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The new Refinery at Domino features a curved glass roof that gives a new aesthetic to the Brooklyn waterfront.



How Sweet It Is

Curved Glass Tops Off Brooklyn Refinery Redo

by Ellen Rogers

More than 160 years ago, the Domino Sugar refinery in Brooklyn, New York, enjoyed the sweet taste of success. The brick structure was a recognized feature along the Brooklyn waterfront with its towering smokestack and distinctive profile. The factory once produced about 4 million pounds of sugar daily and was considered the Domino Sugar empire's "jewel in the crown."

But the rise in popularity of artificial sweeteners, among other challenges, eventually saw demand for sugar drop, and the factory closed in 2004. Now a historic site and owned by Two Trees Management Company, the location has been redeveloped. In addition to public spaces and new construction, those plans also included an adaptive reuse for the refinery.

Completed in Sept. 2023, the 460,000-square-foot Class A office space, designed by New York-based Practice for Architecture and Urbanism (PAU), has a new jewel in its crown. Now called the Refinery at Domino, the project merges the existing brick building with a new glass structure topped with a 27,000-square-foot glass dome providing 360-degree views.

Designing Intent

PAU's work on the adaptive reuse of the refinery began in 2017. Keeping the frame of the existing brick building, architects designed a new glass building within, placing a 10- to 12-foot gap between the two structures. According to the firm's website, "The array of historic windows, uninterrupted by interior partitions, reveal expansive views of Manhattan while allowing the extant structure to be appreciated in an unobstructed form." ➔

Photo: © 2023 Max Touhey

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Photos: © 2023 Max Touhey

The glass vault that tops the newly built Refinery at Domino features 3,500 curved units from Cricursa.

The pinnacle of the project, however, is the newly constructed glass vault, accented with the recognizable Domino Sugar signage.

The Italian company Focchi designed and fabricated the new glass structure. The company's work on the Domino Sugar project dates back to 2019. Project design manager Gabriele Lasi explains that Focchi designed and produced the façade, which was installed by Walsh Glass & Metal, based in Yonkers, New York.

"The project consists of the original sugar refinery, where the internal walls and structures were entirely removed," says Lasi. "On the inside a new steel structure was created. The new custom façade hung to the super structure, includes a unitized glass system and protruding outriggers, which are connected to a steel bracing structure that runs all around the interface of the existing remaining brick wall to connect it to the new inner structure."

The project spans 15 floors, and its new unitized curtain-wall system mainly consists of vision panels with operable windows for ventilation.

"At the top of the building, there's a vaulted glass roof made of mega-sized panels spanning 20 feet that support a stick-built system," he adds.

The Spanish fabricator, Tvitec, which also owns Cricursa, provided both the flat and curved glass. The companies together fabricated SNX 60 from Guardian Glass to provide nearly 14,000 meters (about 45,000 feet) of high-performance glass, including 3,500 curved units for the arch. These double-glazed panels have wide cham-

bers filled with argon gas, reaching dimensions of up to 13 feet, tempered and laminated for strength, safety and acoustic performance.

As an expert in curved glass fabrication, Cricursa was responsible for the vault. According to Cricursa CEO Ferran Figuerola, one of the unique features is a digitally printed, dual-screened ceramic frit, which is black on the interior and white on the outside.

"Especially for the skylight, the white reflects the light outside, and the fact that it's black inside makes the frit less visible from the inside," says Figuerola. "It also enhances the opacity of the frit, so it works better for [solar] control purposes. With the black behind the white, the frit becomes more opaque than a normal white frit, helping filter the solar radiation."

The Domino Sugar project wasn't highly complex for Cricursa to fabricate. Figuerola says there was only one radius, which made it quite simple. However, he adds, it was a large project.

"We are talking about 40,000 square feet of curved glass, and around 600 units were quite large," he says.

Managing the production of so many panels can sometimes be a challenge. Figuerola says it's imperative to know your capacities to address these concerns.

"We calculate what is going to be the lead time for a project, but we always allow some space for internal replacements or production recovery, because with curved glass it's easy to encounter unexpected things that can delay a 'perfect' lead-time," he says.



PAU Architects' adaptive reuse of the historic Domino Sugar facility in Brooklyn, New York, combines the original brick structure with a new glass building.

A 10-12 foot gap between the old and new structures creates a space for biophilic design, connecting the outdoors and indoors.

He continues, "Apart from this, having a good fabrication system, controlling your production and knowing where each glass is at every moment [is important]. For a large-scale project like this, having many different ovens helps because we are producing many other projects at a time."

Figuerola says the company has 20 tempering and annealing ovens dedicated exclusively to curved glass fabrication, 10 for curved tempered/heat strengthened glass, and 10 for curved annealed glass. "If your scale is not large enough and you're occupying most of your capacity in one project, then that's when you start suffering. We tend to allocate one project's production in one oven, and another's in a different oven, and this is how we proceed with large projects."

Careful planning also helped ensure the process remained on schedule.

"From the production point of view, we had a planned schedule of deliveries ... we had one delivery every month, and they were scheduled from the very beginning, says Figuerola. "It was not a difficult project in terms of production. Everything was very well planned from the beginning."

While Focchi is well-versed in vertical projects, working on the roof portion was not without challenges.

"We design and provide façades, which are typically vertical. Although we are not roof specialists, we have the experience and know-how to design all types of enclosure systems," Lasi says. "And this one, which has a curve at the roof, was really challenging because of the difficulty in carrying out a proper water-tightness and optimizing installation and logistics." ➔



Focchi worked closely with Walsh Glass & Metal on the installation of the vertical as well as the curved panels.

Photo: courtesy of Focchi Group

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So it was the biggest difference, compared to other projects.”

The owner, Two Trees, subcontracted the installation to Walsh Glass & Metal, and Focchi and Walsh worked closely with their teams throughout the project.

“We’ve got our technicians and our site managers on site, they provided assistance daily to [Walsh] on the installation. It’s one thing to give them the drawings and say ‘install the unit,’ and another to provide continuous support to do that properly and to resolve any field condition we may encounter.”

New Additions

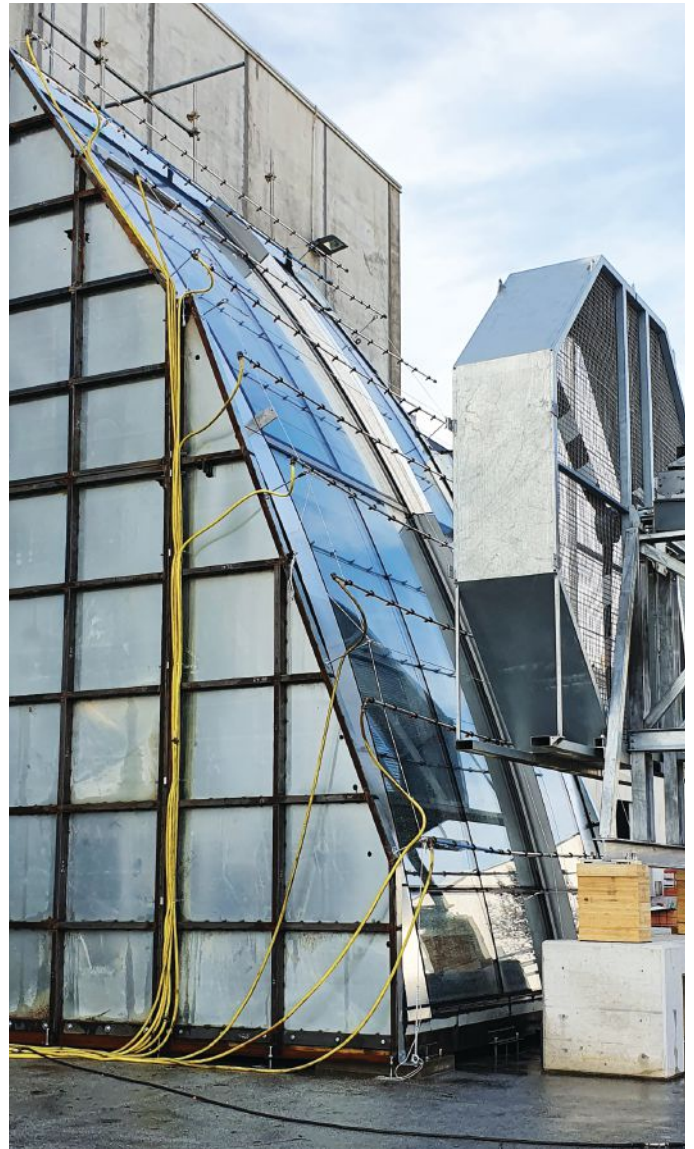
The Refinery at Domino is only part of a revitalization project of the former sugar factory’s location. Now called Domino Park, the project joins new construction towers One South First and Ten Grand Street, completed in 2019 (see the October 2022 issue of *USGlass*, page 52, for a related article), and 325 Kent, completed in 2018. The park also includes historical artifacts and amenities, a playground, elevated walkways and other features.

The revitalization brings new life to the Brooklyn waterfront and a new skyline. The domed curve of the refinery adds a unique aesthetic.

“It’s what I like about this project... the contrast of the materials [brick and glass] and the contrast of the shapes makes it special,” says Figuerola. “The architects did something very good. They created something beautiful. I like that we have a curved roof because it connects the two façades, creating a nice building on top of the existing building.” **USG**



➔ **Ellen Rogers** is the vice president of editorial content and editor of **USGlass** magazine. Email her at erogers@glass.com and connect with her on LinkedIn.



Mock-up testing was critical to the process to ensure the system performance.



Focchi worked closely with Walsh Glass & Metal on the installation of the glass panels, including the roof’s curved glass.

Photos: courtesy of Focchi Group



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