CEBA

BUILT BY THE BEST CASE STUDIES

By Keith Loria

NEWCOLD'S 'DO IT YOURSELF' AUTOMATED WAREHOUSE

NewCold needed an automated warehouse in Fiorenzuola d'Arda, near Piacenza, Italy. When completed, the $70 million project would have storage for more than 72,000 pallets and a state-of-the-art automated logistics system designed for frozen goods.

Luca Quaresima, NewCold's Country Manager for Italy, noticed that Italian frozen food producers were seeking a solution that could significantly reduce lead times and streamline their logistics processes. They were looking also for a sustainable and energy-efficient approach to support business growth.

"Our aim was to provide a solution that not only met these challenges but also positioned them competitively in the international market," says Quaresima. "Our model, NewCold, emerged as the ideal response to these needs having demonstrated its efficiency and effectiveness globally."

Quaresima explains they tailored and customized the design to fit the specific requirements of their Italian NewCold clients. He says it was a process refined through collaboration and hands-on market testing following the acquisition of a historic Italian logistics hub two years prior.

The facility is located in Fiorenzula d'Arda, near Piacenza, Italy. (Photo by Flavio Chiesa courtesy of NewCold.)

Integrating Energy

Sustainability was a key focus in the approach. NewCold was committed to integrating various renewable energy sources to minimize the environmental impact of the building. This approach included harnessing energy from solar panels, using combined heat and power (CHP) systems and implementing smart energy usage, such as recovering energy from NewCold's material handling equipment installations.

"We aimed to create a solution that was not only efficient but also environmentally friendly for our clients," Quaresima says. "The NewCold model, proven successful in various international settings, offered a sustainable approach that aligned with our clients' environmental goals. Additionally, we designed it to enhance competitiveness in the global market, ensuring our clients could optimize their routing to market and control costs effectively."

NewCold partnered with Isopan to supply 409,000 square feet of insulated sandwich panels for the casing of the facility to ensure superior thermal efficiency. These panels increased the energy efficiency of the facility, exceeding 60% compared to corporate competitors.

Tricky Timeline

The project kicked off in November 2022. NewCold initially allocated 18 months for its completion, starting from the acquisition of the necessary permits to commence work.

"Despite the complexities introduced by the COVID-19 pandemic and the market challenges characterized by a shortage of electrical components, we managed to adhere to our timeline," Quaresima says. "This was made possible through a highly integrated and vertical structure, where a significant portion

of the know-how was internalized. The professionalism of our team played a pivotal role."

The COVID-19 pandemic presented unprecedented challenges. The global scarcity of electrical components was a significant risk to progress. However, Quaresima notes that the robust and integrated structure played a crucial role in navigating these difficulties.

"Having a substantial amount of in-house expertise allowed us to adapt swiftly to changing circumstances," Quaresima explains. "Our dedicated team's professionalism and commitment ensured that we could successfully mitigate the challenges posed by the pandemic and adhere to our project timelines."

NewCold's integrated and vertical structure consisted of a comprehensive in-house approach where a significant portion of the project's critical knowledge and capabilities were housed within the organization. This included expertise in various stages of the project, from obtaining permits to the final execution.

"This structure proved invaluable during the challenging times brought about by the pandemic, allowing us to maintain control over key aspects of the project and respond swiftly to unforeseen obstacles," Quaresima says. "Our success hinged on strong and collaborative relationships with our suppliers. The scarcity of electrical components in the market during the project posed a serious threat. However, our proactive engagement with suppliers, built on trust and professionalism, allowed us to navigate through these challenges."

Additionally, the open lines of communication and mutual understanding enabled NewCold to address issues promptly, ensuring a steady supply chain and ultimately allowing all project deadlines to be met.

Collaboration Counts

On the verge of completing the warehouse roof, an unexpected summer storm, one of the biggest in almost 25 years, disrupted the roofing process and was a big challenge.

"It left the roof partially uncovered right when we were about to proceed with the installation of various conveyors and material handling equipment," Quaresima says. "Typically, installing material handling equipment in an open environment would have been impractical, leading to a significant project delay."

However, the project team, in collaboration with the suppliers, devised a savvy solution – they implemented temporary shelter systems to allow the installation of equipment, ensuring progress despite the weather challenges.

The middle stage of the project. (Photo by Flavio Chiesa courtesy of NewCold.)

"It was a testament to the resilience and problem-solving abilities of our team and the strong partnership we maintained with our suppliers," Quaresima says. "This approach allowed us to continue with the project timeline, ensuring that equipment installation progressed alongside the ongoing roof coverage. Recognizing the urgency, both parties worked closely to develop a solution that would allow the installation of material handling equipment despite the weather challenges. Open lines of communication, mutual understanding and a shared commitment to project success were instrumental."

Design Details

The completed facility consists of a 130-foot high bay, a dispatch center for receiving and deploying items and an area for picking. The building has jointless concrete slabs with 1 mm differential deflection tolerance; multiple evaporators located on service platforms at high levels of the high-bay facility; and a concrete structure with a suspended concrete pick-floor level.

The entirety of cold storage included in the dispatch area is kept at -25° Celsius to guarantee the integrity of the cold chain. What's more, the products are all stored in areas that are only accessible by automation, ensuring the top food safety standards.

"I would like to extend my heartfelt gratitude to every individual who dedicated their time and effort to this project," Quaresima says. "Their commitment and passion went above and beyond, overcoming obstacles with unwavering determination. It is their hard work and dedication that has brought this project to fruition. Thank you also to our investors and Westport Capital that helped to make it happen and trusted the potential of the Italian market."

Illustrating the progress that has been made since the early stages of the build. (Photo by Flavio Chiesa courtesy of NewCold.)

Riverbend Ranch's new meat processing plant in Idaho Falls, Idaho, designed and built by award-winning Big-D Construction. (Photo courtesy of Big-D Construction.)

BIG-D CONSTRUCTION DESIGN/BUILDS FOR ETHICAL MEAT PROCESSOR

A leading purebred Angus cattle operation in the United States, known for its ethical livestock management and protection of the environment, Riverbend Ranch wanted a new meat processing plant in Idaho Falls, Idaho. The company's goal was to have its new building reflect its core values.

The owners of the Riverbend Ranch found a builder that aligned with their sustainable philosophy. They selected Big-D Construction Corporation for this forward-thinking project.

"This was an existing customer that we have built more than 20 projects for in Utah and some in Hawaii, and most of the projects were industrial," says Forrest D. McNabb, President of Big-D Construction Corp. "They knew our strength in the food and beverage world, and so they brought us on board to help them develop the project."

Big-D Construction built a modern processing facility for Riverbend Ranch with the capability to humanely process animals from harvest to finished packaged product. (Photo courtesy of Big-D Construction.)

It Was Hell

Considering the project was undertaken during the pandemic, it presented a challenge to keep up with the schedule.

"They wanted to have harvest and product running through the plant by December 2022," says Bryan Willis, Senior Project Manager at Big-D Construction Corp. "We started working on the building in December 2021, and we were able to meet their deadline for the following year."

Big-D Construction started the build utilizing primarily pre-cast concrete walls and insulated metal panels with a cast-in-place concrete basement.

One of the challenges with the build was that the Riverbend Meats Processing Plant had to be built on top of a lava field that required drill and shoot/controlled blasting throughout the project building and site development.

Willis explains that the 4,000-year-old natural feature, known as Hell's Half Acre, increased the complexity of excavation far beyond any typical construction site and increased costs significantly.

"Teams had to employ demolition techniques to excavate footings and foundations as well as trenchers equipped with diamond blades to place utilities," Willis says. "In total, more than 44,250 pounds of TNT explosives were required to remove basalt material."

Culinary water was also a challenge and required a new well to be drilled. With a water table 320-feet below grade, crews blasted through 500 feet of volcanic rock for the new well.

Another challenge was that the area gets extremely cold with big winds blowing from the southwest. As a result, the schedule for lifting and hoisting cranes needed to be completed in a limited time period. The Big-D Team also had to contend with the accumulation of snow and ice, which played havoc with the schedule.

"It really was like construction in the Arctic where you get blinding, driving snows, and it was just brutal," McNabb says.

Utilities at or near the site were nonexistent, which presented a major challenge in and of itself. Everything had to be extended to the project, which was not only a logistical challenge, but it was also a considerable cost factor. Electric power lines were brought in from 2.5 miles away and 9 miles of gas line was installed to reach the site.

Building Values

The Big-D team worked closely with the architect and processing designer to provide input on numerous project elements like designing a highly functional layout, material selections and optimizing the plant for maintainability.

Creating a more humane facility was also a big priority for the owner. Having cattle sourced essentially at the site is a significant part of the finished project, as the animals avoid the immense stress of being transported prior to harvest.

Additionally, the Riverbend plant features a drover lane ramp from the pens to the building entrance. A drover lane, originally developed by famed animal behaviorist and consultant Temple Grandin, is a walkway into the plant that is wider and has high, solid walls in a curving, serpentine shape, meant to keep the livestock moving forward and free from distraction. The drover alley at Riverbend was constructed of concrete.

Fueling Sustainability

To the east of the site, a 20 million-gallon irrigation pond and a pump station were built to enable water used in processing to be captured, processed and reused.

The plant also minimizes its environmental impact with the use of a 5.1 million-gallon covered anaerobic lagoon that captures and pre-treats animal waste and an adjacent biogas and reuse building. These systems capture, treat, and reuse processing waste as fuel for the plant. This biofuel used on-site is carbon neutral, because the CO_2 that is created when burning it has been already removed from the environment over the organism's life.

As a major contributor to the project's success, Big-D's Virtual Design and Construction department utilized 3D modeling and other tools in the early stages of design and construction, which enabled the design team to make modifications to equipment placement that ended up improving the layout of the facility.

The design-build by Big-D included a two-story office. (Photo courtesy of Big-D Construction.)

Completed at the end of 2022, the more than $100 million Riverbend Meats plant is a modern processing facility with the capability to humanely process animals from harvest to finished packaged product and has a strong positive impact on the local community and the ranching industry.

The completed facility includes a large fabrication area with state-of-the-art equipment, 28-degree box cooler, -10° freezer, multiple Hot Box chillers, a cold dock with eight dock-height doors, order fulfillment space, a two-story office, and various support spaces. In total, the facility offers seven temperature zones.

Now that this new plant is in operation, Riverbend Meats is able to produce a superior and healthier beef option for the public.

"This owner is committed to the Idaho Falls area and you can see by this plant, he is very selective with design and equipment – the details that went into the design/build were mindboggling," McNabb says. "The quality of this project and product is unmatched."

KEITH LORIA is an award-winning journalist who has been writing for major newspapers and magazines for close to 20 years, on topics as diverse as sports, business and technology.

EMAIL: freelancekeith@gmail.com

Big-D Construction designed the facility to have seven temperature zones. (Photo courtesy of Big-D Construction.)