

Kraft Curing Systems GmbH, 49699 Lindern, Germany

## Bespoke Concrete Curing Racks for Bespoke Cast Stone Concrete Products

Cast stone concrete is the most customized and architecturally ornamental precast concrete manufactured today. Its value to the restoration of landmark buildings, in governmental, commercial and residential buildings and as a piece of sculpture art also makes cast stone concrete a high dollar product in an industry that constantly lowering its prices. Corinthian Cast Stone, Inc. formed in 1998 and located in Wyandanch, New York just outside of New York City on Long Island has provided the local market with locally manufactured, exceptional cast stone concrete and ancillary services since its inception.

The growth of the company to over 100 employees is due not only to the company's commitment to quality and customer service as well as its reputation for "getting it done," but also for the incorporation of advanced concrete manufacturing processes including an early adaptor of vapor curing equipment for the acceleration of the concrete strength and better durability as well a fully computerized batch plant with microwave moisture meters and the ability to report on each mix for all Corinthian's customized projects.

Corinthian has also been an industry leader in the implementation of extreme resolution 3D laser scanning of existing structures and architectural ornamentation in order to reverse engineer ornamental building cladding and document exterior surfaces of historically important buildings throughout the New York metropolitan area.

In October of 2013, Corinthian Cast Stone's owner, Jason Hirschhorn, decided to diversify and expand the company's product range by adding the production of wet cast concrete pavers and slabs. With the

company already at maximum production capacity in its Wyandanch facility and with the first orders for the new products due in the early Spring of 2014, there were two big questions: how to double production capacity without increasing floor space and how to do this in under 2 months?

Corinthian's Jason Hirschhorn knew that the answer lay in building capacity vertically, but how and who? The answer to all those questions lay 5,000 km away in Lindern, Germany with a partner that Corinthian had worked with for almost all of its 16 years: Kraft Curing Systems.

Back in 1999 Corinthian Cast Stone worked with Kraft Curing Systems on the implementation of accelerated vapor curing for higher early concrete strengths, harder concrete corners and edges and greater color uniformity. Space in the New York metropolitan area is always at a premium and the ability to reduce the concrete hardening time by 50% meant less building cost for higher production rates. In 2007, as business continued to grow, Corinthian turned

to Kraft Curing for the installation of insulated curing chambers and self-stacking pallets in order to better control the curing process and maximize space utilization. Automated curing controls provided a greater level of product consistency while the self-stacking pallets allowed for the flexibility required by Corinthian to produce bespoke concrete products.

Corinthian's goals were simple: double daily production output without increasing the concrete curing area and do so within 2 months. There are many curing storage solutions for precast concrete production and the criteria is based on several important actors, including: homogeneity of product sizes, w/c ratio, mould material, wet- and dry-side product transport and budget.

After working through several different solutions on paper as well as a whirl-wind 3 day trip through German precast concrete manufactories showing as many different types of curing storage systems as possible including rack transport systems (RTS), pallet transport systems (PTS), pallet-with-legs and



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containerized shelving systems the decision was made for a prefabricated rack system.

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In early November, once the pallet dimensions and the allowable rack footprint were agreed upon, a rack design incorporating space for the storage of 520 each 1.400 x 1.100 mm pallets was finalized. It included full length pallet guide rails providing for safe loading and unloading of 22 levels using a standard forklift truck with a Kraft custom designed multi-tiered fork attachment, custom designed threaded leveling base plates for installation on an existing concrete slab (that turned out to be anything but level) without grouting, minimizing of column widths through a novel column design incorporating Kraft Curing's "K" column profile and elimination of a structural I-beam column support that allowed for a more compact design. Since the vapor accelerated concrete hardening



*Durable materials and profiles designed for extreme loads and construction make Kraft Racks a reliable investment for daily uninterrupted production.*

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## CONCRETE RACKS AND ENCLOSURES

Kraft Curing Systems GmbH  
49699 Lindern, Germany  
Phone: +49-5957-961260

Kraft Curing Systems, Inc.  
Fairless Hills, PA 19030, USA  
Phone: +1-267-793-1005

www.krafttracks.com · info@kraftcuring.com



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process was required in order to allow for the possibility of double pouring of the concrete (using each mold twice in a 24 hour period), it was decided to supply the racks in a performance grade quality - with all steel hot dip galvanized after fabrication.

The completely fabricated rack system was on the water to Corinthian Cast Stone in the first week of December 2013 - 3 weeks after the design was finalized.

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More challenging than installation of the rack structure was dealing with a wet cast concrete product requiring a level accuracy of +/- 1 mm and a floor that was unlevel by more than 75 mm over a distance of less than 6 meters. Unlike semi-dry concrete products such as pavers, slabs and blocks typi-

cally hardened in the curing racks and do not "float," the wet cast concrete products found their own level and the difficulty with the unlevel floor was compounded by these self-leveling characteristics of the concrete products. This is where the "getting it done" work ethic of Corinthian Cast Stone together with the Kraft's engineers provided a quick and, more importantly, structurally effective solution that allowed for the level tolerances in the rack in spite a thoroughly unlevel floor.

Since early 2014, over 25,000 pallets of concrete products have been cured in the innovative rack system. The production capacity increase of 50% has been achieved and Corinthian Cast Stone continues on its successful trajectory. With the current rate of sales success, the day is soon approaching when Corinthian's Jason Hirschhorn will need to find a larger production facility. Kraft Curing Systems looks forward to coming up with new solutions for increasing the new plant's capacity too. ■

FURTHER INFORMATION



Kraft Curing Systems GmbH  
 Muehlenberg 2  
 49699 Lindern, Germany  
 T +49 5957 96120  
 F +49 5957 961210  
[info@kraftcuring.com](mailto:info@kraftcuring.com)  
[www.kraftcuring.com](http://www.kraftcuring.com)



Corinthian Cast Stone  
 Wyandanch, NY 11798, USA  
 T +1 631 9202340  
[info@corinthiancaststone.com](mailto:info@corinthiancaststone.com)  
[www.corinthiancaststone.com](http://www.corinthiancaststone.com)