



ALABAMA BREWERY TAPS AQUATHERM FOR FIRST NORTH AMERICAN FOOD-GRADE APPLICATION

PROJECT:

Avondale Brewing Company,
Food Grade Beer Transport,
Chilled Water, Glycol

PRODUCTS:

aquatherm green pipe®
aquatherm blue pipe®

LOCATION/DATE:

Birmingham, AL
November 2014

AQUATHERM ADVANTAGES:

- Ownership realized significant materials and labor cost savings by using PP-R instead of steel
- Aquatherm Pipe won't corrode, scale—even after years of use, and is ideal for direct bury applications
- Aquatherm Piping Systems are completely free of heavy metals and toxic chemicals, so they won't leach any trace chemicals

Within most native Southerners grows an appreciation of the past, a sense of community and an aptitude for storytelling. In March 2010, brothers Coby and Hunter Lake founded their brewery, Avondale Brewing Co., in Birmingham, AL, on these very same principles. To that end, the brothers chose for their 10,000-sq-ft brewery an establishment built in 1895 mostly because of its history. Previously a fire station, pharmacy, bank and saloon, the brothers dubbed Avondale a “small brewery with a big story,” according to Coby Lake.

“With everything that we do here at Avondale, we try to celebrate some part of the history of the building or history of the area,” he said.

The brothers even have brought to life the caricature of Miss Fancy the Elephant, whose image graces the brewery's logo and spirit permeates its foundation. Depending on who is telling the story, Miss Fancy became a resident of Avondale Park—the original site of the Birmingham Zoo—in 1913 when a downtrodden circus owner lost her to a local newspaper publisher in a hand of poker.

In any case, Miss Fancy reportedly was known to be a bit of a drinker. Whenever she was under the weather, her trainer John Todd served her a dose of “elephant medicine,” a mixture of water and—again, depending on who is weaving the tale—either whiskey or bootleg beer provided by city officials who were confiscating alcoholic beverages during a statewide prohibition.

“Miss Fancy is the most historically significant figure in the history of Avondale,”

Coby Lake said. “We've got to embrace the beer-drinking elephant. She's one of us.”

The brothers further show their love for the four-legged beast by naming brews, such as the Pachyderm Pale Wheat and the Vanillaphant Porter Ale, after her as well as hosting charity events, like the TrunkStock Festival, in her name.

Clearly, the days of yesteryear mean a great deal to the brewery founders, and that love of integrating the past led Hunter Lake, also a licensed contractor who oversaw the brewery buildout, to completely restore the historic building. Add to that constructing a commercial craft-brewing system while ensuring there would be room to grow, and the brothers had a very large project on their hands.

A CREATIVE, ECOLOGICAL SOLUTION

As Avondale's creations became more popular, Coby and Hunter Lake began packaging their beer in kegs, cans and bottles for sale in the Birmingham area. Manufacturing about 480 barrels per month, the original building wasn't large enough for both brewing and packaging 10-12 varieties of suds. After deciding to use a second, smaller building on the premises to package the beer, the brothers had to find a way of transferring it from one end of the property to the other.

Fred Esleck, who worked with the local AQT distributor during the installation and is now an Aquatherm Regional Sales





Having been impressed with the quality and performance of Aquatherm Blue Pipe on its chiller lines (shown here insulated and running from the chiller to the main brewery), Avondale's owners researched and ultimately selected Aquatherm Green Pipe for beer lines as well.

Manager, had worked with the brothers to find the right equipment for the brewery's glycol-cooling system. He was visiting Avondale when he saw how they were moving the beer to the packaging area.

"They would fill a tank with beer, then a forklift on site would pick up the tank and drive it to the second building," he said. "I just said, 'You know, there is a piping system you can use to transfer the beer instead of going through all of this work.'"

Esleck was referring to the same piping the brothers had used for the brewery's glycol-cooling system: Aquatherm polypropylene-random (PP-R) piping. Although Aquatherm traditionally has been used across the U.S. for everything from potable water to heating and cooling, compressed air and greywater, it previously had never been employed to move a food-grade product for human consumption; Avondale's new project was going to be the first.

The Lake brothers have a passion for the past, but they also are looking forward to a long future at Avondale. Products such as Aquatherm can help them reach that goal.

PP-R piping won't corrode, scale, wear out or clog—even after years of use; hard water doesn't affect the piping, making it ideal for almost any application. Additionally, Aquatherm piping systems are completely free of heavy metals and toxic chemicals; they also are hydrophobic, which means they will not leach any trace chemicals, keeping Avondale's beer safe, pure and delicious. Finally, the piping systems are fully recyclable and sustainable and can

contribute to LEED v4 certification.

"At one point, they had some of the information about Aquatherm's environmental friendliness in a frame in the bathroom," Esleck laughed.

CLEAN BEER IS TASTY BEER

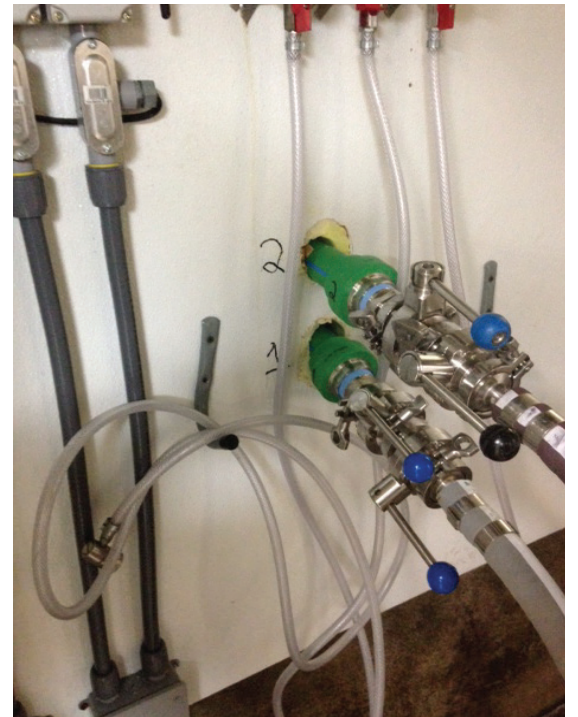
Planning a piping system that could efficiently transport beer from the main brewery to the packaging building took some thought. According to Kade Miller, a brewer also in charge of quality control and maintenance at Avondale, 15-30 barrel stainless-steel conical fermentation vessels and bright tanks in the main brewery are joined to approximately 300 ft of 2-in. Aquatherm SDR 11 non-faser Green Pipe® that runs to a holding tank in the smaller packaging building.

"Being that [the Aquatherm Green Pipe] is food-grade material, it should not be susceptible to harboring bacteria, and with proper cleaning and sanitation should perform flawlessly."

—Kade Miller, Brewer, Avalon Brewing Co., Birmingham, AL



The 2-in. Aquatherm Green Pipe that carries beer from building to building was primarily buried 3 feet underground, but this section of pipe is in a crawlspace that goes from the main brewery and then underground to the packaging building.



Aquatherm Green Pipe is shown here penetrating a wall from the main brewery and entering Avondale's canning building. Aquatherm Green Pipe is NSF-approved for contact with food grade materials.

The pipe runs from the vessels and tanks in the main brewery through a wall connection, continues along the outside of the building, then stretches underground all of the way to the packaging building, routes above ground outside and through another wall connection into a storage tank in the packaging building that holds the beer until it's ready to be transferred into kegs, cans or bottles.

Aquatherm Green Pipe is recognized for its high level of performance and low environmental impact; it is designed specifically for potable-water applications, including hot- and cold-water supply. Although its many features make the piping ideal for a range of operations, its NSF listing for potable-water and food-service applications was top of mind for this project.

Once the beer is transferred from Point A to Point B—which, according to Miller, happens a couple of times a week—Five Star low-foaming Saniclean sanitizer is pumped through the piping in reverse to catch any debris that might be stuck on a joint and completely sterilize the piping. Miller says the piping also is filled with the sanitizer when not in use. Miller feels there is no reason to worry about bacteria growing in the piping system.

"Being that [the Aquatherm Green Pipe] is food-grade material, it should not be susceptible to harboring bacteria, and with proper cleaning and sanitation should perform flawlessly," Miller said.





Two-in. Aquatherm Green Pipe® SDR 11 non-faser runs from the brewing vessels and tanks through a wall connection outside of the building, then runs underground to the packaging building that holds the beer until it's transferred into kegs, cans or bottles.

FUSION TAKES THE FEAR OUT OF LEAKS

Because the Lake brothers had previously used Aquatherm piping systems in their brewery, constructing the new beer-transfer system was relatively easy. Esleck trained five employees on Aquatherm's unique heat-fusion process, but, according to Miller, only two were needed to do the majority of the welding on the new project.

Aquatherm piping uses reliable heat fusion to form connections; heat fusion bonds both sides of a joint into a single, homogenous material without the use of chemicals or mechanical connections, which eliminates systematic weaknesses and potential fail-points in the pipe. The seamless heat-fusion connections, combined

with the piping's resistance to corrosion and abrasion, help to ease leakage concerns.

The installers used a McElroy Socket Fusion Kit purchased for the new project as well as a Ritmo tool that had been used on the brewery's glycol-cooling system.

"For some reason, these guys take to [the Aquatherm fusion-welding process] very well," Esleck said. "I think it's a pretty complicated procedure to make beer, so maybe they're used to more technical stuff. They could really see the fusion process when you explained it to them. They understood it and took to it more quickly than other folks I've tried to train."

Although it took three days in November 2014 to install the system, Esleck said most of that time was spent digging the ditch in the ground

where the piping was to be placed.

The biggest concern about the beer-transfer system was the short lengths of pipe that were exposed to the elements above ground. To ensure the beer wouldn't freeze—no matter the weather—Esdalek suggested Armaflex closed-cell insulation as well as electrical heat tracing.

"Heat tracing looks like an extension cord you wrap around the pipe," Esleck said. A thermostat regulates the heat tracing, turning it on when the outside temperature reaches a setpoint and warming the pipe, guaranteeing the beer won't freeze.

Although stainless-steel pipe could have been used for the project, Esleck said the Lake brothers saved a great deal of money using Aquatherm piping systems, only spending about \$3,000 on materials. Labor also was an issue.

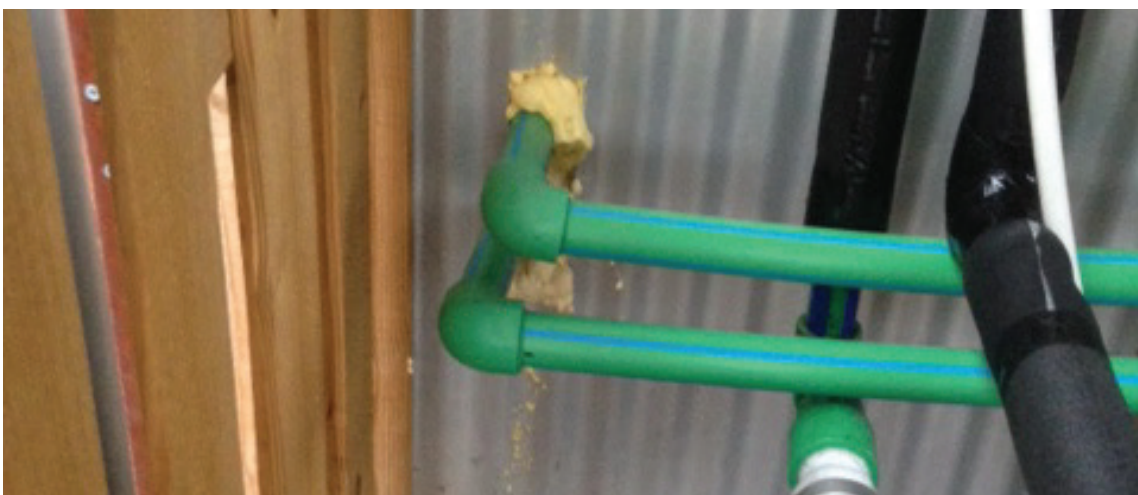
"If you are putting stainless together, you have to have a specific welder, and they certainly didn't have that," Esleck said. "But they did have Aquatherm-certified welders."

READY FOR ANOTHER ROUND

The project was successful, and now the Lake brothers can rest easy knowing their beer supply is clean, pure and safe in transit. "I'm pretty confident in [the Aquatherm Green Pipe] not leaking, even in the case of a substandard weld," Miller said.

Esdalek continues to keep an eye on the brewery and is excited to see what's next for Coby and Hunter Lake. "It has been neat to watch Avondale grow," Esleck said. "And I get to watch [the brothers] live their dream."

As they say at Avondale Brewing, "Trunks up!" 



The two Aquatherm Green Pipe® lines shown here carry Avondale beer, while the lines above it (insulated except for the fittings and valves) are Aquatherm Blue Pipe®, which was used for Avondale's chiller lines.

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 faser-composite layer in the pipe reduces linear expansion of the pipe by up to 75% compared to plastic piping



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