

MICHIGAN BREWERY GOES BLUE TO BE GREEN WITH AQUATHERM BLUE PIPE



PROJECT:

Founders Brewing Co., Heating Distribution

PRODUCTS:

aquatherm blue pipe®

LOCATION/DATE:

Grand Rapids, MI
Fall 2013

AQUATHERM ADVANTAGES:

- Aquatherm has a natural R-value of 1 or more depending on SDR, which allows the system to be more efficient than metal
- The reliability of the heat fusion process used to connect Aquatherm eased concerns about leakage
- Aquatherm Blue Pipe® can be easily washed and maintained

To say that Michiganders take beer brewing seriously is an understatement. The state of Michigan has over 185 craft breweries and even has their own song entitled, “The Michigan State Beer Fight Song.”

Many cities in the state offer their own version of pub-crawls and craft brewery tours to give tourists a taste of what this great state has to offer. One city in particular, is so densely packed with microbreweries; it was named Beer City USA for two years in a row by an annual Beer City USA poll. Beer City USA, otherwise known as Grand Rapids, is home to Founders Brewery.

Founded in 1997, Founders Brewery has evolved into one of the most recognized breweries in the U.S. The brewery started out as a package brewery and has grown significantly in the past few years. Currently Founders is in restaurants, bars, and stores in 32 states and 13 export markets of distribution. According to Chief Production Officer Brad Stevenson, Founders has averaged over 70% annual growth in the past six years.

With around 300 members of the Founders team, the brewery is making accommodations for the higher demand of its product. “With our growth, we’ve had to buy a lot of new gear,” Stevenson explained. “Most of the new gear has helped us focus on making more product and adding capacity. We’ve now hit a volume that’s allowed us to look at process improvements and other things we’re interested in, like energy conservation.”

HEAT RECLAIM PROCESS

According to Stevenson, brewing is a very energy intensive process. “We invest an enormous amount of energy and money into heating the product up, and then we turn right around and invest more energy and money into cooling it back down. Anytime we can take that energy that has already been invested in, and port it off to a secondary use, we want to take advantage of doing that. We’ve done that systematically throughout the brewery. We have heat reclaim on our hot side in our brewing system that’s been phenomenal. This was a drive to put heat reclaim in our fermentation process and take the byproduct of fermentation heat and use it to assist in building heat.”

In order to achieve that goal, Stevenson enlisted the help of Seaman’s Mechanical, also located in Grand Rapids, MI. CJ Fox, Design Engineer for Seaman’s explained how Aquatherm piping was suggested for use on this project. “The main reason we chose Aquatherm Blue® piping was for the insulating value. We’re sending 120°F degree water out to the chillers or the air handlers, to preheat the air and we want to try to keep as much heat in the pipe as possible. We also needed something that could be washed down.”

The space is wash-down rated so the pipes need to be easily washed and maintained. Breweries are known for having mold issues and with insulation and other products in the brewing area, there’s always the possibility of mold. “Black piping was out of the question. We were left with



using copper pipe, stainless steel pipe or the Aquatherm product. Aquatherm made the most sense to use on this application,” Stevenson added.

Approximately 700-ft of Aquatherm Blue pipe was used in 2-in., 3-in., 4-in., and 6-in., sizes for heat reclaim for the 75,000-sq-ft brewery. According to Brad Strouse, Account Manager, Seaman’s, Aquatherm pipe was introduced to them by Justin Anes with Columbia Pipe & Supply Co. “We chose this product because of its unique ability to handle the 80-120°F fluid with minimal expansion and contraction. The fusion process was also a significant factor as this ensures structural integrity for an eco-friendly cost.”



Anes provided training on the Aquatherm piping and the team used Aquatherm welding equipment rented from Columbia Pipe & Supply Co. to install the piping.

Strouse explained in further detail the process of the heat recovery system. “We are using

rejected heat from water-cooled 100 and 150-ton chillers. The largest cooling load of beer occurs during the initial cool-down period or fermentation period of the beer. This coincides with the highest CO₂ emissions as part of the fermentation process, which requires the building HVAC system to supply outdoor/fresh air to reduce the CO₂ level. During the heating season, the rejected heat is used to pre-heat the outdoor air creating a very nice balance in transfer of energy.”

“We wanted to make a good business decision and do the right thing (environmentally)... with the heat reclaim process and Aquatherm piping, we were able to do both.”

-Brad Strouse, Account Manager, Seaman’s Mechanical, Grand Rapids, MI

“The transfer of energy starts with the initial heating of ingredients using a steam boiler. The heat is absorbed by the beer, and once the beer is transferred to a fermenter tank, the heat is absorbed by the chilled water surrounding the beer, and transfers it to the outdoor air – supplying pre-heated fresh air into the building. This greatly reduces the use of natural gas for heating,” Strouse explained.

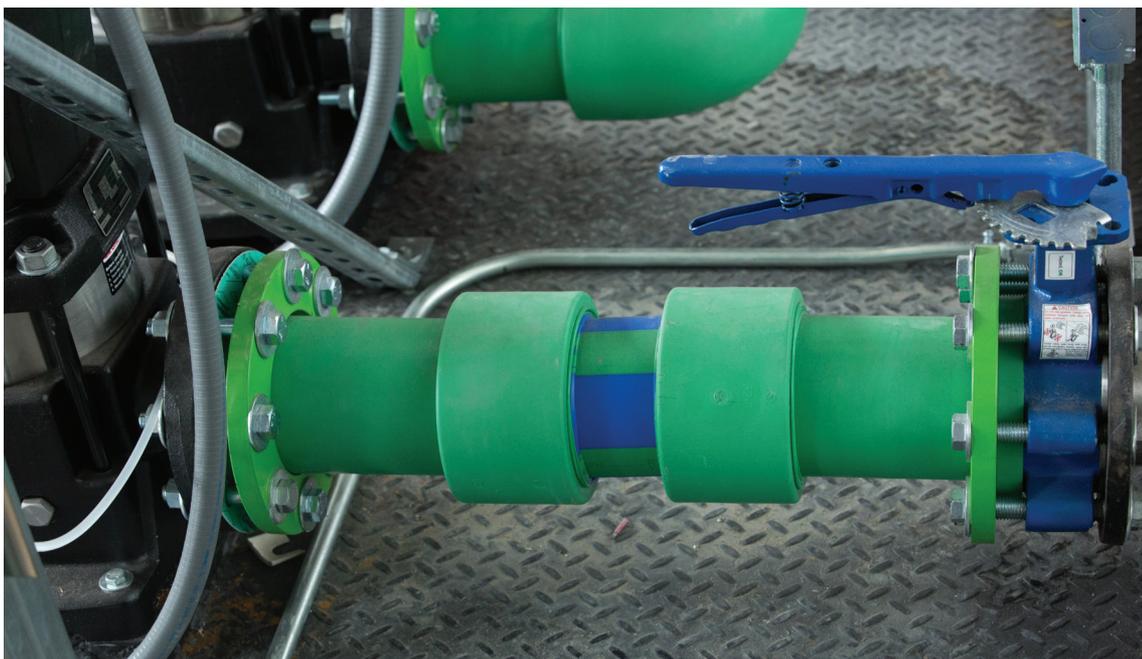
According to Strouse, the design surpassed the initial energy calculations and ROI of around four years because of the extremely cold Michigan winters. Two AAON roof-top units were also utilized on this project.



The team at Founders takes a lot of pride in keeping their brewery clean. “This was the cleanest brewery we’ve ever set foot in,” Strouse explained. “That is what led us to install Aquatherm piping in this facility. It’s wash-down rated and leak free after you install it.” Strouse added that using Aquatherm over copper provided some material savings, though specific figures weren’t available.

“We wanted to make a good business decision and do the right thing (environmentally),” Stevenson added. “With the heat reclaim process and Aquatherm piping, we were able to do both.”

As Founders continues to grow, Aquatherm will be part of their piping plan. In fact, Aquatherm is again being used in the heat reclaim process, this time to connect to three new 190-ton chillers. 



The German-manufactured pipe has been one of the world’s most durable and greenest piping systems for four decades and proven successful in 70-plus countries. Aquatherm piping systems offer many performance and environmental benefits, such as:

- Eliminating toxic materials, glues and resins, and open flames from the piping installation equation
- An R-value of 1 or more per inch or greater depending on pipe size and SDR
- The fusion welding process, which creates seamless connections that last a lifetime without leaking or failing
- An optional fiber-composite layer in the pipe reduces linear expansion of the pipe by up to 75% compared to plastic piping



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