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Chelten House Heads West to Meet Market Demand

Locating a new facility in Las Vegas had excellent odds, including cutting transportation costs and finding a committed workforce.

► Wayne Labs, *Senior Technical Editor*

► Bottles pass by on the production line at Chelton House Products' new facility. Source: Gray Construction.

Chelten House Products is a fourth-generation, family-owned business that has provided great-tasting, high-end pasta sauce and salsa products for food retailers for more than 40 years. Today, Chelten House is a leading producer of private-label organic and all-natural foods for the US retail industry; it is SQF Level III certified. The processor's original facility in Bridgeport, NJ has had a lot of additions over the years to keep up with rapidly increasing market demands.

But one East Coast facility can only do so much, and the processor realized it was time to expand. So, why not build the new plant on the West Coast where there was already a huge demand for its products and a good supply of relatively local ingredients?

Gamble on pays off

Chelten House looked at several West Coast properties and settled on a lot just outside of Las Vegas. With Gray Construction as its design-build firm, it built a 91,085-sq.-ft. plant on Coleman Street, just a



► This end view of the kitchen shows cooking kettles with piping and plenty of room for moving around.

Source: Gray Construction.

few miles north of the Las Vegas strip. Logistically, the new plant positions Chelten House in close proximity to its product ingredients—especially California organically grown and processed tomatoes—and a large customer base on the West Coast. This has resulted in a tremendous cost savings, both on cross-country ingredient freight charges and product shipping costs to West Coast customers.

Officially opened in March 2013, the fully automated Las Vegas facility has improved Chelten House's lead times and allowed the processor to better serve existing and potential customers across the country. The added capacity of the plant also allows Chelten House to plan for future growth.

North Las Vegas has a very stringent and thorough construction permitting process. Chelten House, Gray Construction, M.G. Newell (the process contractor) and all the subcontractors worked in unison to expedite the process for acquiring site, building and systems permits. As a result, the project was designed, permitted, constructed and commissioned within nine months of its being awarded to Gray Construction.

Scaling up from NJ in less space

One of the biggest differences between Chelten House's New Jersey plant and the Las Vegas facility is the design of the process flow. The New Jersey plant has grown from 35,000 to 215,000 sq. ft. in the last 10 years, requiring the processor to pack production lines into the existing space to make it work.

In Las Vegas, everything has been planned and designed to a tee, beginning with incoming goods.

"We source vegetables in a variety of forms—IQF, fresh, dehydrated, etc.," says Jason Dabrow, Chelten House director of operations. "Quality assurance inspects the incoming materials to verify all the specifications meet our standards. Once approved, they are moved into their designated storage space including a large cooler/freezer and ambient racking." Having a location near California is a big deal, especially when the shipping of 50 million pounds of tomatoes can be routed to Las Vegas instead of South Jersey, according to Dabrow.

With almost 91,085 sq. ft. of space available in the Las Vegas facility, the processor has not only been able to improve upon production line design, it has also planned for future growth. In fact, the site is designed for building expansion to the east for an additional 40,000 sq. ft. of warehouse space, says David Hird, Gray project manager.

"The Las Vegas facility was designed with the intent of expanding production to four independent kitchen and packaging lines," says Hird. It was laid out in a manner that allows product to flow systematically from one end of the facility to the other. In addition, the facility is designed and built to maximize employee safety and the efficiency of the people, product and traffic flow, he adds.

POWER Engineers consulted with Chelten House to come up with the most efficient material flow for its current production lines, as well as a design for when the plant operates at full capacity. Currently, according to Hird, there is one line up and running with another under construction.

The Las Vegas plant's lines are more automated than those in New Jersey. This, combined with upgrades to equipment, has resulted in a 25 percent increase in line efficiency at the plant. In Las Vegas, a fully automated A-B-C Packaging decasing system removes incoming empty glassware from the cases; a Standard-Knapp case packing system for finished product glassware repackages the filled and labeled products into the cartons the glassware arrived in. In addition, the filler and labeler were upgraded in the Las Vegas plant to accommodate higher bottle speeds.

Looking at the processing side of the plant, Chelten House increased the number of kettles in its first kitchen by 25 percent for additional cooking capacity. However, Dabrow says the company prefers cooking in the smaller kettles to keep product quality high. The use of smaller kettles also ensures products made at the Las Vegas facility are consistent with those made in New Jersey. All the kettles are supplied by Lee Industries.



► **Bottled and capped products enter the cooling tunnel.** Source: Gray Construction.

But there's more to producing quality sauces than the number of kettles. "The sauces are made in kettles using an automated batching process driven by Wonderware software," explains Dabrow. The system communicates with Rockwell Allen-Bradley PLCs, whose I/Os receive sensor inputs and control hardware.

"The system automates valves and pumps to control bulk ingredient adds, mixing and heating," adds Dabrow. "All manual actions are prompted on the interactive touchscreen and verified by the operator. Each kettle sits on load cells that constantly measure weight and communicate back to the computer to start and stop ingredients."

Before batches are filled, they are checked for quality. "Once batches are approved by QA, they are released to a holding tank," says Dabrow. "From there, the filler pump automatically calls for product based on a level probe in its hopper." "We use a 14-head, rotary Elmar filler," continues Dabrow.

"Jars are immediately capped after filling before they file into a custom-built cooling tunnel. The tunnel uses a combination of high exhaust and spray-chilled water to reduce the product temperature." The increased cooling tunnel size also helps eliminate bottlenecks that could result from higher processing and filling speeds. An inline Mettler-Toledo inspection system checks product for foreign objects. Prior to case packing, the bottles are labeled on Krones equipment.

In the plant, all material and product flows are coordinated with employee flows to maximize efficiencies and minimize risk for employees and cross-contamination.

Technology and food safety upgrades

The New Jersey operation has been using Wonderware software successfully since the early 1990s. The Las Vegas plant has built on its success and implemented several upgrades. The intuitive, touch-screen system is helpful to new employees who are just learning the company's processes and procedures. It is used in the new plant's kitchens to standardize tomato blends, ensuring every batch of sauce is cooked and mixed exactly the same way, every time. Further plans for Wonderware's Factory Suite call for it to monitor the overall efficiency of the processing and packaging lines.

To ensure product quality, Cheltenham House also took the following measures:

- Pipes, pumps and valves were oversized to lower product shear stresses.
- Redundant instrumentation was installed to meet and ensure product specifications.
- Paste and diced lines were dedicated from the storage tanks to the kettles to prevent cross-contamination.

- A state-of-the-art metal detector was installed.

Food safety is the first priority at Cheltenham House. For example, a new feature at the Las Vegas plant is an enclosed filler room, which protects the product from the already filtered room environment for a double measure of protection. Through a wall cavity, product bottles are filled and capped. Once they are airtight, they exit the room.

"In fact, areas where food or ingredients are exposed during preparation and/or cooking are isolated independently from general plant and warehouse spaces," says Hird. "Each specific processing operation is segregated from the other with independent airstreams. The high-hygiene spaces are positively pressurized, as compared to adjacent areas, to prevent the introduction of contaminants."



► **Vertical dock levelers save energy in the loading dock area.**

Source: Gray Construction.

The HVAC system was also designed with a significant amount of outside air with a high level of MERV [minimum efficiency reporting value] filtration.”

The Las Vegas facility also includes two separate access points, one for plant employees and another for office employees. Plant employees enter through locker rooms where they dress in clean uniforms and put on their personal protective equipment. Everyone who enters the plant is required to use a handwashing station, even office employees.

Several measures were taken to ensure plant sanitation including:

- Finished product shipping and raw materials receiving are separate from cooking operations to eliminate material cross-contamination.
- Facility waste streams are separate from process waste to ensure sanitary segregation.
- The kitchen and filler areas are totally enclosed.
- IMP (insulated metal panel) walls off the floor and sitting curbing were employed; all surfaces, finishes and fixtures are washdown rated.
- Microbial contamination harborage points were eliminated by locating equipment, conduit and supports no less than 2 inches from the walls.
- Handwashing sinks are easily accessible at all entrances and exits to maintain hygiene.
- A CIP system was installed to ensure optimum sanitation of equipment.
- Urethane cement floor coatings were installed in washdown areas to ensure a cleanable surface with antimicrobial applications.
- Stainless steel piping, fixtures, platforms, drains, walls, etc. were installed in heavy washdown areas to prevent corrosion and contamination.

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See Food Master, p. 123



► Four large cooking kettles and a smaller unit are on the first production line. Source: Gray Construction.

- Poweramp vertical dock levelers were installed for maximum environmental control and cleanability within the continuous pit leveler trench.

Gray Construction's Quality Management System (QMS), specifically created for the design and construction of FDA/USDA-compliant food processing facilities, was used during the design-build process of the Las Vegas facility. The system,

along with Gray Construction's mobile device technology, helps ensure the highest level of food safety measures, including predictable and measurable field-level quality audits based on the latest design and construction techniques in food plant sanitation.

"Within Gray Construction's proprietary QMS are design and construction best practices, which serve as a control point platform for our design-build team to use as a design baseline," says Tyler Cundiff, Gray Construction senior manager, business development. "These best practices have been captured through lessons learned over the years and are populated within the system."

The specific regulatory and Chelten House design requirements were carefully considered and incorporated through a programming and design development process that featured significant coordination among all project stakeholders, according to Cundiff. This process included focused discussions on the implementation of food safety strategies; all project stakeholders brought a unique set of expertise to the design. Once the strategies and concepts were established, the details of the design were rendered in construction drawings.

BUILDING TOGETHER

When Chelten House selected Gray Construction to build its organic food production plant in Las Vegas, we knew it was the right fit. Like Gray, Chelten House is a multi-generational family-owned business committed to delivering "only the finest" products to its customers. Gray makes this same commitment to our customers, as evidenced by our ranking of 10th among the top food and beverage contractors in the nation.

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Tyler Cundiff

Senior Manager, Business Development, Food & Beverage Market
tcundiff@gray.com



In addition to a sound facility design, it was imperative that the project team carry over the food safety strategies into construction. “This is where Gray Construction’s QMS proved valuable to the team,” says Cundiff. “During the design phase, we were able to populate the QMS jobsite handheld tablets with both baseline best practices and the specific food safety strategies established during the design process. This allowed our construction site teams to proactively audit, report and measure the food safety compliance strategies that were developed during the design phase.”

Focus on sustainability

Several features in the new facility design center around sustainability. These were planned by Randall Vaughn, architect of record with Gray Construction. Since there’s a lot of sun in Las Vegas, the building structure was designed to support rooftop solar panels when Chelten House is ready to install them. The lighting includes highly efficient LED pole lamps, as well as T5 fluorescent lighting fixtures.

In sunny areas like Las Vegas, thermoplastic polyolefin (TPO), which has a high degree of reflectivity, is used for roofing to reduce the “heat island” effect and keep the building cooler. Skylights provide natural lighting, reducing the number of total light fixtures and energy use. The HVAC

system uses evaporative cooling; the rooftop HVAC units are placed at key locations.

“Cooling is distributed via rooftop units with small amounts of refrigerant,” says Hird. “General plant and warehouse spaces are conditioned with evaporative cooling and Big Ass fans. There is no central ammonia refrigeration plant for this facility.” The industrial-sized fans allow the building to operate at a higher temperature, while taking advantage of the fans’ cooling effect, for operational savings.

An onsite effluent system treats the process waste streams so they can be sent to the local water treatment plant. “Effluent material is collected in a catch basin that collects large solids,” adds Hird. The hydrosieve can handle 300 gpm and accommodates 65 gallons of solids. From the hydrosieve, the effluent drains into a fat, oil and grease (FOG) separator. From the FOG separator, the wastewater flows to a holding tank, where effluent is diluted and chemically adjusted to meet city requirements for temperature and pH. To prevent the out-gassing of finished surfaces, minimal finishes were used throughout. For example, the lobby wall is natural quartzite stone. The general carpeting is a Shaw Ecoworx tile, which is cradle-to-grave certified, a recipient of EPA’s Green Chemistry Challenge award, PVC free, made of 40 percent recycled content and contains low VOCs. It also meets CRI



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"Family business" at Chelten House means the inclusion of everyone who works at the company. It's a culture that has existed for more than 40 years and gives the company a competitive edge with a highly dedicated workforce.

Because of the high unemployment rate in the Las Vegas area, Chelten House had a large labor pool from which to recruit new employees. Chelten House sold job candidates on

► Bottled and capped products emerge from the process area (far background) and proceed to the cooling tunnel. Source: Gray Construction.

its family-oriented culture and potential for future growth. The message to job candidates: This is your chance to get in on the ground floor of a thriving business and help grow this business in a supportive, family-oriented environment.

Not only did candidates respond well to this message, job seekers literally lined up outside the door to apply at Chelten House. Needless to say, the company is very pleased with the team of employees it has assembled at the Las Vegas plant.

Upon entering the Chelten House Las Vegas plant, one will notice the "One Team" sign. Chelten House lives by this guiding principle by encouraging employee input with an open door policy. By empowering the employees to share their opinions and ideas, a winning attitude is created that benefits the entire organization. Chelten House is also currently working to formalize the employee feedback process, one more step the company is taking toward creating a transparent culture that empowers employees to participate in all aspects of the business. ♦

For more information:

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With 200 people on our food and beverage team – most of whom have spent their entire careers in manufacturing plants – we're fiercely committed to this industry and to our clients. Our teams deliver real-world expertise in project planning, project delivery, technical consulting, buildings and infrastructure, process, packaging, and systems integration.

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Contact:

Contact: Don Hodapp
Email: foodandbeverage@powereng.com
Phone: (888) 687-8811
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