

Packaging Projects

Highlighted Experience

Kelly Charles

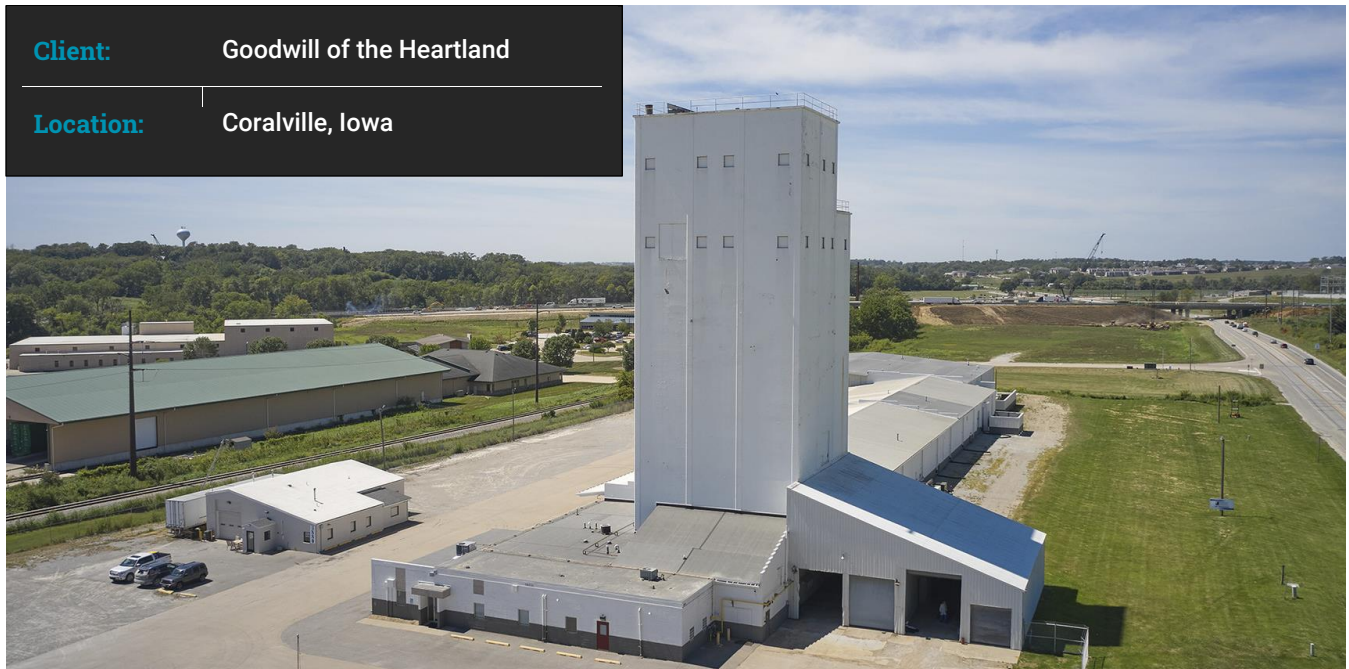
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Turnkey Vegetable Oil Packaging Plant



After landing a sizable long-term contract with the USDA to package vegetable oil, Goodwill needed to launch a manufacturing plant near Coralville, Iowa. The catch: Goodwill was new to the food industry and needed a plant with specific design considerations to suit a labor force of people with significant disabilities (AbilityOne program). Working hand-in-hand with Goodwill's executive team, we provided a full-service turnkey package to help Goodwill convert a shuttered animal feed mill into a fully-functional oil packaging plant.

ACCOMPLISHMENTS

- » Job creation through smart design: While the industry standard is to go fully automated, Goodwill wanted to engineer jobs back into the line. The new semi-automated filling line is designed with considerations for both ergonomics and operator safety.
- » Equipment procurement: Our experience and network of vendors helped Goodwill find the right balance of cost and equipment performance – and we were able to get it ordered, purchased and delivered within their schedule.

- » Subcontractor coordination: In a hot building economy, finding a quality contractor for a relatively small project can be tough. Our relationships with local builders helped connect Goodwill with the right people to get the job done and ensure that they did it well.
- » Broadened Goodwill's team: Goodwill took advantage of our industry relationships and our design and procurement experience. They stayed focused on their mission of supporting the community while we took care of getting the plant built.

FEATURES

- » Start-to-finish production line (bulk oil receiving from tanker trucks, batch tanks with vitamin blending/addition, can filling, check weighing, labeling, palletizing, stretch wrapping and case coding)
- » 53,600 square-foot renovated building
- » Two 30,000 gallon oil silos
- » Semi-automated system
- » Creates 40+ well-paying jobs for the community, including 20+ for people with significant disabilities
- » Production rate of 10,000-14,000 metric tons of oil annually
- » Comprehensive design and project management/administration (architecture, civil, structural, process, packaging, mechanical, electrical, controls, scheduling, procurement, project/program management)

SERVICES

- » Comprehensive, multidiscipline design services: architecture, structural engineering, civil engineering, process engineering, packaging engineering, mechanical engineering, electrical engineering, controls engineering, environmental services
- » Full, turnkey delivery including equipment purchases, contractor management, and schedule and procurement services/development
- » Organizational support services including consulting for key hires and project representation in front of Goodwill's board and key stakeholders

Consolidation of Dry Pouched Meal Production Lines



Our client made a business decision to shut down one facility and move process lines to other existing plants. The objective was to cut costs and labor by consolidating operations. From beginning to end, POWER engineered, designed, and managed this \$20 million project to relocate multiple pouched dry-meal process lines to two separate plants, each in different states. Our scope included decommissioning the plant, moving and procuring equipment, and overseeing training and start-up of the process lines at their destination facilities.

ACCOMPLISHMENTS

- » Timely delivery on a fast-track schedule: We met the client’s aggressive schedule and expectations by completing this project within six months – all tasks were delivered on time and within budget. Our team’s comprehensive abilities, in-factory experience, and efficient work ethic allowed us to safely decommission a plant and simultaneously engineer and startup operations at two other sites.

- » Complex logistical coordination: Two new flex lines were installed at one destination facility using existing and purchased equipment; two additional lines comprised of relocated and new equipment were moved to the other facility. Four of the lines were relocated whole. POWER was also responsible for developing equipment specifications and layout options, and testing for a new palletizer, infeed conveyors, cheese pouch bandoliers, and cheese decoupling. In all, 13 lines were installed across three facilities.
- » Continuous production: Our team installed the process lines without interruption or impacting production output. Both destination facilities continuously ran operations at full capacity throughout the project. Flexibility and up-time for three of the production lines actually increased because our team changed the in-line flavor packet production to insertion of offline-produced packets.
- » Procurement services: The client engaged our team in the purchase process of manufacturing equipment. POWER's procurement methods benefited this project because of our sophisticated tracking equipment and our ability to generate orders faster than the client could do so alone. The result was a flexible purchasing process and more efficient means of getting the equipment on site.

FEATURES

- » Four dry pouched meal production lines were moved, and nine new lines installed.
- » Existing equipment was taken out of the shutdown plant and relocated across several states. New equipment was procured by coordinating with vendors.
- » The process lines integrated automatic and manual cartoners, palletizers, conveyors, and casepacking and stretch wrapping for pouched meals comprised of cheese powder, flavor packets, dried pasta, vegetables, and other dry ingredients.

SERVICES

- » Structural, mechanical, process, packaging, electrical, and controls engineering and design
- » Project management and construction administration
- » Procurement, scheduling, and vendor coordination

Frozen Pot Pie Line Expansion



Facing increased market demand and wanting to diversify production across its facilities, our client decided to expand its frozen pot pie line capabilities to accommodate multiple product sizes. To accomplish this, a \$65 million building expansion was determined necessary to accommodate the new line.

The new production line covers everything from ingredient receiving to dough mixing, sauce creation, protein dispensers and, finally, cartoning, packaging, and palletizing. With POWER’s collaboration and design expertise at the fore, the line now produces 240 pot pies per minute to meet production demands.

ACCOMPLISHMENTS

- » Incorporated cleanroom design into sauce kitchen.
- » Coordinated with, and integrated equipment from, multiple international and domestic manufacturers.
- » Led construction activities that required coordination with equipment installation contractors, general contractor, refrigeration contractors, and HVAC contractors to achieve a smooth installation.

- » Planned and executed critical lift safety operations through coordination with the plant, construction, and equipment personnel. As lifts could only be operated during production shutdowns every two weeks, it was essential that the operations were communicated, personnel were out of the way, and the challenging production area was successfully navigated.
- » Packaging design included automated accumulation to minimize downtime and product damage, as well as providing for an auto adjustable guide rail system to minimize changeover time to under seven (7) minutes.
- » Master planning, reporting, and tight change management led to a successful construction phase.

PROJECT FEATURES

- » 38,000-square-foot insulated metal wall (IMP) building addition
- » Full process and packaging integration
- » Fast-track preliminary engineering
- » Design-bid-build approach for the design and construction phases

SERVICES

- » Process, packaging, mechanical, electrical, controls and structural engineering, construction administration, project management, procurement support, vendor coordination, and master scheduling.
- » Equipment issue for bid (IFB) and issue for construction (IFC) packages.
- » Frontend planning efforts to show cost and return on investment helped the client win project approval from corporate sponsors.
- » Incorporated lessons learned from assessing an existing line to develop a more streamlined design capable of higher production.
- » Assisted with equipment procurement and installation bids, detailed bid packages, and evaluations and recommendations on whom to place orders with.
- » Provided commissioning and startup support.

Additional Packaging Experience

Master Plan for Greenfield Cookie Plant Expansion

Client: Leading Artisan Cookie Producer

Location: Western US

After outgrowing two cookie production facilities, our client needed a concept for a new or expanded plant capable of mixing, baking, enrobing, wrapping, and packaging higher volumes of their iconic pineapple-shaped shortbread cookies. POWER delivered a master plan that included a proposed site, conceptual design, and equipment layout for a fully automated 68,180 square foot cookie production and packaging plant, including 17,900 square feet for future growth. Because the cookies are uniquely shaped and individually wrapped, the conceptual design for automating this process included equipment recommendations and flow layouts that could reorient the cookie to match what the automatic wrapper infeed required. Our team also helped meet our client's production goal of 500 cookies-per-minute, despite the 310 cookies-per-minute capacity of a recently purchased enrober; we developed two conceptual process options. The master plan concept included a retail store, viewing areas for customers to watch cookies being dipped in chocolate and packaged, and large windows along the production lines where tours and operation management could easily look out over the plant floor.



With artisan shapes, there's no "one-size-fits-all" approach, making custom orientation patterns a must. We can help make equipment recommendations and flow layouts to meet your packaging needs.

Processed Cheese-Slice Packaging

Client: Leading Food Processor

Location: Midwestern US

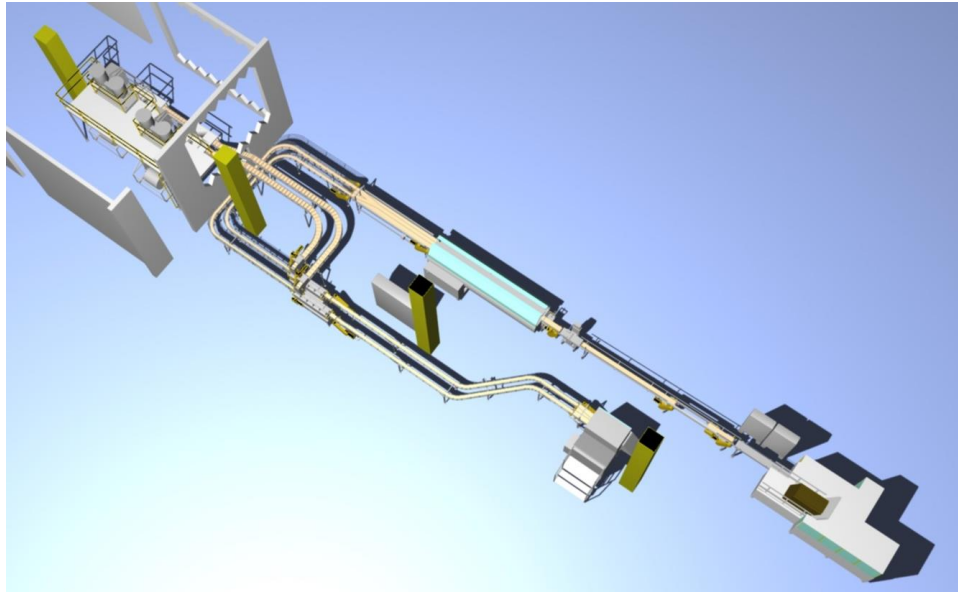
POWER was retained by this leading food processor to relocate and install existing and new processing and packaging equipment to support the installation of four new hot-pack packaging lines for individually wrapped cheese slices. This involved infrastructure changes, the removal and relocation of existing equipment, and the installation of new equipment.

POWER performed the engineering required to prepare the drawings and specifications for bid packages that detailed the work required for equipment installation, including mechanical, electrical, and structural scopes of work. The engineering support included initial evaluation and concept validation to determine the number and location of new lines. This initial planning phase was followed with preliminary engineering support to further define the project scope, schedule, and budget. Upon full project approval, POWER completed all layouts, developed multiple bid packages, and supported the installation and start-up. POWER provided a simulation model to determine some of the required accumulations and packaging system design parameters to ensure design efficiency. Though the client's scope continued to change after project approval, POWER's team of experienced engineers was able to remain flexible and responsive to the changes so that there was no impact on the project schedule, and they were successful in designing a packaging room that wraps nearly 10,000 slices of cheese per minute.

POWER's process engineering scope included receiving the raw liquid and dry ingredients, blending and mixing them in accordance with specific product recipes, and cooking the liquid cheese before delivering it to the hot-pack fillers. Packaging engineering scope included installation of the hot-pack fillers, overwrappers, case packers, case conveyor system, palletizers, and stretchwrapper.



Our packaging engineering expertise includes sizing, specifications, general arrangements and design for various kinds of products.



POWER's services include packaging plant surveys, conceptual design, preliminary design, final engineering, procurement expertise, and installation and startup support.

Cereal Plant Relocation and Integration

Client: Leading Food Processor

Location: Midwestern US

POWER provided consolidation and integration services through a multi-faceted plant relocation project for a major food manufacturer of consumer brands. The new facility was designed to repackage product from distributors for re-sale. Functioning as a specialty packager, the facility handles bulk-sized packaging and single-serving size cereal boxes for the hotel, restaurant and airline industries.

Packaging/Process Controls

POWER provided an electrical and controls analysis and designed case conveying and palletizing for the new facility. POWER was responsible for rerouting the product distribution system to fit existing building constraints and new code requirements. POWER performed design and installation of a complete palletizing system that detects varying package sizes and changes palletizing patterns. The palletizing system provides an interface between the Warehouse Inventory Management System (WIMS) and production (where a SKU is assigned as pallets are produced).

Material Handling

POWER's design of the automated palletizing system is capable of manipulating production from ten packaging lines with varying case sizes. POWER developed a zero-back pressure, zone lived roller conveyor. The system analyzes the upstream line production and prioritizes which pallet to build. The ten accumulation conveyors merge to a common belt and are sent to a high-speed unitizer. Completed pallet

cubes are stretch wrapped and conveyed to two pallet pick conveyors for lift truck picking.

Aseptic Juice Drinks and Hot Fill Fruit Pouches, Building Renovation with Process and Packaging Line Design

Client: Aseptic Food Processor

Location: Southern US

We assisted with the installation of a new, more efficient aseptic food line in an existing facility. POWER assisted with research, evaluating and choosing the best option for packaging downstream from the filler through palletizing, as well as engineering support for the process and infrastructure portions of the project. Project scope included new equipment installation, existing warehouse renovation, a building addition, and necessary utility and facility upgrades. POWER completed front-end engineering; developed P&ID drawings and equipment layouts, created an overall building general arrangement, conducted a utility study, and identified the controls, power and facility modifications required to support the new production line. POWER developed six Engineer, Procure, and Construct (EPC) bid packages that encompassed the entire project scope for our client to solicit bids from selected vendors and contractors.

Challenges included identifying the process and facility requirements for producing new products on this line that were not currently produced on any of their existing aseptic lines, finding a packaging solution that would result in increased operating efficiencies over their current production lines, and clearly delineating between the six different EPC bid packages that would be required to complete the project. To resolve these issues, POWER conducted a thorough site investigation, including interviews with the plant's team members to identify performance expectations and to review lessons learned from previous installations.

We developed packaging layouts that included accumulation equipment our client had not previously considered. Additionally, we performed a packaging line simulation for proof of the efficiency improvements. The process area layout we developed included installation of separate rooms and HVAC systems to provide the required sanitation separation. Finally, we developed a bid scope format that clearly delineated the six EPC bid packages.

Additional Packaging Experience

Client: Project: Location:	Penford Foods Spray Dryer and Packaging System Addition Richland, Washington	<ul style="list-style-type: none">» 1,500 pounds of finished starch product per hour» Pneumatic conveyor system to detect pressure changes and prevent explosions» Palletizing system for 50-pound bags» Comprehensive design, project management, and contractor coordination
Client: Project: Location:	Leading Food Producer Ice Cream Facility Conveying, Wrapping, Packaging Optimization Northeastern US	<ul style="list-style-type: none">» On-site evaluation of packaging systems and conveyor controls» Provided affordable suggestions to modify existing equipment» Production lines for three kinds of ice cream products
Client: Project: Location:	Leading Food Processor Installation and Startup of Two New Deli Sliced Lunch Meat Lines Midwestern US	<ul style="list-style-type: none">» Multidisciplinary design for two new product lines» Product output exceed 100% full production within one week of startup» PLC/HMI programming and commissioning and startup support» Procurement and bid package services
Client: Project: Location:	The Haskell Company Hill's Science Diet Preliminary Engineering Topeka, Kansas	<ul style="list-style-type: none">» Plan and budget for high-speed canning line» Process flow diagrams, equipment specifications, and bid documents» Conveyance options to address space constraints» Sanitary line with improved automation
Client: Project: Location:	Conceptual and Detailed Design for New Rice Packaging Line Leading Food Processor Western US	<ul style="list-style-type: none">» Detailed layout documents» Factory Acceptance Test (FAT) documents for each piece of equipment» Overall controls system integration

Client: Project: Location:	Confectionary Coatings Packaging Solution Clasen Quality Coatings Watertown, Wisconsin	<ul style="list-style-type: none"> » Master plan and budget for three new packaging lines » Preliminary engineering, process flows, and general arrangement design » Sanitary zoning of production area » One process line feeds two packaging lines
Client: Project: Location:	Existing Gravy Packaging Simulation Study Leading Food Processor Midwestern US	<ul style="list-style-type: none"> » Simulation from filler to palletizer, including case erection and transportation » Tested feasibility of new capper and two scenarios for labeler » Recommendations for new capper purchase
Client: Project: Location:	Packaging Improvements Teeny Foods Portland, Oregon	<ul style="list-style-type: none"> » Master plan for baked goods production line » Layouts and budgets to reduce the change over time of the sheeting and packaging equipment » Automatic stacking and bagging for pita bread » Manual and automatic loading of the flow wrappers » New, more efficient hand-packing system
Client: Project: Location:	Surimi Seafood Packaging Line Automation Trans-Ocean Products Salem, Oregon	<ul style="list-style-type: none"> » Automated packaging system to load crab sticks into horizontal thermal former » Minimized operator assistance from cutter to thermal former » Capable of full wash down » Accepts product added back by hand
Client: Project: Location:	Malt Bagging Conceptual Engineering Leading Ingredient Producer Canada	<ul style="list-style-type: none"> » Conceptual and preliminary engineering » Power distribution of new electrical feed and transformer » Mass balance calculations for bulk handling equipment » Program management for warehouse product inventory/personnel » Provided capital estimate for equipment, installation, and construction