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CONCRETE PRODUCTS / CAST STONE

Exceeding Expectations

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Exceeding Expectations

Daily the world experiences the harmful effects of global warming, which is increased by industrial emissions, including those from the production of building materials. Never before has there been such a need to be more conscientious about the carbon footprint one leaves on the environment. Realizing that the production of building materials accounts for as much as 12% of all CO₂ emissions, CalStar Products set out to develop building materials that are lower in embodied energy than anything else available in the marketplace.

Through CalStar's forward thinking and investment in research and development, innovative technology was developed and tested to produce "green" facing bricks and pavers. Each product contains 40% post-industrial recycled material, requires 85% less energy to manufacture and has 85% less embodied CO₂ than traditional fired-clay or concrete brick and pavers.

Knowing that this was a revolutionary and innovative change in the way building pro-

ducts would be manufactured and that a specialized curing process would be crucial to achieving reduced energy consumption as well as a lower carbon footprint, CalStar recognized that they needed a partner, not just a supplier. For their curing system design and engineering, Kraft Energy, a Besser Company was contacted.

"CalStar approached Kraft Energy because Kraft brings extensive knowledge in curing a wide range of construction products, in-

cluding those containing recycled materials, exactly the expertise that our product requires," stated Michael Telischak, Director of Manufacturing for CalStar. "We are unlike other building material producers who consider the environmental impact of curing as an afterthought to the production process. For us, the environmental effects of curing are as important as energy cost control, which, not incidentally, Kraft also provides."



The new curing system is comprised of individual and independent Quadrix™ curing systems

Because the process and technology are new, there were no points of reference or benchmarks to offer precedence, so Cal-Star and Kraft Energy worked together from the beginning. Team meetings were conducted to discuss the desired end-product characteristics to be achieved, and how to accomplish this in the most energy efficient manner.

After reviewing the information from Cal-Star's research and development team, Kraft Energy engineered a system for their inaugural production plant in Racine, Wisconsin.

The new curing system is comprised of nine individual and independent Kraft Energy engineered Quadrix™ curing systems. The curing system in each chamber provides independent control of relative humidity and temperature. The most significant benefit of this curing approach is the continual and responsive adjustment to the curing atmosphere within each chamber to precisely meet product requirements at each stage of the curing process.

Kraft Energy's Autocure™ automatic curing control system allows for each product to have its own designated curing schedule, minimizing wasted energy and maximizing curing efficiency. Kraft developed Vaporware™ curing data logging software records the curing

information, including overall and curing phase duration, relative humidity and curing temperature. This data will prove useful during further product development as well as for providing accurate quality control records for use with product testing and product certification. Due to the ability to precisely control the atmosphere, the curing environment is free of condensation resulting in consistent quality products, a safe working environment and no corrosion on the pallets or racks.

While facing brick is CalStar's primary product line, their paver line was recently certified by the Interlocking Concrete Pavement Institute (ICPI), of which they are among its newest members. CalStar's Michael Telischak, a member of the ICPI Technical Committee states, "The Kraft system ensures our products meet all the specifications required for performance and certification."

During the design and construction of the curing system, CalStar and Kraft Energy collaborated on each detail to minimize heat and energy losses. The entire curing system, from the specified chamber insulation including automatic insulated doors, to the output of the heating units, and the moisture control system, has resulted in CalStar's energy consumption being at or below the level which was anticipated during plant design. This has prompted CalStar to commission an energy consumption study to certify the amount of embodied energy in each brick or paver. The study will provide CalStar and Kraft Energy quantifiable data from an independent, third party that will show the system has maximized production efficiency and product quality with the lowest possible environmental impact. View the study's results at www.calstarproducts.com during the latter part of 2011.



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FURTHER INFORMATION



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