

Lighting Manufacturer Expands Production Capacity and Optimizes Manufacturing Processes



Client

Rich Brilliant Willing (RBW)

Industry

Custom-lighting manufacture

Objective

Provide technology, process, and work-flow recommendations to support RBW's strategic growth plan.

Outcome

Through COE-ASM's support, RBW transformed their manufacturing processes and expanded production capacity to meet growing customer demands.

Company

Rich Brilliant Willing (RBW) was established in New York City in 2007 as an experimental design studio and international product-design consultant. Since then, the company has grown substantially, producing lighting solutions that have been installed all over the world, from the renowned Noma restaurant in Copenhagen to Fortune 500 company offices across the United States. RBW is also a certified B Corporation, a purpose-driven company that upholds the highest standards in social and environmental accountability. RBW's product offerings contain both custom-finished and configured lighting systems, which demands a high-product-mix and moderate-to-low-volume manufacturing environment. The company's operations include component assembly, system configuration, testing and inspection, and fulfillment.

"The COE-ASM team, led by Gerry Hurley, was a valuable partner in our team's successful efforts to completely relocate our production operations and consolidate our warehouse inventory under one roof. Their collaborative approach to production workflow, workstation design, and materials storage served as the guiding light to navigating the tremendous challenge of establishing RBW's new factory of the future in Kingston, New York."

Dave Staehle, former Change Manager at RBW

Challenge

RBW's unique offering and customer-centric model helped the manufacturer grow over the past decade. However, this growth came with a set of intersecting challenges: Its manufacturing space in Brooklyn, New York, offered limited opportunity for expansion; its product-manufacturing value chain needed restructuring; and both information-exchange and product-flow needed optimization.

In light of these challenges, RBW planned to shift its manufacturing and fulfillment operations to a larger facility, what its leadership called a "factory of the future." A site was found in Kingston, New York, that was ten times larger than the Brooklyn location. The move to the larger facility presented an opportunity for RBW's leadership to rethink how the company's digital infrastructure would support anticipated future growth. RBW's legacy software system had evolved organically over the course of ten years, inadvertently creating many data blind spots that complicated production and fulfillment across multiple off-site warehouses.

The new location would also offer a chance to maximize the efficiency of RBW's supply-chain, shop-floor, and warehouse operations. Short lead-time is a critical customer expectation within the lighting industry, which presents considerable logistical challenges driven by component supply, warehouse queuing, and production scheduling.

Altogether, RBW's leadership agreed that a larger manufacturing facility, implementation of more advanced Industry 4.0 capabilities, and improved work-flow operations would create a foundation for long-term future growth. With this in mind, RBW's leadership turned to the Center of Excellence in Advanced and Sustainable Manufacturing (COE-ASM) at Rochester Institute of Technology (RIT) for help in planning for their manufacturing transition.

Approach

COE-ASM first worked with RBW to evaluate opportunities to advance their manufacturing and enterprise processes through a digital-maturity assessment. To do this, COE-ASM first assessed RBW's information and digital infrastructure according to multiple dimensions of Industry 4.0. Then an objective baseline score was developed for each of these to determine Industry 4.0 maturity levels. Finally, COE-ASM provided RBW with prioritized recommendations for information-flow and business-process improvements along with newer technologies that could support an increased workload.

Thanks to what they learned through COE-ASM's assessment, RBW's leadership was able to create an Industry 4.0 future-state vision and implementation roadmap. This served to link the physical and workflow transformations made as part of the site relocation with the appropriate digital tools to maximize overall productivity and competitiveness. It also underpinned communication to key stakeholders—such as those in order administration, assembly, sales, finance and supply—about Industry 4.0 digital tools and capabilities.

After the digital maturity assessment was completed, COE-ASM provided assistance in planning for expanded manufacturing operations. RBW's transition plan called for a much larger space to support diverse growth strategies, including more component fabrication. The Kingston facility, which served as a call center prior to RBW's arrival, had to undergo significant renovations to prepare production, warehouse, office, and collaboration spaces. In parallel to the facility preparations, COE-ASM provided manufacturing engineering expertise to plan and design expanded production, fulfillment, and warehouse operations, with a focus on efficiency and scalability.

With increased production and fulfillment levels in mind, RBW sought to significantly grow the size and competencies of its staff. RBW worked closely with COE-ASM to optimize inventory management and control, since leadership planned to bring most of its warehousing onsite and move away from relying on third-party services.

Deliverables

COE-ASM performed an Industry 4.0 assessment based on 16 operational and organizational criteria. The assessment prioritizes areas for improvement based on key performance indicators (KPI) and company financials. The assessment showed that automation through robotics was not a best-fit for RBW. Instead, COE-ASM suggested that RBW would benefit more by automating its inspection processes and improving information flow between the shop floor and enterprise software systems. This included tighter integration between RBW's manufacturing execution system (MES) and its enterprise resource planning (ERP) system. The identified opportunities support both reduced cost and quicker turn-around to reduce lead time. The assessment ended with development of a digital-advancement roadmap for RBW's "factory of the future," which linked into the company's existing strategic planning. This initial project provided a good starting point for the broader changes associated with the transition to the new and larger facility.

In support of the relocation of RBW's warehouse, fulfillment, and manufacturing activities, COE-ASM provided manufacturing-engineering, facilities-planning, lean-manufacturing, and ergonomic-design assistance. This included concept designs for flexible production work stations (assembly, inspection, and product packaging) as well as iterative floor-plan designs for materials storage, production, work-in-process buffers, and receiving and shipping dock areas.

Over a period of nine months, periodic site visits were conducted at both the legacy Brooklyn facility and the Kingston site. Each visit enabled the team to take a deep dive into RBW's manufacturing operations and analyze the material and information flows within the production and fulfillment processes. Detailed information was collected on current work station layouts and designs, material-handling strategies and technologies, and manufacturing-process flows.

Concept designs for flexible and ergonomically sound work stations and material-handling systems were created and critiqued as part of a collaborative and iterative design approach. Several floor-planning workshops were held to develop the vision for the space in light of the overall material flow, from the receipt of incoming goods through to the shipment of finished goods. In support of this vision, detailed facility floor plan concepts were generated for warehouse, production, and inspection operations.

Results

COE-ASM's expertise supported RBW's efforts to build a solid foundation for future growth. Assistance began with the initial Industry 4.0 assessment, followed by manufacturing engineering support for RBW's expanded manufacturing operations in Kingston. COE-ASM helped RBW develop a more intentional operational philosophy to inform decisions about technology, process, and work-flow across the business.

Notable outcomes of COE-ASM's work with RBW include the following:

- Strategic Industry 4.0 approach: More focus is given to high-priority, feasible digitalization projects that were identified through COE-ASM's Industry 4.0 assessment.
- Increased digital expertise of team: RBW's leadership gained a better understanding of gaps in its organizational structure—especially in light of data integration and ERP—and has hired new staff to support data-driven operations.
- Successful relocation to larger facility: The shop-floor layout design, team-capacity building, process optimization, inventory consolidation, and automation integration COE-ASM cultivated were critical to realizing RBW's vision for a “factory of the future”.
- Improved production environment: COE-ASM led development of a new series of work stations to optimize assembly and test operations, emphasizing flexibility, ergonomics, material flow, workplace organization, and visual controls. Waste associated with movement of material was minimized while production and warehouse capacity were more than doubled, with future expansion planned into the facility layout.



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