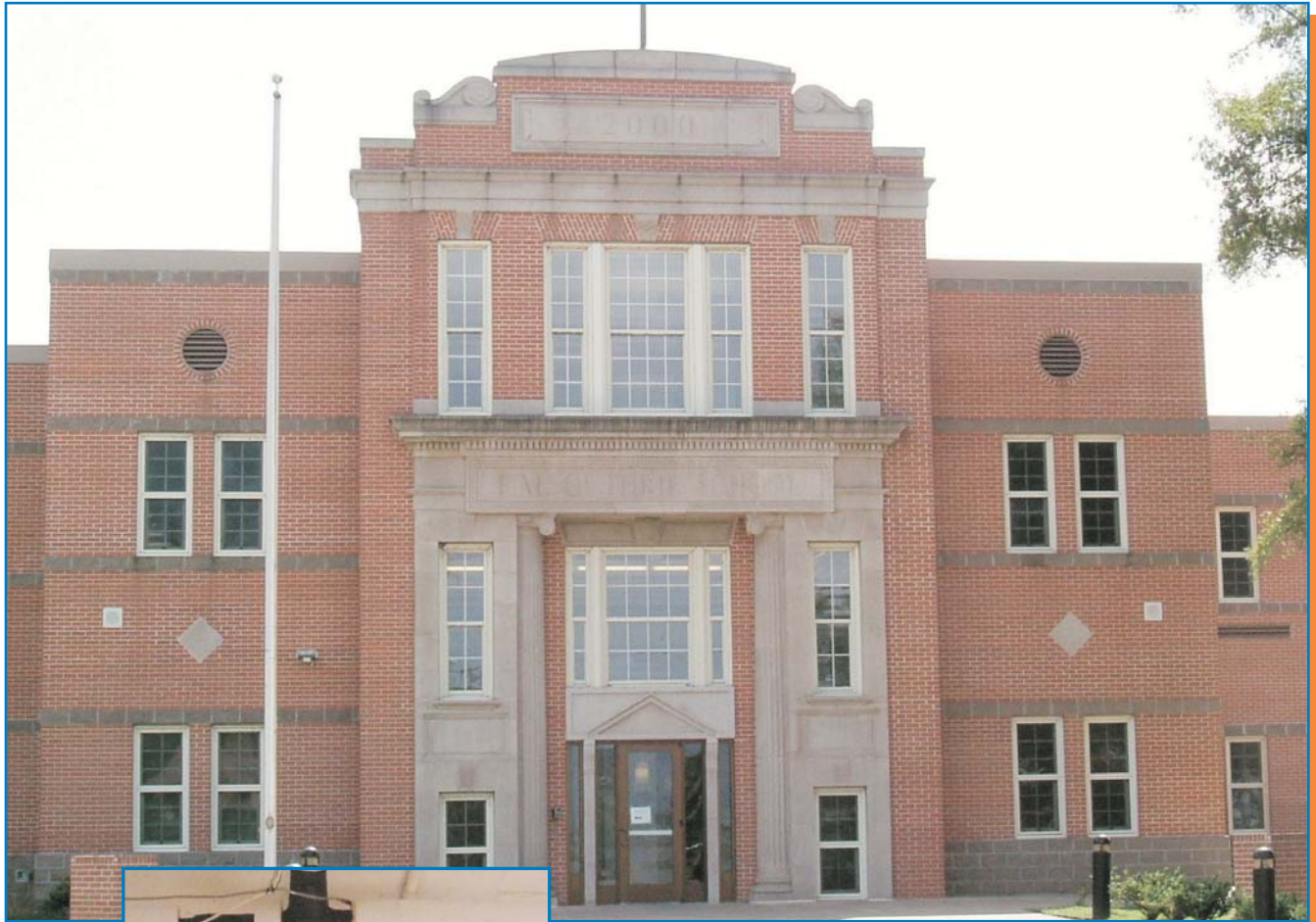




School Maintenance Crews Fight Mold with VaporWick® Insulation



Guthrie Elementary School, Memphis

Case Study



With plenty of warm humid weather from late spring to early fall, Memphis City Schools are challenged to keep chilled piping systems tightly insulated and dry. All too often their best efforts come up short and the schools have to deal with dripping water, stained ceiling tile and growing mold.

One response from school administration was to assign a special maintenance crew to fix what was said to be the cause of at least some of the mold – condensation from poorly insulated chilled pipe. In some cases the pipe may not have been insulated properly to begin with; in others the insulation was old or had been damaged.

To select the best insulation for the job, the maintenance crew assigned to the task held separate training sessions for two candidate insulation products for chilled pipe – a relatively new type of fiberglass insulation and expanded polystyrene foam. They had representatives from each manufacturer teach the crew how to install their insulation. After the two sessions, the crew voted for the one they wanted to use. Their pick: VaporWick® pipe insulation from Owens Corning.

VaporWick insulation is specifically made for piping systems that operate below ambient temperatures. The product incorporates a patented concept that uses a wicking material to remove condensed water from the system, keeping the insulation dry. Water vapor that enters the system and condenses on the cold pipe surface is removed to the outer surface by capillary action, where it then evaporates to the ambient air.

“The crew picked VaporWick insulation because it is more ‘user friendly,’” says Rickey Thompson, supervisor of special projects on the maintenance team.

“The product seems to be doing a good job,” continues Thompson. “We have taken out a lot of wet insulation and replaced it with VaporWick insulation. The new material seems to be doing very well.”

The team replacing wet insulation is headed by Crew Leader Maurice Tutton. Working with him are Willie Walker, Kenneth Watkins and Leon Rogers.

“We are still learning but we have been working with VaporWick insulation for six or seven months now and it is very easy to install,” says Tutton.

There were several factors that prompted the team to select VaporWick insulation, explains Tutton. One is the ability to put the product on wet pipe, which enables the crew to install insulation on a system that is operating.

“We just wipe off the pipe real well and install the VaporWick insulation,” says Tutton. “We couldn’t do that with other types of insulation because it would trap the water inside. We would need to shut down the system and let the pipe dry before installing other types of insulation.”

Tutton says he and the crew also like the fact that VaporWick insulation does not require the use of messy mastic between each piece of insulation, a factor Tutton says is most significant when installing insulation in tight spaces.



“I highly recommend it.”
Crew Leader Maurice Tutton

MEMPHIS CITY SCHOOLS

- The Memphis City Schools is the largest school system in the state of Tennessee and the 18th largest metropolitan school system in the nation.
- The school system is one of the largest employers in Memphis with approximately 16,500 full-time and part-time employees.
- More than 118,000 K-12 students are served in 185 schools with 396 separate buildings with 18 million square feet of floor space.
- Maintenance spending is approximately \$20 million annually.
- How much chilled pipe do they have? "Miles and miles and miles," says Russell George, who is in charge of the Customer Support Center and Energy Management Systems.

"It is hard to seal everything up perfectly when you are working in a tight space," says Tutton. "Any little crack or open area can let air in and condense moisture. When that happens you are just setting yourself up for mold later on.

"With VaporWick insulation we have more leeway," he continues. "We need to make sure the wicking material is placed properly but we don't need to seal the insulation tightly.

"We like it," concludes Tutton. "I highly recommend it."

Russell George, Manager of the Customer Support Center and Energy Management Systems at the schools, says he approved the choice of VaporWick insulation even though the product is more expensive on a per-piece or per-foot basis.

"When you factor in the ease of installation, VaporWick insulation is not more expensive," says George, who also considered the fact that the product would be installed by general maintenance crews, not professional insulators.

"VaporWick insulation produces a more forgiving system," he explains. "It doesn't require a perfect installation job. If the seams are not exactly perfect, the VaporWick system will still manage any moisture that gets into the piping."

Mike Davis, technical representative for distributor Insulation & Refractories Services, Inc., is pleased with the way VaporWick insulation works. He admits, however, that he and others at the company were pleasantly surprised.

"We all said it wouldn't work," admits Davis. "It's pretty unbelievable. It contradicts traditional methods of insulating chilled pipe. For years we were told to achieve a complete seal and with VaporWick insulation we are going in the exact opposite direction."

Despite their misgivings, Davis says the company decided to give the product a chance and installed it in a mechanical room at a college in the Memphis area. "That was several years ago and the insulation is holding up very well," says Davis. "We definitely have confidence in the product now," he continues. "We have used it many times since the test installation and it has always solved the moisture problem we were trying to address."

Freddie Veteto, mechanical engineer, project manager and an owner of Insulation and Refractories Services, is another doubter who became a believer after seeing VaporWick insulation perform under extreme conditions.

"We installed VaporWick insulation on chilled pipe above the cookers in a rice mill," says Veteto. "They have steam rising from the cookers and chilled pipe running about 10 feet above. We put VaporWick insulation right on while the chilled water system was running. That was last spring and the insulation still looks good. There have been no problems there."

Johnny Whitsett, president of Insulation & Refractories Services and also a company owner, says they decided to try VaporWick insulation based on their confidence in Owens Corning Area Sales Manager Steve Campbell.

"We've got 110 percent faith in Steve Campbell. If Steve told me the Mississippi River is going to dry up I would believe it. He is a man of his word and he kept pounding into my head that this product did work. So we gave it a test and found that it does perform."

Whitsett says the company first used VaporWick insulation on several small jobs and monitored the applications. "We are still monitoring those small jobs and the insulation is still performing well," he says. Darrell Cothorn, the sales representative at IRS who worked with Memphis City Schools, saw VaporWick insulation perform well in several installations at large commercial facilities in Memphis.

"Those facilities have several large chilled water lines," says Cothorn. "With other types of insulation they would last a while and then the company would need to go back in to fix leaks. Once VaporWick insulation was installed, the cycle was broken. That proved to us that VaporWick will work."

MOLD: A GROWING PROBLEM FOR SCHOOLS

Nationwide, school districts are finding allergy-inducing mold in walls, on ceiling tiles and near ventilation systems.

According to published news reports, mold has forced some administrators to shut down schools and make millions of dollars in repairs. Others face lawsuits from students and staff members who claim moldy buildings caused long-term health problems.

"It's a growing problem, and it's one of the more high-priority issues that schools are dealing with," said Ericka Plater, indoor air quality manager for the American Association of School Administrators.

In the fall of 2002, 1,000 local students spent a month at Bristol Motor Speedway – not watching races but studying in the skyboxes while mold was removed at their high school.

Sullivan County Schools director John O'Dell said the Bristol high school was shut down for about six weeks and \$600,000 worth of repairs after children became ill and several classrooms tested positive for black mold, or *Stachybotrys chartarum*, which is said to cause breathing problems.

VAPORWICK PIPE INSULATION: FEATURES & BENEFITS

VaporWick pipe insulation is designed specifically for below-ambient-temperature applications in severe hot and humid operating environments.

- Keeps insulation dry by using a specially designed wicking material that absorbs condensed water from the pipe surface and wicks it to the outside.
- Ideal for dual temperature installations because it is rated for operating temperatures which range from 32 degrees F to 220 degrees F.
- Meets model code fire requirements with a flame spread rating of 25 or less and a smoke development rating of 50 or less; this means the product will be granted building code approval for use in air plenums and other critical locations.
- Excellent thermal value, which contributes to lower operating costs and a favorable installed cost/performance ratio.
- Can be installed directly over wet piping so systems don't need to be shut down during the product's installation.
- Has a self-sealing lap seal with no need for staples or mastic.
- Resists mold and fungus growth.

Cothorn says the crew at Memphis City Schools told him they like VaporWick insulation because they don't need to do as much time-consuming work to seal the system, compared to the expanded polystyrene foam insulation they considered.

"They are pretty much thrilled with the result," says Cothorn. "Their moisture problems are going away."

George says they did have a scare that shook the crew's confidence in VaporWick insulation. On a particularly warm day this spring they found condensation forming on the surface of insulation they had recently installed.

They called for help and within 24 hours an Owens Corning technical representative was on the scene. After a thorough check of the building, the Owens Corning representative found a duct on the roof of the school that was allowing unconditioned outside air to enter the space above the ceiling tile.

"The duct was supposed to exhaust air to the atmosphere, not let unconditioned air into the building," says George. "The air handling system inside the building was supposed to be over-pressured so air would exit the building. Instead, there was negative pressure and air was being sucked inside. Once we fixed that, the condensation problem went away."

The only remaining problem for the maintenance crew is responding to all the requests their success has generated. To attack that problem, Campbell returned to Memphis in September to train a second crew on the installation of VaporWick insulation. The new pipe insulation crew includes Phillip Dortch, Darrell Edwards, Stinson Dandridge and Quentin Hopson.

With doubters becoming believers, air pressures being reversed and more crews learning how to install VaporWick insulation, it appears there is a lot of learning taking place at Memphis City Schools.

Photos by Rickey Thompson.

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