

MIURA

success stories

MARKET:

College/Universities

USAGE:

Efficient Steam Generation,
Energy Savings, Reduced Emissions

CUSTOMER:

Duke University,
University of Arkansas

Major Universities Choose Miura's On-Demand Boilers for Reduced Energy Consumption & Carbon Footprint

Duke University Installs 15 Miura Boilers To Improve Energy Efficiency;

University of Arkansas Installs 6 Miura LX-300 Boilers For On-Demand Steam and "Green" Energy Savings

Duke University's commitment to sustainability continues with a \$25 million renovation of its East Campus Steam Plant and conversion to Miura natural gas boilers.

For about 50 years, the plant's coal-fired boilers supplied steam through underground pipes and tunnels to heat campus buildings until the plant closed in 1978. Duke University's new plant, outfitted with 15 Miura LX series gas-fired steam boilers, will provide 35 percent more steam capacity to campus, while simultaneously helping to reduce the university's environmental footprint.

The new gas boilers require less water and time to produce steam and produce fewer emissions of greenhouse gases than coal fired boilers do. Instead of using lots of energy to fire up one to three large coal boilers, the plant can distribute its steam-generation needs among its smaller 15 new gas boilers based on demand.

Miura boilers feature an exclusive "once-through" vertical-tube design, a revolutionary advance that produces "On-Demand Steam" in just five minutes (or less) while also using less water and energy. Miura boilers can, on average, save as much as 20 percent annually on fuel costs over other boiler designs.

"We can have them on cold standby and have them come on as necessary, which creates a significant reduction in the energy losses associated with a typical start-up, purge, and warm-up cycle of a boiler," said Russell Thompson, director of utilities and engineering for Duke Facilities Management.

At full capacity, the 15 Miura boilers in the new East Campus Steam

Plant will provide Duke with a 110,000 lb.-per-hour base load year-round, and perhaps up to about 130,000 lbs. during peak-need times.

Miura's exclusive technology also produces BHP outputs comparable to much larger units, but with far less water consumption and a more compact footprint. This enabled Duke to install its 15 Miura boilers in the East Campus Steam Plant without having to expand any part of that historic brick building.

As a result of their energy-efficient "green" design, Miura boilers output reduced levels of harmful emissions such as carbon dioxide (CO₂) and nitrogen oxide (NO_x).

Miura's gas-fired/Low-NO_x LX Series steam boilers are designed to eliminate 75 percent of the harmful emissions of standard gas-fired boilers. Miura's LX Series steam boilers provide industry-leading reduced NO_x emissions as low as 9 ppm (standard gas-fired boilers produce pollutants at a rate of 80 ppm).

"From a total production standpoint, we have gone from producing 95 percent of our steam with coal to producing

85 percent of our steam with natural gas," Thompson added.

That reduced coal usage translates to a reduction of 30,000 metric tons of CO₂. "It is our first big step in our Climate Commitment Challenge to reduce our carbon footprint," Thompson said.

The design team for the project consisted of RMF Engineers, Smith Group Architects, Thompson's team from Duke University Utility and Engineering Services, and the Duke Office of Project Management. The construction team was led by the Balfour Beatty Corporation, and the main mechanical contractor was Boiler Masters Inc.

