



Minute Maid Park

FOAMGLAS®

Value Engineering Has High Cost at Houston's Minute Maid Park

Pittsburgh Corning

When Minute Maid Park, home to the Houston Astros, opened in March 2000 as Enron Field, it boasted a number of features that blended new technologies with the look and feel of an old-time ballpark. Its retractable roof revealed the largest open area of any baseball stadium while its 50,000 square feet of glass in the west wall of the roof gave fans a view of the Houston skyline, even when closed.

The stadium, owned by the Harris County-Houston Sports Authority, was built at a cost of \$250 million and set to house the Astros through the 2029 season per their lease agreement.

Keeping Cool in the Houston Humidity

The combination of grass, daily irrigation, the retractable roof and the high humidity of Houston provided many challenges for the park's chilled water system. To make sure fans stayed cool and comfortable throughout the scorching Houston summer, the building's designers equipped the facility with a chilled water system using an estimated 25,000 lineal feet of distribution and return lines in assorted sizes up to 24" inches in diameter. However, the climate in Houston placed extraordinary demands on the insulation system protecting the chilled water piping.

Problems resulting from water vapor intrusion into the original permeable insulation system became evident within half a dozen years when stadium employees noticed condensation build-up that, in some cases, resulted in water dripping off of the pipes.

In November 2006, the Harris County-Houston Sports Authority hired consultants to diagnose and identify what had gone wrong with the original insulation system.

The consultant identified and described the problem at hand noting that the insulation system installed was not capable of preventing condensation build-up on the chilled water piping based on the environment at the park. The causes included changing the original design from an impermeable insulation system to a permeable one and the fact that specifiers erringly used design data for the Houston Airport. This is particularly important since the airport is located 23 miles north of the often open stadium and experiences conditions less severe than downtown Houston.

PROJECT PROFILE





Chilled water distribution lines protected with FOAMGLAS® insulation can withstand high humidity and physical abuse.

The original design called for impermeable cellular glass insulation for all of the chilled water piping and fittings. Through the value-engineering process, that spec was changed to fibrous glass with an all-service jacketing for both the piping and fittings. Phenolic insulation was also specified in some areas.

Lawsuit Filed against Contractors

In October 2007, the Houston Astros Baseball Club and the Harris County-Houston Sports Authority filed a lawsuit against multiple contractors involved in the design and installation of the system. According to an October 14, 2007 article in the Houston Business Journal, "Improper insulation is causing current condensation problems in the pipe system."

In the article, attorney Wayne Fisher, representing the Astros, is quoted as saying, "The wrong insulation was put on there in the first place." The article speculated the final cost could reach \$70 million.

The Solution Calls for FOAMGLAS® Cellular Glass Insulation

It was decided that Minute Maid Park's entire chilled water piping matrix would require retro-fitting with FOAMGLAS® cellular glass insulation, the material originally specified by stadium designers in the late 1990s prior to the value-engineering process. The product, a 100% impermeable, non-corrosive

insulation, is manufactured by Pittsburgh Corning Corporation. It is an all-glass, closed-cell material which eliminates the possibility of moisture intrusion and doesn't require a protective jacketing to keep it impermeable. The high compressive strength of FOAMGLAS® insulation is extremely important and protects the system from physical abuse, especially in accessible areas such as the stadium's two dozen mechanical rooms. In addition, the insulation's longevity is proven over many decades and unmatched in the industry, often times outlasting the buildings that it insulates.

Results with the New Insulation System

Since its installation on the retrofit project, FOAMGLAS® insulation on all chilled water pipes has prevented condensation problems presented in the high-humidity environment at Minute Maid Park. While value engineering is quite common, and the switching of materials at job sites can take place, this project is a lesson to all specifiers and contractors about the potential downfalls associated with those practices.

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