

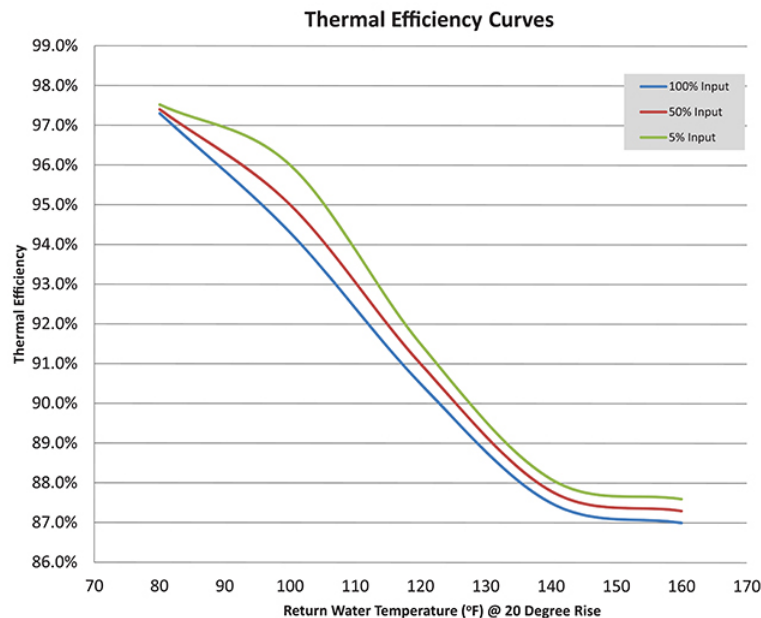
Technologies

The Importance Of Modulation

In general, modulation refers to the ability to adjust a boiler's or water heater's firing rate (input) to meet the heating demand (output) of the system.

AERCO equipment utilizes a fully modulating design that precisely matches firing rate to actual building demand. A 2000 MBH capacity Benchmark boiler can run with as little as 100,000 BTU/hr., or 6.7% input. Drawing only enough fuel to meet actual load changes, each unit will gradually increase its capacity – in precise 1% increments – up to 100% capacity.

Not only is less fuel burned as a result of modulating input, but also heat transfer is enhanced when the AERCO units operate at “part load.” Constant operation maintains temperatures within the heat exchanger, yet the reduced input increases the time these combustion gases are in contact with the heat exchanger surface, promoting greater energy transfer and cooler exhaust gases. AERCO equipment features an inverse efficiency curve performing best at lowest loads.



Since the majority of a boiler's operating hours will be under “part load conditions,” modulating units promise greater seasonal efficiency.

C-More Controls and Modulation

AERCO's inverse efficiency profile can be fully leveraged by carefully coordinating the operation of multiple units by using the C-More Control System. Put simply, it requires less energy for a group of modulating boilers, each firing at a lower load, to heat a building than for a single boiler operated at full or high fire to carry the entire workload.

AERCO's C-More Controls regulate the operation of multiple Benchmark or Innovation and ReCon installations, giving each unit firing instructions to maximize the efficiency of the plant as a whole as loads change throughout the day. Operating hours are also distributed evenly across all units, always alternating the lead boiler so that no particular unit receives more work over time than the others do.

Where Conventional Equipment Falls Short

The oldest boiler designs have only one level of power – 100%. They are either on or off. This creates cycling losses each time the unit shuts down; the heat exchanger cools off and must be fully “reheated” before heat transfer can begin.

Once the unit restarts, the 100% firing rate may be far more than what is required to meet the building's load.

While newer burners and boiler designs incorporate 5:1 or 3:1 turndown ratios, limited firing rates still result in some wasteful overshooting or cycling losses.



Heating and Hot Water Solutions

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