Bowling Green, Kentucky
THE DAILY NEWS
Monday, December 7, 2009

A new natural gas steam boiler at Western Kentucky University is receiving its final bolts before it goes into commission and saves the school 50 percent of its coal usage for heat.

The $1 million project to buy and install the boiler also included the removal of two older boilers that have not been in commission for 15 years because of dilapidation.

Located in the Central Heat Plant, sandwiched between Gilbert Hall and Parking Structure 1, the new 30-foot-

tall burner joins three others, two of which burn coal and have been at WKU since the early 1950s.

All of the boilers will work together to create enough steam to heat nearly every building on campus with a three-mile-long steam line that runs around campus in a loop.

Christian Ryan-Downing, sustainability coordinator for the university, said officials are excited to see the new boiler go up in flames because it greatly reduces the university's dependency on coal and its long-term effects on the environment.

"We are trying to reduce our carbon footprint," Ryan-Downing said. "We have a lot of students on campus who feel very passionately about coal use. They are concerned about mountaintop removal, (the dangers for miners) and the health of the mining communities."

The natural gas boiler is the first boiler added to the university since a mini gas boiler was installed in 1992. It arrived in November and required an entire wall of windows to be removed so that the old boilers could be torn out and the new one installed. Ryan-Downing pointed out that the steel from the old boilers was recycled.

After final inspections by the Environmental Protection Agency, the boiler is expected to go into commission at the end of this month or beginning of January.

Dale Dyer, plant operations manager at WKU, said the cost of gas and coal is actually about the same now. And even though natural gas is usually slightly more costly up front, the fact that it burns more efficiently than coal makes it more cost-effective in the long run.

Joe Martin, a boiler operator at the plant, said currently 11 workers rotate in shifts around the clock to shovel about 32 tons of coal into the coal burners every day during the coldest months.

Dyer said the university just signed an agreement with the EPA to voluntarily reduce the maximum amount of coal it could potentially burn annually to 4,000 tons. Before the agreement, the university was permitted to burn up to 10,000 tons, but Dyer said it has never used more than about 5,600 tons.

While the university is anticipated to burn half the coal it usually does with the gas boiler, Dyer said the agreement also offsets the potential for an anticipated mandatory emissions monitor.

"What we accomplished with the voluntary cap is that we assure the (hydrogen chloride) emissions do not go high enough that we have to have special equipment to reduce the (hydrogen chloride emissions) from the gas," he said.

In the past year, the university has installed a filtration bag house just behind the steam plant that funnels the coal emissions and cleans out particles, such as soot

and dust, from being emitted into the air. Essentially, it works as a house-sized netting system between the boilers and the large smoke stack marked with a WKU.

Ryan-Downing said the new $600,000 boiler was purchased with funding lassoed from last year's energy savings.

The university has no plans to completely bag its coal usage in the near future, Dyer said, but it is a possibility in the long term, he said.

"It's a possibility but not a topic being debated or discussed with much enthusiasm at this point," Dyer said. "In the long-range plans, it is likely, but in the short-range plans - like in the next five years - it's not likely ... coal is a big part of Kentucky and it wouldn't be the most popular choice."

Ryan-Downing said she regularly gives tours of the facilities to student groups and classes interested in learning how the campus is heated. Many are surprised to see that a small natural gas heater handles the campus during the "fringe" months, such as November and March, before two large coal-burning boilers, installed in the 1950s, kick in to kick up the heat during the coldest months.

Natural gas boilers are said to emit 70 percent less greenhouse gas than coal boilers, and Ryan-Downing said they clean up a few other things for the environment as well.

“One of the byproducts of burning coal is coal ash, which has to be removed, and there’s a lot of question about what to do with it,” she said. “It can be used for concrete and asphalt, but ours goes to a company that uses it as a solidifying agent for their waste liquid ... but it still eventually ends up in a landfill. Another benefit of natural gas is that you don’t have the coal byproduct.”

Ryan-Downing said she tries to convey to students that the best way to reduce coal burning is by reducing energy use. She pointed out that while WKU uses coal to create heat, 66 percent of the electricity supplied by the Tennessee Valley Authority is coal generated.

“Our number one thing is reduce, reduce, reduce (energy use) and be smart about how you’re using it,” she said. “If we can cut down on our use, we may not need as massive a boiler. We don’t want people to be uncomfortable, but we want them to be responsible.”

Dyer said one of the greatest benefits of the new boiler is that it allows the university the opportunity to be selective on its fuel consumption based on cost.

“It gives me as an energy manager the opportunity to take advantage of the cheapest fuel,” he said. “If coal is cheaper tomorrow, then maybe we’ll burn less gas for a while. We haven’t had the ability to be fuel selective, because we were mostly coal, for a long time. At the

least, this scenario allows us to use 50 percent coal and 50 percent gas.”