



Dow Industrial Solutions

Taking on the Tundra

Case Study



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DOWFROST™ HD Protects Lambeau Field's Heating and Cooling Systems from Harsh Green Bay Winters

December 31, 1967. The field-level temperature at Lambeau Field is -25°C (-13°F), the wind chill a staggering -43°C (-46°F). Thirteen seconds remain on the clock as the Green Bay Packers and the Dallas Cowboys settle into their stances on the yard line. Up in the press box, an attendant scrapes away the frost from the window, so the reporters can see. Cloud-puffs of breath appear and dissipate like smoke signals in the midst of the sellout crowd of 50,861, and bundled in green and gold wool blankets and huddled together to keep warm on the bottom-numbing metal bleachers.

It was the setting for one of the greatest plays in the history of professional football. And yet, the Ice Bowl might have been that much more enjoyable if the fans could have seen it from the comforts of a heated luxury box.

Much has changed since the Ice Bowl on the "frozen tundra" of Lambeau Field more than 50 years now. The stadium is bigger; the scoreboard is electronic; Lambeau Field even hosts weddings and meetings in the off-season. In addition, four hydronic systems now provide heating and cooling to the stadium facility. And to efficiently warm the stadium on days reminiscent of the Ice Bowl, Lambeau Field uses a solution of

35 percent DOWFROST™ HD Inhibited Propylene Glycol-based Heat Transfer Fluid and deionized water. The fluid from Dow Chemical may not be much help to the bare-chested Cheesehead in the first row, but for those with tickets for indoor seats, it's as important to the game experience as a Packers win.

Warming Field, Facility, and Fans

Green Bay's games are legendary for the thousands of fans who pack Lambeau Field every Sunday. Packers season tickets have sold out for 42 consecutive years, and the waiting list reaches numbers of 57,000 and up. It comes as no surprise that Lambeau Field spent the past two years expanding its stadium and increasing capacity from 60,890 to 72,515. Part of that expansion included increasing the club seating from 1,920 to 2,900 seats. There are also 166 private boxes. And as you would expect, they all require ample heating.

Lambeau Field has two hot water systems that utilize DOWFROST™ HD as the system fluid. Both systems rise nearly 100 feet into the air to reach the upper level luxury suites and press box—remember the attendant scraping ice off the the glass? As an industrially inhibited glycol-based fluid, DOWFROST™ HD helps keep the heating systems functioning efficiently up the large incline. More importantly, it provides a crucial level of freeze protection for the system.

“Like many football stadiums, Lambeau Field is not fully enclosed,” says Stephanie Maier of Hydro-Flo, the HVAC service provider that works with Lambeau Field on its four hydronic systems. “Many of the systems have pipes that are extremely exposed.”

Beyond the luxury suites, there are other areas used for meetings and events in the off-season, requiring both heating in the winter and cooling in the summer. According to Andy Meier, president of Hydro-Flo, some critical areas include the Packer Hall of Fame, Curly’s restaurant, banquet halls and the convention center—all part of the new 366,000 square foot Lambeau Field atrium.

DOWFROST™ HD is used as a freeze inhibitor in Lambeau Field’s two chilled water cooling systems, which also pass through spots of exposed pipe, such as open concourses or shafts. Here the DOWFROST™ HD fluid plays a pivotal role—the harsh Green Bay winters could easily freeze the stagnant water in the cooling pipes and cause one of them to burst, a disaster should it happen in the middle of a December Packers game. Since draining the entire system during the winter would be extremely inconvenient, time-consuming and costly, DOWFROST™ HD is the logical choice to keep the pipes from leaking or bursting.

Meeting a Lofty Challenge

What makes the Lambeau Field heating system stand out in the eyes of the people who work with it is the sheer quantity of heat transfer fluid used. Literally miles of heating and cooling pipe stretch throughout the stadium. The massive amount of static pressure caused by the system’s height created challenges just trying to install DOWFROST™ HD.

The tanker trucks that Dow uses to deliver bulk glycol orders can offload glycol-based fluid at about 65 psi. Because of the height of the system in the renovated Lambeau, the tanker pump was insufficient for the initial fill of the four hydronic systems.

“We overcame this obstacle by sizing a pump that would be connected in series with the tanker pump to increase the discharge pressure at the fill point,” says Maier. “Hydro-Flo also delivered and assisted in the offloading of the glycol at Lambeau Field to ensure that the delivery went smoothly.”

Another challenge presented by the enormity of the system is monitoring its performance. With so many miles of pipe, it’s no small task to keep a close eye on everything, making corrosion a problem that the stadium can’t afford. Without the stadium engineers’ confidence in DOWFROST™ HD, the amount of time and effort spent monitoring the system would be cost-prohibitive.

Dow’s Technical Service group uses sample analysis kits to monitor system performance. After the engineers at Lambeau Field take a sample of the fluid, Dow runs tests and provides results and recommendations on the maintenance of the stadium’s systems.

“Permanent inhibitors prevent constant monitoring of the system and the need to supply additives after the system is up and running,” says Maier. “Hydro-Flo does not see equipment issues (pump seal leaks, valve packaging leakage, etc.) when the contractor uses Dow glycols. That’s a huge benefit to the end-user.”

Lambeau Field management enjoys its relationship with Hydro-Flo and Dow because of the high quality service it receives. The vastness of the system demands careful attention and knowledgeable support to make sure potential problems are caught ahead of time. Technical service specialists from Dow and Hydro-Flo check the fluid regularly to ensure consistent performance, a fact that Maier believes went a long way to winning the project in the first place.

“At Hydro-Flo, we pride ourselves on having great products to offer and backing those products by great service,” says Maier. “With Dow we are able to do both—they have the best inhibited glycols on the market and they offer free sample analysis kits to ensure the systems are maintained properly. Handling the Dow product line allows Hydro-Flo to offer a complete line of hydronic heating/cooling equipment.”



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