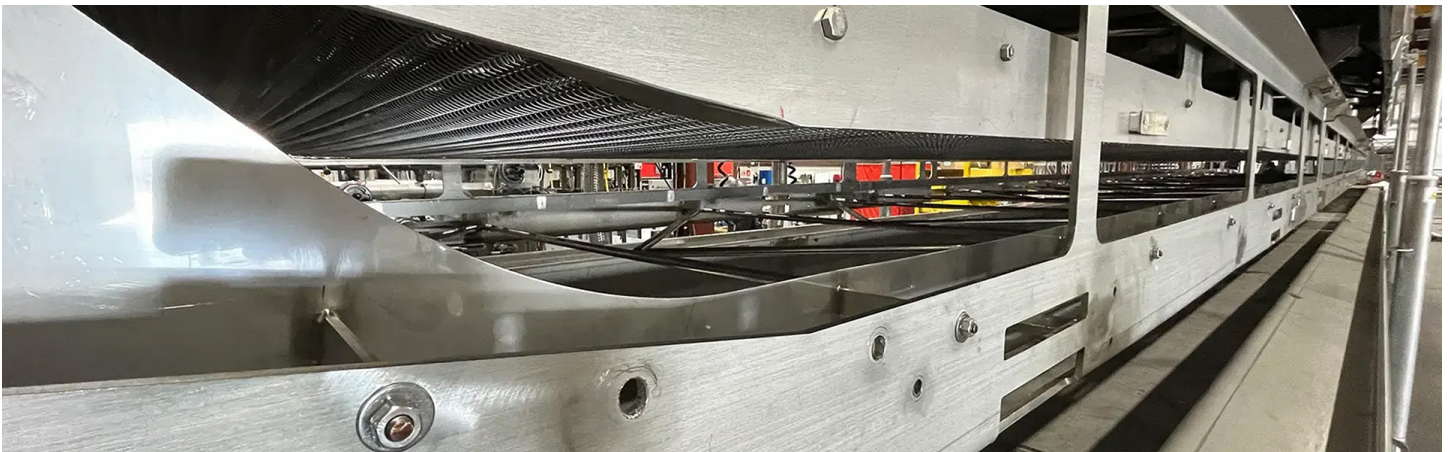


CASE STUDY

Focused Shutdowns Drive Operational Efficiency for a Major U.S. Food Manufacturer

A large food manufacturer needed to increase production capacity, improve operational resilience and meet surging market demand — all while keeping its facility fully operational. The challenge: Upgrade critical production and packaging lines to extend run-times, eliminate bottlenecks and maintain stringent food safety standards.



Burns & McDonnell was selected to lead front-end planning, early procurement and execution of a comprehensive facility overhaul. Through a series of focused shutdowns, our team delivered design-build solution, providing significant performance gains without disrupting ongoing production or compromising safety.

Challenge

To remain competitive in the manufacturing industry, our client needed to increase the time between sanitation cycles and eliminate bottlenecks on two primary production lines to boost throughput. Upgrading production and packaging systems to meet these objectives would demand significant operational changes and introduce a range of complex challenges.

Project Stats

Client

Confidential

Location

Midwest, U.S.

200K+

labor hours

8

focused shutdowns

0

safety recordables

The active plant setting would heighten the risk of contamination and worker safety incidents. Some parts of the facility would be temporarily exposed to outdoor air, which would require effective isolation, air handling solutions and fast-paced construction solutions to maintain controlled conditions. Safety also would need to be managed carefully during overhead crane lifts, which would necessitate thorough clearance of work areas for safe equipment placement.

Additionally, the financial stakes for such improvements would be high, making efficient management of downtime a top priority for our team and the client.

Solution

Burns & McDonnell implemented a phased approach using focused shutdowns, with outages ranging from three days to three weeks. These planned outages allowed the team to complete intensive work in short, defined time frames while minimizing disruption to ongoing, active operations.

First off, the team identified an adjacent area for construction of the first new production line. Once the new line was installed — all while the existing equipment kept running — the new line was commissioned and put into production. This then allowed for removal of legacy equipment, to make way for the second new production line — work that also was completed while the second legacy line remained in production. Following installation of the second new system, a brief, carefully planned shutdown enabled the integration and activation of this new production line. With both upgrades complete and operational, the remaining obsolete equipment was removed, providing a seamless transition to enhanced production capabilities. Once both new lines were up and running, the remainder of the legacy equipment then could be removed.

Modern conveyor and packaging systems were also integrated to further enhance efficiency. Through early and detailed planning, procurement timelines were carefully synchronized with construction activities. Given the extended lead times for certain systems, proactive coordination was essential to prevent delays and see through a smooth, uninterrupted upgrade process. The upgrades encompassed renovation of approximately 12 packaging distribution lines and installation of a dozen new process equipment systems for each production line — with a total of about 100 pieces of

processing and packaging equipment across both production lines — to significantly enhance both operational capacity and efficiency.

Additionally, a major environmental retrofit converted a standard process space into a refrigerated environment, maintaining precise conditions at 40° F and 20% relative humidity. This transformation was critical in extending production windows between sanitation cycles.

To support temperature control improvements, the team installed five new critical air processing rooftop units, each weighing approximately 21 tons, along with 90 tons of rooftop steel and 12-ton heat exchangers. Each of the critical air units arrived in three separate pieces. The pieces were then craned into place and then connected once they were placed on the roof. These units, along with the heat exchangers and extensive steel infrastructure (180 tons overall), were integral to achieving the controlled process environment and providing heat to the production equipment. The team also conducted equipment inspections and readiness reviews before each shutdown to see that all systems met the required specifications.

Risk mitigation measures included physical barriers to control movement within the facility, carefully designated entry and exit paths for personnel and materials, maintaining negative air pressure within the construction zones to manage dust and fume control and constant inspections of barriers and contaminant control to maintain product quality and safety. At peak, there were more than 120 personnel onsite during the day shift and around 80 during the night shift.

Results

The project delivered measurable improvements while maintaining safe and uninterrupted plant operations. Pre-shutdown activities helped streamline work during the limited shutdown windows. This careful planning allowed for supported, smooth equipment integration and improvements, which upheld sanitation standards necessary for safe food production.

The team logged more than 200,000 labor-hours during the most intensive phases, working in round-the-clock shifts with more than 40 personnel per shift. Even with our team operating in an active manufacturing environment, all shutdowns were executed with minimal downtime and no major disruptions to operations.

The project recorded zero safety incidents. Through close coordination and shared problem-solving, our team was able to operate in sync with our client, strengthening trust and collaboration.

The project successfully met our client’s goals. The production facility achieved longer runtimes between sanitation cycles and improved throughput by addressing key mechanical and process constraints.

About Burns & McDonnell



Burns & McDonnell is a family of companies bringing together an unmatched team of engineers, construction and craft professionals, architects, and more 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**.

