

SERVICE FEATURE

# Revolutionizing Automated Warehousing: A Turnkey Approach to ASRS + Building Delivery

The desire for reduced labor costs, improved accuracy and supply chain safeguards is pushing distribution centers and manufacturing facilities forward into the golden age of advanced automation. Extensive data analysis, careful application to relevant business operations and facility integration is essential in order for automated systems to operate optimally.



## Optimizing E-Commerce Operations With Automation

As e-commerce sales continue to grow, the use of efficient order processing systems will also expand. Consumer expectations are high and many manufacturers and distribution centers are falling short.

Providing diverse product selection, accurate fulfillment and rapid delivery requires great agility. It is always a challenge, particularly when trying to manage antiquated manual fulfillment systems while the labor market is in flux. Increasingly, automated storage and retrieval systems (ASRS) are being chosen over manual systems to reduce warehouse and fulfillment center costs and increase efficiencies.

Warehouse automation technologies are highly customizable, are computer-controlled, and offer high-rate fulfillment solutions to optimize picking, packing and shipping operations. In the U.S., less than 5% of warehousing has been automated. However, cost efficiency and speed-to-market considerations are pushing businesses to embrace automation.

Benefits include:

- **Customizable rightsizing:** Warehouse automation is not a one-size-fits-all solution. To meet clients' requirements, these solutions can be configured to balance performance, flexibility, space and cost.
- **Supply chain stabilization:** Supply chain struggles can be mitigated with this solution that adeptly utilizes available space to manage the intricacies of storing product payloads.
- **Return on investment lift:** At a time when unprecedented operational threats are affecting companies, this solution helps boost ROI because of increased throughput and reduced labor costs.

## Rightsizing Solutions for Your Operation

Project delivery for automated warehousing and fulfillment centers is complex and requires a comprehensive approach to the application and implementation of these technologies.

The project team must understand clients' core business operations and future objectives. In addition, the team must be cognizant of the complex integration that must occur across automated equipment, operations, IT systems

and building systems all while managing the logistics of delivering large volumes of materials to the project site.

As part of the automated system development process, an experienced integrated solutions partner will focus on identifying fulfillment solutions that introduce optimal efficiencies and cost savings across an entire operation. Technology considerations are dictated by product specifications, order rates, minimum order quantities and operational processes, as well as facility constraints, packaging and storage requirements, labor factors, and more.

Burns & McDonnell works with clients to appropriately apply manual or automated solutions based on these factors, but ultimately operates through the lens of a thorough business case analysis.

Our team prioritizes operations/fulfillment above all else because that's what drives business returns for clients. The success of ASRS rack performance (foundations), space utilization, temperature control, project cost efficiency, speed of delivery and constructability is strongly dependent on a properly designed facility.

Burns & McDonnell works closely with automation partners to deliver highly optimized and coordinated facilities on expedited timelines. Our team's in-house architects, engineers and builders have extensive experience creating warehouse and fulfillment center design-build projects that utilize a range of automation and multitemperature storage solutions. Asking challenging, relevant questions throughout a project's life cycle is critical to designing and engineering automated systems that meet or exceed expectations, and lead to client success.

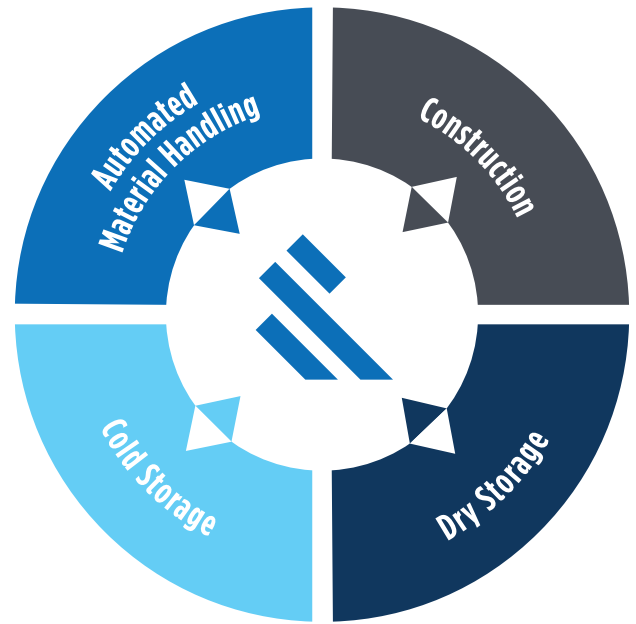


Figure 1: Logistics and E-Commerce Capabilities

### About Burns & McDonnell



Burns & McDonnell is a family of companies bringing together an unmatched team of engineers, construction professionals, architects, planners, technologists and scientists to design and build our critical infrastructure. With an integrated construction and design mindset, we offer full-service capabilities. Founded in 1898 and working from dozens of offices globally, Burns & McDonnell is 100% employee-owned. For more information, visit [burnsmcd.com](http://burnsmcd.com).

### Comprehensive Offerings

#### Solutions/Project Development

- Site selection/analysis
- Planning/zoning/entitlements consulting
- Site/geotechnical investigation
- Technology and automation evaluation
- Foundation selection for automated systems
- Facility layout and envelope type
- Building systems selection

#### Planning and Detailed Design

- Civil/site development

- Automation/material handling equipment layout
- Ergonomics/operator cycle time analysis
- WES/WCS/integration scope definition/workshops
- Rack supported building envelope design
- Architectural/structural, HVAC, plumbing, electrical and data systems design
- Mezzanine design (and integration with building columns)
- Thermal/vapor control and refrigeration engineering

- Dry ice systems planning (on demand)
- Dock equipment selection
- Value engineering
- Permitting
- Supplier selection

#### Construction Services

- Site/building construction
- Engineering coordination
- Procurement
- System installation
- Commissioning
- Startup readiness
- Training