SAVINGS OBTAINED FROM HOT WATER BOILER CONVERSION AND LOW NOx UPGRADE

BOILER DIVISION CASE STUDY

Buck Institute

Novato, California

Boiler conversion

CUSTOMER APPLICATION AND KEY CHALLENGES

At the time of contacting R.F. MacDonald Co., Buck Institute was operating with an obsolete Cleaver-Brooks Steam Boiler system. The hot water boiler maintenance was high and only running at about 70-75% efficiency.

Significant damage to one boiler coupled with the looming high cost of Low NOx retrofit left Buck Institute in need of a cost-effective solution.

The existing closed-loop low pressure steam system was completely oversized for this facility.

Faced with the options of repair or replacement, the Institute turned to R.F. MacDonald for an effective long term solution.

The Buck Institute Campus, Novato

THE R.F. MACDONALD CO. ANALYSIS & SOLUTION

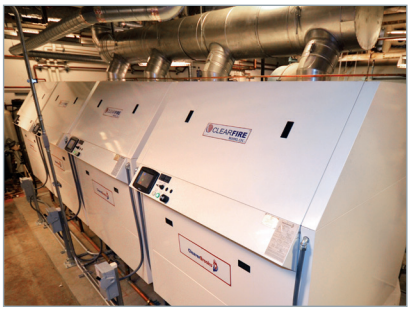
The Buck Institute is the nation's first independent research facility focused solely on understanding the connection between aging and chronic disease.

The Institute depends upon the availability of a reliable heating system, and while it was clear that the existing system was antiquated, financial constraints prevented the pursuit of replacement.

The situation altered when an impeller fan broke, significantly damaging one of the boilers. With no backup to replace the broken unit, Facilities Manager, Ralph O'Rear contacted R.F. MacDonald Co.

Early analysis set the cost of repair at $75,000, leaving the same high-maintenance, low-efficiency system in place. With this and the Institute's long-term needs in mind, R.F. McDonald's Modesto and Rohnert Park branches teamed up to deliver a more economical solution.

They recommended forgoing the repair in favor of replacement with a newly engineered system: four high efficiency/low NOx Cleaver-Brooks ClearFire-C hot water boilers.



Completed ClearFire-C Hot Water Boilers installation

This eliminated the need for heat exchangers while reducing physical footprint by half that of the previous system.

The ClearFire package included a Falcon control, a Cleaver-Brooks integrated control interface that sequences multiple boilers, eliminating the need for a stand-alone control. The existing flue system was re-utilized with only partial modification done to save installation costs.

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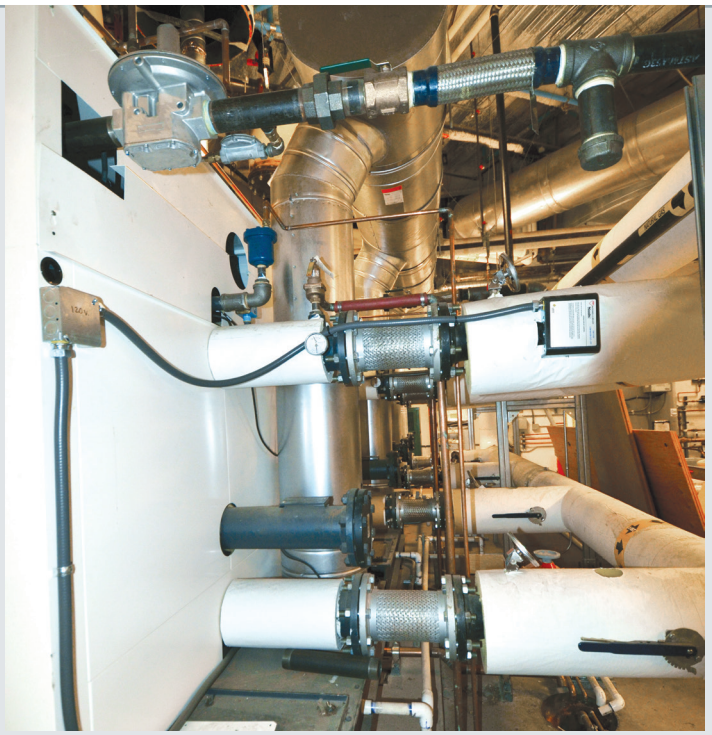

Completed ClearFire-C Hot Water Boilers installation

PROJECT RESULTS

Working with R.F. MacDonald Co., Buck Institute's damaged steam boiler system was replaced with a substantially updated, engineered hot water system.

The new ClearFire boilers meet BAAQMD/Low NOx permit requirements, and have shown significant gas and electrical savings.

These state of the art boilers more closely match their load requirement and offer the low-cost, low maintenance heating solution that Buck Institute needed.

Replacing the oversized, antiquated low pressure steam boilers has reduced maintenance cost by 65%, and earned Buck Institute a $26,000 rebate from PGE for energy savings.

"Excellent Fuel Savings Reductions"

Ralph O'Rear, Buck Institute

Buck Institute is now a member of R.F. MacDonald's Assured Efficiency Plan (AEP). With AEP, the solution-oriented relationship has grown even further. Monitoring is in place and the new system will be kept at peak performance moving forward.