The Chocolate Room

Design-Build Team Meets The Belgian-Chocolate Challenge for Frozen Confection

For months, Burns & McDonnell designers and process engineers kept a tantalizing secret: Unilever planned to introduce its Magnum brand ice cream bar — the world's most popular ice cream bar — to the United States. Europeans consume a staggering 1.3 billion Magnum bars a year, but most Americans had never heard of the brand.

A Magnum bar is a decadent portion of premium vanilla-bean ice cream thickly coated with real Belgian chocolate. There are double chocolate, white chocolate and other variations — all with the signature thick Belgian-chocolate coating. The publicity campaign for the U.S. launch would include glamorous, tongue-in-cheek videos directed by designer Karl Lagerfeld. But first, Unilever needed to fill the American distribution pipeline with product.

Unilever called on Burns & McDonnell to design and build modifications to an existing plant in Sikeston, Mo. The modifications involved adding a special chocolate room, piping and controls to support a proprietary process that enrobes the rich ice cream-on-a-stick (known in the industry as a premium stick novelty) in high-quality Belgian chocolate.

"The chocolate had to be kept within a narrow temperature range in the chocolate room storage tanks and delivered to the process at a precise temperature," says Burns & McDonnell engineer Randy Peterson, who managed the project.

Burns & McDonnell designers met the challenge with a system that keeps the chocolate constantly circulating through more than 2,000 feet of insulated, double-walled piping. The piping containing the chocolate is gently heated by hot water contained in the second piping wall.

A control system designed by Burns & McDonnell continually measures the temperature of the chocolate at the delivery point and sends signals for temperature adjustments at upstream points in order to consistently maintain the required delivery-point temperature. The use of insulated piping saves energy and helps with maintaining the proper temperature.

"Keeping the project a secret wasn't really a problem for us," Peterson says. We were excited about it, but we often work on projects that are confidential, so not discussing our work outside of the project team is pretty normal for us."

Conceptual design began in March of 2010. In addition to fast-tracked design-build, Burns & McDonnell stayed on site to help coordinate installation and start-up of new processing equipment at the facility. By mid-October 2010, Magnum bars were being produced at the Sikeston facility and shipped to distribution points across the country. In early 2011, Unilever launched the Magnum brand in the U.S. and Canada.

"Demand for Magnum bars exceeded expectations," Peterson says.

But no worries, Magnum bar fans — Burns & McDonnell is continuing to help Unilever expand U.S. production of the popular treats.

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