

Hybrid boiler plant design

DESCRIPTION

Hybrid boiler configurations integrate condensing and non-condensing boilers to provide a high, optimal seasonal heating efficiency while avoiding the cost of incremental condensing boiler capacity that never achieves condensing level efficiencies. The boilers have a combined capacity necessary to meet or exceed the building's winter design space heating load and built-in redundancy should one boiler fail or require maintenance. Condensing boiler performance is dominated by the boiler return water temperature (RWT). The boiler starts to condense water out of the combustion gasses when the dew point of the combustion gases is at about 130F. Therefore, during milder winter conditions, the hybrid controller operates the condensing boiler at part load capacity to achieve condensing level efficiencies with RWT (or inlet water temperatures to the boiler) of 130F or less. As the winter conditions become colder and the outdoor temperature drops below a certain threshold, the hybrid controller switches to the non-condensing boiler for space heating operation.

DEMONSTRATING THE TECHNOLOGY

Hybrid boiler plant designs are suitable for buildings up to 100,000 square feet conditioned by hot water heating systems. Participants for testing and demonstrating this technology can be recruited from small business or custom programs.



Photo courtesy of Boilersource

CRITERIA	VALUE
Gas savings	0.09 Therms/ft ²
Measure life	20 years
Carbon emissions avoided	5.87E-04 MT equivalent CO ₂
How it saves energy	Hybrid boiler configurations integrate the operation of condensing and non-condensing boilers to provide a high, optimal seasonal heating efficiency, while avoiding the cost of incremental condensing boiler capacity that never achieves condensing level efficiencies.
Non-energy benefits	Cost savings strategy
Barriers to adoption	Emerging control strategy, market awareness

FOR MORE INFORMATION

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