

ONE TRIAL BOILER RESULTS IN NINE BOILER INSTALLATIONS

BOILER DIVISION CASE STUDY

Santa Clara University

Santa Clara, California

Boiler Replacement

CUSTOMER APPLICATION AND KEY CHALLENGES

The student body and university staff members are accustomed to a standard of comfort which was difficult to maintain even with the current system performing properly.

The university used a low-mass hydronic system to heat the campus buildings.

A total of thirty boilers from several different manufacturers were in use, some of which were outdated. This made servicing complex and frustrating, including frequent temperature swings, false alarms and shut downs.

Chris Watt Facility Director, a thirty year employee, identified RF MacDonald Co. via social media and requested a review of the systemic equipment problems affecting the entire campus.

Eventually two boilers in the Leavey Activity Center were in such bad shape they needed immediate replacement.



The Santa Clara University Campus

Santa Clara University, a comprehensive Jesuit, Catholic university, California's oldest operating higher-education institution demonstrates faith-inspired values of ethics and social justice.

THE R.F. MACDONALD CO. ANALYSIS & SOLUTION

SCU did not like dealing with multiple service providers and several layers of contact. This required SCU staff to repeat information with each new representative. This also resulted in several types of equipment being installed due to varying recommendations.

R.F. MacDonald Co. ensured SCU they would have one point of contact who would bring in specialists as needed depending on what was involved, such as a technician for tuning.

The system recommended was the Fulton Endura—a high-mass condensing boiler well-suited for primary variable flow systems. The boiler includes an enhanced duplex stainless steel heat exchanger that has been pre-certified as compliant with Bay Area and South Coast NOx limits. Also outdoor reset controllers were included to optimize performance based on ambient temperature .

It was also recommended that this same state-of-the-art equipment be centralized across the campus.

SCU agreed to have one boiler installed in the O'Connor hall as a trial to determine performance.

The O'Connor trial boiler exceeded the campus expectations so when two other boilers failed at Leavey Activity Center, Fulton Enduras were again selected. They were shipped from our Fresno inventory of stocked boilers, installed and started up by R.F. MacDonald Co. personnel within (2) days.

With the urgent boiler problem solved and a history of positive service and technology performance established, both the benefits of the R.F. MacDonald Co. single point of contact and the Fulton Endura boiler were proven. SCU and the R.F. MacDonald Co. team moved on to the broader outdated equipment problem. See the results on back.



The Fulton Endura high-mass condensing boiler

BOILERS

PUMPS

SYSTEMS

SERVICE

PARTS

CORPORATE

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LAS VEGAS

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LOS ANGELES

10261 Matern Place
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MODESTO

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RENO

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Endura Cross Sectional Drawing.

PROJECT RESULTS

At the time of this publication, nine boilers are installed and the plan to centralize with one manufacturer and service provider is well under way. The remaining boilers have been replaced as needed.

The new Fulton Endura high-mass condensing boiler is capable of running at lower temperatures, allowing the flue gases to condense and attaining higher thermal efficiency. This in contrast to the previous copper-finned boilers which had to run at higher non-condensing temperatures to prevent corrosion. Some of these boilers, though designed to operate at higher temperatures, were in fact seeing lower temperatures and hence condensation due to frequent cycling. Because these boilers were not constructed to withstand the acidity of the condensate, their heat exchangers corroded out, and the boilers needed to be replaced in as little as five years. The Fulton Endura will not have this issue with "cold start-ups," as it is built to condense.

Increased efficiency will also be achieved using the outdoor reset controllers which in hotter months drop boiler temperatures from about 180 degrees to 140-150 degrees, allowing the boilers to condense and providing significant energy savings. With the previous system, hot and cold air cycled back and forth to correct temperature caused by an air handler kicking on the boiler to modulate this air flow.

With the high-mass system, warm air consistently flows to the buildings due to reset controller which monitors outside temperature and causes the boiler to produce only the water temperature necessary for the required building temperature.