



RIDGEVIEW HIGH SCHOOL

Saving Energy in Redmond School District, Redmond, OR

Case Study



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Buderus Condensing Gas Boilers for Energy Savings in High Schools

Project Goals:

- ▶ Sustainable heating & cooling
- ▶ Energy savings and environmental comfort
- ▶ Educational outreach for Oregon students

Background

When the Redmond, Oregon School District was faced with the challenge of retrofitting the existing Redmond High School with an upgraded heating and cooling system, three Buderus SB745 commercial condensing gas boilers met the challenge. According to Jerry Milstead, the school district's construction project manager, the 207,000 sq ft high school, built in 1970, received an 80,000 sq ft remodeling in spring 2013 with upgraded classrooms, refinished gym, new bleachers, and new boilers and chillers.

In 2012 the district had built the new 280,000 sq ft Ridgeview High School, incorporating four Buderus SB615 condensing boilers fired by liquid propane.

Installation Summary

As explained by Hans Rindfleisch of Skanska USA Building, Buderus SB745 commercial natural gas condensing boilers were selected for the Redmond High School upgrade, requiring removal of two old 60,000 pound water-tube boilers and heat exchanger. "Once the space was cleared of debris and insulation, we were able to pour a pad and set the new boilers in place. Our challenge was finding a layout for the boilers to allow us to tie into the existing header while allowing sufficient spacing for electrical equipment and flues. We located the water heaters to the mechanical mezzanine in the boiler room, providing the custodial staff a warm, spacious working environment."

The new Ridgeview High School completed in 2012 incorporated a Honeywell WEBS HVAC DDC control with a VRV system. It uses multi-zone air handlers with refrigerant fed coils installed within the duct work to supply heating or cooling.



Four Buderus SB615 gas condensing boilers at Ridgeview High School

Buderus

Benefits and Conclusion

The new Ridgeview High School was completed in the fall of 2012 at a final cost of \$73 million, significantly below the originally budgeted \$80 million. It was awarded LEED® Gold certification from the U.S. Green Building Council. The LEED® assessment awarded several points for optimizing energy performance due to half of the facility operating on high efficiency variable refrigerant volume (VRV) heat pumps, allowing portions of the building to simultaneously maintain different climate control settings. The facility's tilt-up concrete walls also scored additional LEED® points. The seven to eleven-inch-thick walls provide a thermal mass that decreases the loss of heating and cooling.

"The district is very pleased that we could work within the budgetary constraints while constructing a building of which the community can truly be proud," said Jerry Milstead. "We couldn't be more thrilled with the outcome of the project."

The Buderus SB series of high-efficiency condensing boilers feature design flexibility for retrofit and new construction projects. High mass design is tailored to fully meet space heating retrofit applications, and can be used with multiple fuels including natural gas, propane or heating oil. The

seasonal efficiency of the Buderus SB Series boilers can reach up to 98%, reducing heating costs by up to 20% in comparison with conventional heating units.

Energy savings using the Buderus boilers at the new Ridgeview school are projected to be between 20% and 25% of a standard code-compliant system. Significant energy savings are also projected at the refurbished Redmond High School with the Buderus SB745 boilers, which came online in autumn of 2013.



Three Buderus SB745 gas condensing boilers are installed in Redmond High School.



Project Name:

- ▶ Ridgeview & Redmond High Schools

Building Owner:

- ▶ Redmond School District, Redmond, OR

Application:

- ▶ Hydronic heating

Equipment

- ▶ Buderus SB615 (LP) and SB745 (natural gas) condensing boilers

▶ **Installation Contractor: MacDonald Miller, Oregon Cascade**

▶ **Engineer: MFIA Engineers**

▶ General Contractor: Skanska, Portland, OR

Manufacturer's Representative:

▶ PacWest Sales, Portland, OR

Project Completion:

▶ 2012 - 2013