaser Wine & Spirits

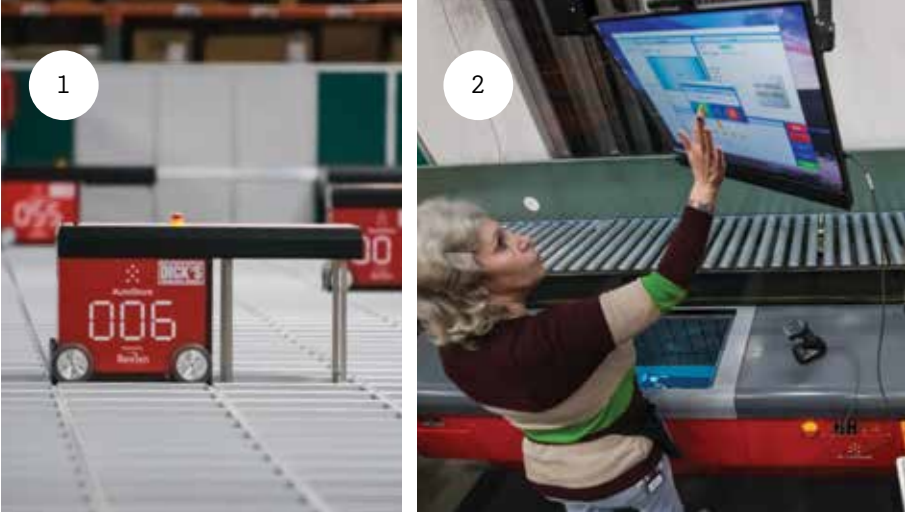


Exacta Touch

The Exacta Touch application integrates with goods-to-person technologies as well as with high velocity pick to light systems. This highly visual, touchscreen enabled application directs operators through picking, putaway and cycle count operations by providing visual representations of the system and operator actions. Exacta Touch reduces ramp-up time with its rich user interface that allows operators to seamlessly interact with goods-to-person technology.

PROCESS:

- 1. **DELIVER** – Goods-to-person bot delivers inventory bin
- 2. **PICK** – Pick product from inventory bin
- 3. **PLACE** – Place product into pick container
- 4. **CONFIRM** – Confirm using pick to light



Exacta Sentinel

Exacta Sentinel is a standalone conveyor routing software package for our clients to install, configure, and implement faster and easier than ever before. Standard functionality allows Sentinel to be offered at a lower price point with a shorter lead time than traditional WCS software. All systems will include a standard interface communication structure and visibility into the system through reporting or a web application.

PHOTOGRAPH:
Knipper



Software Support & Training

Bastian Solutions provides customers with essential support functions, including around-the-clock access to technical specialists and an online support portal for reporting, tracking and resolving issues. We offer comprehensive training to develop highly effective employees that can successfully leverage the Exacta Suite within the warehouse. Training is customer-specific and features end-user enablement using a surplus of proven teaching methods. Our technical trainers are involved throughout the entire project. This ensures that our trainers can provide full support and training at both the business process level and end-user operations level.

“
The Batian Solutions team were not only able to bring us subject matter experts but they brought people to the table who had been embedded in live operations who could bring real-world experience to the table.

- Rob Harris, General Manager
Brookvale International, Puma

PUMA

The new system achieves
same-day shipping on all ecommerce orders
and easily handles peak season volumes.

Research our case studies for yourself at
bastiansolutions.com

Case Study

PUMA, a leading sports apparel distributor, partnered with Bastian Solutions to select, design, and implement an AutoStore goods-to-person system to consolidate and improve order fulfillment operations at its third party logistics facility in Torrance, California. The facility, owned and operated by Brookvale, a third-party logistics provider, now handles up to 200 e-commerce lines per hour per operator and 700 wholesale units per hour per operator. This allows PUMA to easily meet same-day fulfillment and peak seasonal demands.

KEY TECHNOLOGIES

- In-depth engineering consulting study to maximize current and future operations
- AutoStore goods to person order picking system
 - 170 robots
 - 171,000 bin locations
- 16 AutoStore pick stations and six receiving stations with touch screen monitors
- Exacta warehouse execution system
- Put to light devices at picking stations
- Automatic labeling machines for empty shipping carton license plate labels
- In-line weigh check scale
- Print and apply labelers for shipping labels with an inline scale for manifesting
- 6,200 feet of Hytrol and Bastian Solutions Conveyor
- 2 autobagging machines for ecommerce orders
- Hytrol pivot wheel sortation conveyor
- 3 carton erectors

RESULTS

- AutoStore allowed PUMA to consolidate multiple distribution centers into one facility in Torrance, CA
- 30,000 SKUs are stored in the AutoStore system, including all e-commerce SKUs and retail SKUs
- Facility handles about 200 e-commerce lines per hour, per operator and 700 wholesale units/hour per operator. This is 2-3x the amount previously handled
- Achieves same-day shipping on all e-commerce orders and easily handles peak season volumes



Controls

Our team will get your control system operational quickly, allowing the benefit of improved operations ahead of your competition. From new to existing equipment and from small conveying systems to fully automated conveyor systems, let the expertise and experience of our engineers give you full control of your system. Our solutions include motion control, assembly, process control, material handling, furnace control, data collection and reporting.

PHOTOGRAPH: Field control box



HMI

We offer a Human Machine Interface (HMI) to keep you connected with your system like never before. Bastian Solutions HMIs are ideal for monitoring and controlling a conveyor system and are very user friendly. Multiple 3D screens provide a detailed view of how the system is operating, and color association for conveyor sections make the information easy to comprehend. We also offer HMI capability on phones or tablets for mobility within the facility.

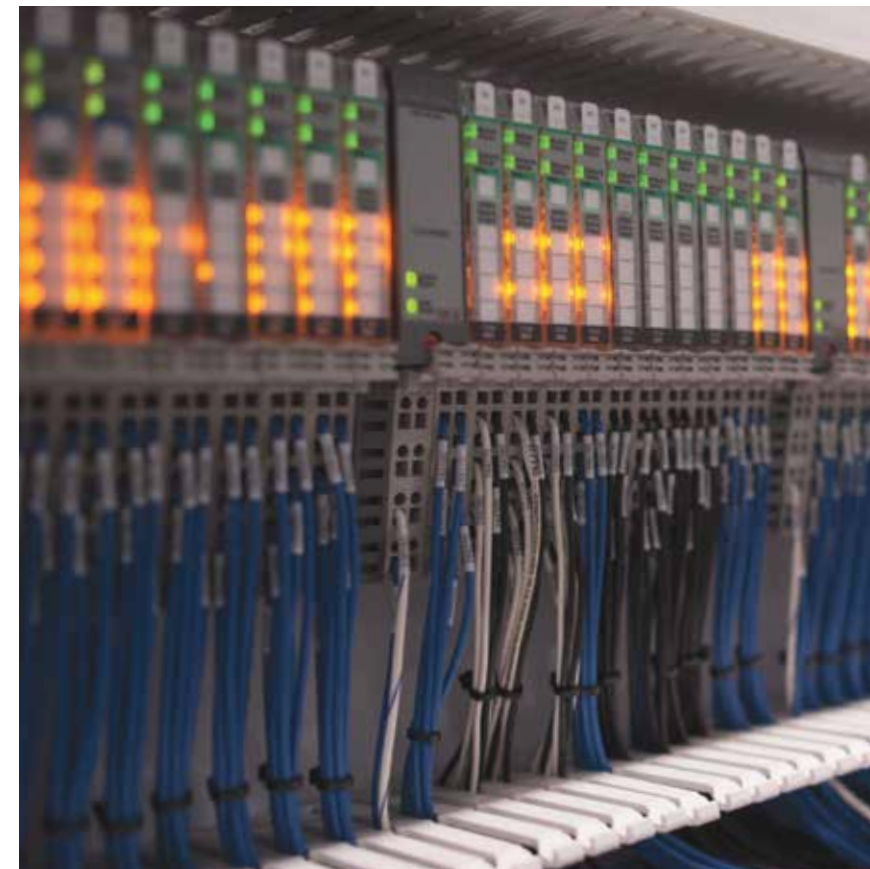
PHOTOGRAPH:
Control Station

Ready to take the next step?
Give us a call at 888-725-3046

Engineering System Design

Bastian Solutions' Controls team offers custom control system design and integration, along with full system service and support to give you peace of mind. We believe that it is very important for our customers to know the process in which we develop their solutions. By establishing and encouraging communication with our customers throughout the entire system design and implementation process, we are confident that our customer's desires and needs will be addressed and valued with the utmost care.

PHOTOGRAPH:
Controls for Perfect Pick System



Industrial Controls

We utilize both PLC and PC-based controls. We have a lot of experience with most major brands of PLCs including Allen Bradley and Siemens. We are a licensed Rockwell Machine Builder, which is a classification only a handful of controls integrators hold. We also program in what is referred to as "Open Controls Architecture", which means at the end of the project, you own all our PLC code complete with design comments. Most of our competitors' program in a closed architecture and force you to come back to them for future changes.

Panel Shop

Bastian Solutions' panel shop capabilities include panel design for custom products, in-house fabrication at low rates, testing and quality control before shipment, and installation capabilities if needed. Keeping our business in house and working directly with suppliers allows us to pass along a savings directly to the customer. Engineers and panel technicians work hand in hand from design through completion. Bastian Solutions also has the ability to UL(Underwriters Laboratories standard) list panels if needed. Our team can fabricate a panel from the customer's designs, develop a custom panel, or develop a system design based upon performance for the specifications or conceptual design of a project. We have the ability to work with the customer to either design or fabricate exactly what a product or system needs to make it operational.

Research our case studies for yourself at bastiansolutions.com



Customer Support Services

We offer many different services such as delivery and assembly of parts, maintenance and repairs, customer training and 24/7 system support. We guarantee to respond quickly to any inquiries that you have. Bastian Solutions also offers maintenance and service contracts, which are available monthly, quarterly, bi-annually and annually.





Technical Support

Support is offered for one full year following project implementation, including around the clock assistance, 24 hours a day, seven days a week, for mission critical operations. Our support team provides a primary, secondary and tertiary contact, all from a single toll free phone number, which is manned around the clock. These contacts are intimately familiar with your system and will provide immediate response if a problem occurs. One advantage of Bastian Solutions’ support program is that once engaged, support technicians will train system experts at your site to ensure the highest reliability and uptime. In an emergency, these system operators, certified by Bastian Solutions, will have already developed a relationship with support line engineers and technical support specialists. In our many years of experience, we have discovered that this relationship plays one of the most critical roles in quickly identifying and resolving system issues.



Controls



Robotics



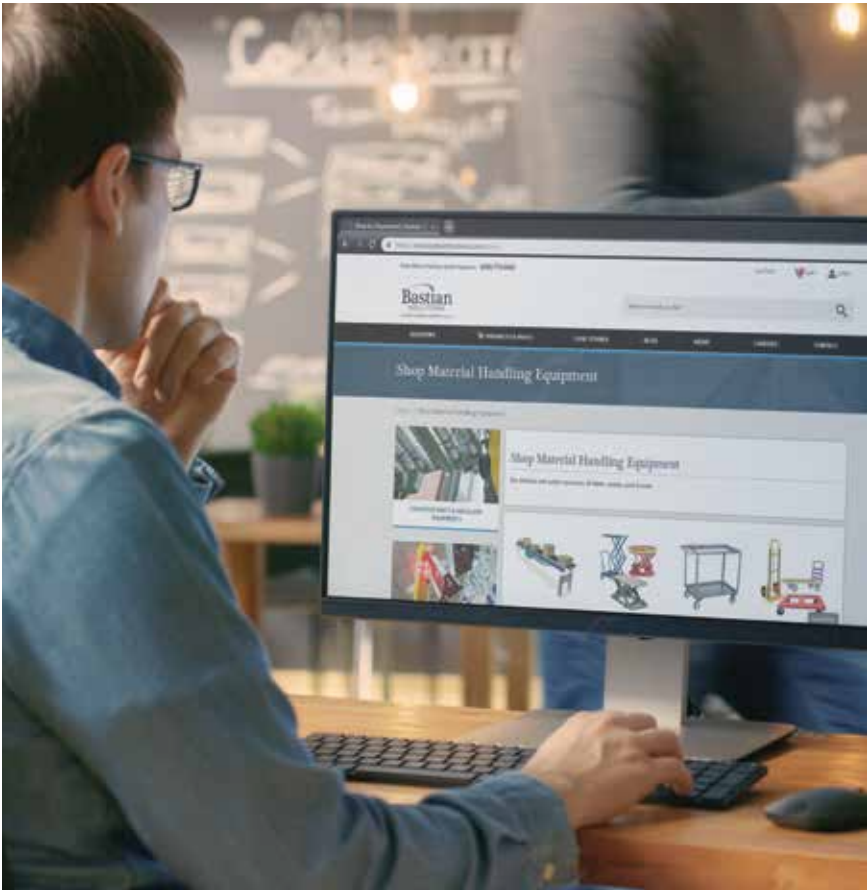
Software



Mechanical

Maintenance

We have expert technicians available from Toyota and Raymond Service Centers that can inspect each piece of equipment and proactively address those minor maintenance issues before they escalate into expensive and unplanned outages. There are over 6,000 skilled technicians that are experts in maintaining and servicing all forms of material handling equipment. Regardless of make or manufacturer, our preventative maintenance program provides support and around-the-clock assistance, 24 hours a day, seven days a week.



Parts

Keeping up with system maintenance can be easily done at any time through our customer portal. Quickly and easily find parts and accessories through a curated list of products designed for your system.

For general inquiries, we offer a large inventory of material handling products through our online store. Search for custom conveyor, lift tables, workstations, totes, safety equipment, parts and more!

We're engineering your competitive edge.

We are a trusted supply chain integration partner committed to providing our clients a competitive advantage by designing and delivering world-class distribution and production solutions.

Our team of experts are here to help. Contact us today.





a TOYOTA ADVANCED LOGISTICS company

Contact us to learn more and speak
with one of our experts today!

Phone 888.575.9992

info@bastiansolutions.com

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Bastian Solutions

20+ GLOBAL LOCATIONS



BASTIANSOLUTIONS.COM