

Calloway

QUARTERLY

AERCO Introduces **3-Million BTUH Boiler** in a Deeper Shade of "GREEN"



Benchmark

3.0 Low NOx

- Natural Gas
- 15:1 Turndown Ratio
- Low NOx <30ppm
- Precise $\pm 2^\circ\text{F}$ Temp Control
- Direct or Conventional Vent
- Sealed Combustion
- Low Gas Pressure
- Quiet Operation
- Compact Footprint

The new 3.0 Low NOx Boiler from Aerco offers everything today's environmentally responsible engineer wants from a high capacity boiler, from top rated seasonal efficiency to lower greenhouse gas emissions.

Gone are the days of large, cumbersome boilers with huge heat loss characteristics and limited turndown capacity. The Benchmark 3.0 offers 3 million BTU/hr of capacity in a 28" x 64" footprint with the added advantage of a 15:1 turndown ratio. This means that owners can achieve precise load matching from 200,000 BTU/hr to full fire input of 3 million BTU/hr. Most important, the Aerco Benchmark is capable of achieving its highest efficiency (90% or better) under part load conditions, where facilities typically operate the majority of time. The Benchmark 3.0 can be applied either as a stand alone single unit or in a multiple boiler configuration for greater capacity and inherent standby.

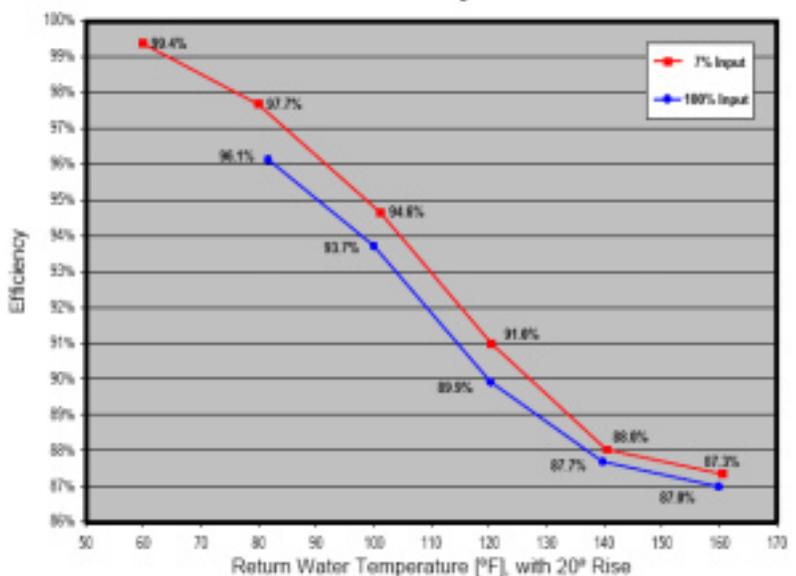
One of the most impressive features about this third generation Benchmark is that it uses the same time proven materials and technology that made Aerco the leader in condensing boilers years ago. Competitive product designs often downgrade the materials on the secondary heat exchanger to cut corners. This is not the case with the 3.0 design, which employs two, identical, stainless steel, heat exchangers to deliver the extra capacity. This is the same heat exchanger design that has been available with the BMK2.OLN for nearly ten years—

same material, same design, same welding, etc. Built to withstand no flow conditions, this particular heat exchanger saves owners the cost and operating expense of equipment typically required for boiler pumping. The heat exchanger is also less vulnerable to thermal shock.

The hallmark of all Aerco condensing boilers is their extremely high efficiency—particularly at part load. This, along with a broad 15:1 turndown ratio keeps energy consumption to a minimum with precision matching of output to load. Operating efficiency actually increases as load decreases (see below).

Up to 99% efficiency and Low NOx operation make the Benchmark 3.0 an environmentally responsible choice for schools, university, hospitals, hotels, and other commercial applications. The BMK3.OLN consistently delivers <30ppm NOx at all firing levels, making it ideal for engineers striving for "greener" design options. For more information about the Benchmark, go to www.aerco.com/products/benchmark_boilers.shtml.

Thermal Efficiency of BMK3.OLN



* Preliminary data points. Publication of final curves pending test review and confirmation by Underwriters Laboratories.

Heat-Timer Publishes Boiler Control Article in HPAC Engineering Magazine

Want to know more about controlling multiple modulating boilers? Don't miss the March Issue of HPAC Engineering. The magazine contains a timely feature on control strategies for modulating boiler systems—*timely* because engineers are specifying these systems more than ever before. According to the author, problems arise when engineers fail to realize that these systems require different control strategies than single boiler systems. He goes on to explain the various operating principals of modulating boilers and basic control strategies.

Understanding Turndown Ratio

The article does a particularly good job demystifying turndown ratio—a subject that is sometimes misunderstood even by industry professionals.

By definition, turndown ratio is a boiler's full heat output rate divided by its *minimum stable* output rate. For example, a 100,000 Btuh boiler with a 5 to 1 turndown ratio has a lowest stable output rate of 20,000 Btuh. It is often incorrectly assumed that 1% modulation equals 1%



of capacity in modulating boilers. Rather, 1% modulation (low fire) is equal to the lowest stable firing rate of the boiler, which could be 10%, 20%, 50%, etc. of a

boiler's total capacity, depending on its turndown ratio. A change from 1% to 0% modulation can equate to a fairly large portion of overall capacity.

That being the case, it is easy to see why controlling and sequencing multiple modulating boilers can become complicated. Without proper control, a multiple boiler system is likely to fall into a pattern of inefficiency and short cycling. Worse, owners miss out on the operational savings that modulating boilers promise.

The good news is, Calloway Engineered Systems represents a line of boiler controls that can address virtually any boiler application, reliably and efficiently. The experts at Heat-Timer, including Vincent Clerico, author of the HPAC article, have over 75 years of experience developing controls for a variety of boilers and boiler systems. Together, Heat-Timer and Calloway Engineered Systems can help you make the right controls decisions for the boiler systems you design. For more information, go to www.heat-timer.com.

Earning LEED Points for Water Conservation Using Raychem® HWAT

Looking to achieve LEED rating points by reducing water usage and sewage flow? Consider specifying Raychem® HWAT hot water temperature maintenance cable in lieu of recirculation for schools, high-rises, correctional facilities and hospitals. HWAT not only saves water by providing instant hot water at the tap, it uses less energy and is less labor intensive to install than typical recirculation systems.

HWAT is installed in direct contact with the hot water piping and under the insulation. A semi-conductive polymer lies at the core of the HWAT cable. Its "molecular memory" responds to thermal changes independently at every point along the length of the pipe, replacing heat loss at the precise point it occurs. As a result, occupants spend less time at

the tap waiting for hot water (it's already hot) and substantially less water is wasted.

How much water does HWAT save? Consider this: In a typical recirculation system, up to one gallon of water can be unheated in piping that is 50 feet away from the recirculation loop. If a fixture at the end of the 50 feet was used just 5 times per day, the annual water waste for that one fixture alone would be 1,825 gallons per year.

Energy and Labor Savings, Too

HWAT is also less labor intensive to install because it eliminates the need for any return piping, balancing valves, and recirculation pumps. HWAT systems

typically use less energy than a recirculation system because the water does not need to be overheated 5 to 10 degrees above the desired hot water temperature to compensate for cooling in the recirculation loop. The energy required to operate the heating cable and maintain the water temperature in the pipe is minimal because the self-regulating heating cable only compensates for the heat loss through the pipe insulation.

HWAT is an excellent product solution for engineers who are striving to achieve LEED status in the projects they design. It is also an environmentally responsible option for owners who are now embracing green building practices with greater enthusiasm than ever. *Share it with them.*