



## GREEN PIPE HELPS MINERS REMOVE THE BLACK

### PROJECT:

River View Coal Mine, Domestic Water Supply

### PRODUCTS:

aquatherm green pipe®

### LOCATION/DATE:

Morganfield, KY  
August 2008

### AQUATHERM ADVANTAGES:

- PP-R was less costly than copper
- No concerns about jobsite theft
- Natural R-value was bolstered by additional insulation

With copper prices sky-high, an experienced mechanical contracting company embraced polypropylene as a superb potable water solution at a Kentucky coal mine.

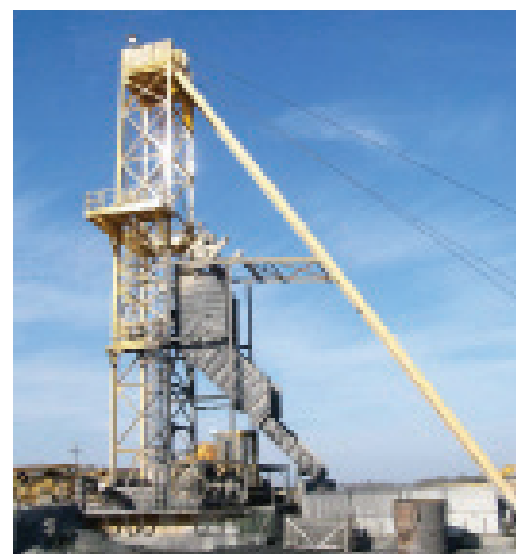
Lyons Company, Mechanical Contractors and Engineers, located in Glasgow, Kentucky, prides itself on its team of licensed and skilled journeymen and master plumbers, experienced pipefitters, and welders. So receiving the bid for a large plumbing job at a Kentucky coal facility was commonplace. However, the piping system they specified for the domestic water supply for the facility's shower rooms was actually a bit out of the ordinary – at least in the U.S.

Operated by River View Coal, LLC, The River View Coal Mine, located near Morganfield, Kentucky, is expected to produce 6.4 million tons (at full capacity) of high-sulfur coal per year. Construction of the facility's infrastructure proceeded quickly and the mine was operational by the end of 2009. The mine has as many as 600 workers.

When the miners end their shift and prepare to head home for the day, they need to scrub all of the coal dust and dirt from themselves. Thus, a large shower facility was an integral part of the mine's support buildings. Lyons received the bid to design and install all of the domestic water supplying two shower rooms, measuring about 22 feet by 24 feet, with 40 shower heads apiece.

### GREEN SAVED SOME GREEN

In summer 2008 when the company was preparing its bid, copper prices were at an all-time high. Tony Simmons, project superintendent for Lyons, explained that the company had been investigating copper piping alternatives, including polypropylene. "Our company is always looking to expand and try new products as they come along



to stay competitive and give us an advantage," Simmons said.

While new to Lyons and relatively new to North America, polypropylene piping is actually anything but new: Aquatherm's polypropylene piping systems have been used for nearly 40 years in over 70 countries. A key to Aquatherm's success is the fusion welding process that connects the pipe. The fusion process creates seamless connections that when properly executed last a lifetime, while eliminating the need for toxic materials, glues and resins, and open flames in piping installations.

The polypropylene pipe and desired fitting are simply inserted onto an Aquatherm welding device and heated for a specified time (typically only seconds), then joined together. Once fused, pipes and fittings have the same physical properties, eliminating systematic weaknesses. Additionally, a fiber-composite layer in the pipe reduces linear expansion of the pipe by 75% compared to other plastics, ensuring that it hangs rigidly even when subjected to high operating temperatures (up to 200°F). Fully recyclable, Aquatherm Greenpipe®





reduces concerns about the cost (and theft) of copper and is designed specifically for potable water applications.

Dennis Oliver, engineering manager at River View Coal, said that when Lyons Company presented Aquatherm as a cost saving option, he and his staff had no hesitation whatsoever. “We knew how durable polypropylene is because we use HDPE in harsh environments and depend on it in the mines. It was a cost saving measure, and it made perfect sense for the shower rooms,” Oliver said.

The job could have been specced with copper, but PEX wouldn't have been able to handle the high temperature ranges and other demands of the system, according to Simmons. “The hot water is coming straight off the hot water boilers and the Aquatherm is able to carry the temperatures and the pressure.”

## GETTING THE CREWS TO FUSE

While the Aquatherm system forms extremely durable joints, there is a learning curve involved with it and proper training is essential to its durability (Aquatherm-trained installers are also able to offer the company's 10-year warranty). Representatives from Aquatherm and the local Aquatherm distributor hosted a four-hour fusion welding demonstration at the Lyons' Glasgow office, with Simmons and installer



Joe Thomason in attendance. Simmons has been in the trade for about 30 years and had previous experience with HDPE and fusion pipe, but was a bit cynical of polypropylene at first.

“I was a bit skeptical of everything being in metric and it was a bit different. But it's like a lot of things, you work with it a bit and you get used to it,” he said. In August 2008 Lyons rented an Aquatherm manual fusion welding jig for the 3-inch mains and a handheld fusion tool for the smaller welds.

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**-Tony Simmons, project superintendent, Lyons Co., Glasgow, Kentucky**

The main lines were 3-inch, with 2-inch, 1 ½-inch, 1-inch, and ¾-inch Aquatherm Greenpipe® also used on the job. Aquatherm's Greenpipe® SDR 11, a version designed for cold water applications and without the fiberglass reinforcement layer (thus less expensive) was used to save further costs on cold water lines. The shower heads were installed along the outside walls of the rooms and a block of shower heads were also placed in the middle of the rooms.

Lyons used some copper in the chase plumbing walls in order to transition from the Aquatherm to the copper flush valves (Aquatherm is working on introducing polypropylene adapters to the North American market), and Bradley stainless steel shower boxes, flush valves and urinals were installed on the project, along with Kohler commodes.

Simmons and Thomason prefabricated some sections on the jobsite, mainly, the headers that went around the outside of the shower rooms. They were prefabbed using Aquatherm's fusion outlets and placed on stands, then hung in position for the shower boxes.

Simmons encountered some uncertainty in fastening and hanging some sections of pipe early on. However, Aquatherm quickly got representatives on the jobsite and provided direction and reassurance

“I was a little frustrated with being sure that everything was done just right, but they got out here

and got everything straightened out. A lot of the problem was that I was getting a bit too precise, or too technical,” Simmons recalled. Regarding code approvals, the local inspector wasn't familiar with Aquatherm, but upon reviewing a letter stating that the product had been approved in the state since 2005 and seeing that it's on the approved materials list, he was satisfied.

## WRAPPING UP

Aquatherm's polypropylene pipe possesses a natural insulation value of R-1 (or more depending on pipe dimension and SDR). However, the hot water mains throughout the building were insulated as a precaution to maintain water temperature because some of the run outs to the showers were long and no reheat loop was included in the system.

Out of roughly 1,500 fusion connections, Lyons had only five leaks. A few of those resulted from overheating the pipe on the iron and the rest were on headers. Overall, however, Simmons was quite impressed with polypropylene's reliability.

“Joe and I did all the work, and to have only five leaks, that's pretty good,” Simmons said, adding that the number of leaks would certainly decrease further with more experience. “I've been using copper for 30 years, but there would have probably been that many leaks if we were using copper too,” he added.

With roughly 3,000 feet of Greenpipe installed in the facility, the shower rooms are now fully tested and operational, and both the River View and Lyons staffs are quite satisfied. “It all came out great,” Simmons said, with Oliver adding, “I didn't hear any complaints during the installation, and it's nice looking pipe.”

*A version of this article appeared in the January 2010 issue of Contractor magazine. To view the article, visit*

*<http://contractormag.com/news/green-pipe-mine-2345/index.html>*

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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