


Innovation: Precast sees future with 3-D printing forms

It is always fascinating visiting PCI members' plants and seeing the ingenuity where technology is being used to innovate in the precast concrete industry. Whether it's the latest materials (such as ultra-high-performance concrete), building information modeling, lasers being used in the casting beds, or automated plant technologies, individual producers are constantly striving to gain advantage in the marketplace. PCI also strives to be the place where members can come together to push the envelope, sometimes in ways that perhaps no individual member has the resources to explore. PCI staff members frequently debate our role in helping to move the industry forward through innovation.

One area where PCI can excel is leveraging other resources, and it is exciting to see the future of precast concrete emerging outside of Knoxville, Tenn. PCI is in the second year of a five-year project with Oak Ridge National Laboratory (ORNL) to explore the next generation of energy-efficient enclosures using insulated precast concrete wall systems. The original project scope included the three-dimensional (3-D) printing of molds for the panels. During its first year, the project successfully printed a 1 ft length of a complex cornice shape that was inserted into a more conventional form for the wall panel. This was exciting progress, with more than 40 casts made on the 3-D printed piece with no degradation.

Through an arrangement with a PCI producer member in year two, Oak Ridge agreed to 3-D print molds for complex window panels for a high-rise project in New York City. The project received \$240,000 in special funding from the U.S. Department of Energy (DOE), requiring a matching contribution from the producer. The DOE has invested resources that in 18 months have helped the technology go from a lab experiment to a full-blown project requiring thousands of panels and subject to the rigors of the construction schedule.

The PCI Research and Development (R&D) Council has committed an additional \$85,000 funding match to additional DOE resources for ORNL to document the entire process for use by other PCI members and the industry. The R&D Council showed a time-lapse video of the 3-D printing process to the PCI Board of Directors at its meeting during Committee Days in October. Look for details in the weeks ahead about PCI and ORNL hosting an open house toward the end of the year for members to see mold printing and panel casting.

Thanks to all the PCI members for the record attendance at this year's Committee Days, topping 500 with total registration of 537. PCI thanks the sponsors and our Premier Partners for their support and for helping make the program happen. Thanks to the volunteers and committee chairs who reported filled meeting rooms—a sign of the energy and enthusiasm for the programs we have going on at PCI. I'd especially like to thank the PCI staff for all their hard work and dedication, both leading up to the meeting and at the event itself. The staff came together to present a great experience for all attendees. Before the meeting, the staff went live with a new website and database, launched the "How Precast Builds" marketing campaign, and unveiled a new series of training videos for new plant employees in both English and Spanish. Congratulations on a job well done. 

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