Benchmark+ Education

High-Efficiency Boilers









AERCO.com

AERCO®
A WATTS Brand

10 Years of Unprecedented Coverage

AERCO's condensing, Low NOx Benchmark boilers have provided thousands of schools and universities nationwide with reliable heat, cleaner air and significant energy savings.

With Benchmark+, you'll also get **10 years of unprecedented coverage** that will help maintain fixed service costs and protect you against surges in inflation, transportation, commodities and more that can contribute to major parts pricing increases in the future. Plus, you'll get all the benefits you expect from the Benchmark Platinum including a compact footprint, maximum efficiency and an industry-best warranty.

Keeping your heating plant's service and maintenance kit costs low and fixed means there's more room in your budget for accomplishing the education mission of your facility.

Benchmark+ Protects Against High Maintenance Costs

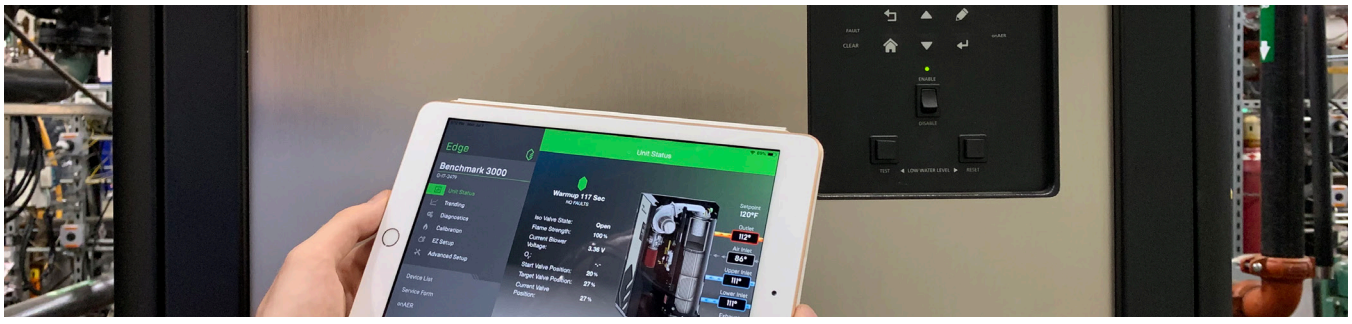
Annual maintenance expenditures are typically 3-5% of your plant's total replacement value (i.e., the total cost of your plant equipment). This 3-5% budget cost is expected to cover both maintenance and service to keep your equipment running as intended. As time progresses, your annual maintenance/service costs may increase as a result of other factors such as equipment wear and tear, inflation, labor cost increases, etc. However, Benchmark+ is designed to help you minimize your maintenance costs and keep them within that range or less to alleviate any negative impact to your budget.

10-year Parts and Warranty Service

- Keeps your maintenance budget fixed for 10 years and provides support and peace of mind
- Guards against any inflation, transportation, commodities, etc. surges that can contribute to major service cost increases in the future*

10 Years of Maintenance Kits**

- Locks in pricing for a decade
- Keep units operating as they should using our annual complimentary maintenance kits



*Full 10 year parts and warranty service requires a 10-year onAER subscription
**Maintenance is not included

Benchmark+ Gives You Tools and Training to Succeed

In order to ensure your Benchmark plant is optimized and operating at peak performance, we'll give comprehensive factory training to your school district employee of choice so they'll have the knowledge needed to properly maintain and service the equipment.

You'll also get a 10-year subscription to onAER Predictive Maintenance which provides valuable data and analytics that enable you to not only see in real time your plant's performance, but to be proactive with maintenance and ensure the plant is operating as it should.

Combining all of this with the boiler's high efficiency (including increased energy savings, reliable heat, and lower installation and operational costs), makes the Benchmark+ best-in-class, delivering significant savings and Return on Investment.

AERCO Factory Training

- Learn from the experts how to best maintain and service your equipment for maximum performance and efficiency

10-year Subscription to onAER Predictive Maintenance

- Remotely monitor the health of your equipment in real time and reduce downtime
- Proactively view boiler plant operation and status, track performance and efficiency, receive immediate alerts for faults or maintenance required
- Take preventative measures to ensure your system is operating at peak performance which will help keep your maintenance budget low over the lifetime of the equipment

Comprehensive First Year Review

- Using historical data from onAER's cloud based service and onsite assessment after one year of performance, local experts will assess your system and provide a report on potential opportunities to further optimize your system



Smart, Powerful Boiler with Low Operational Costs

In an *ideal world*, high efficiency, commercial condensing boilers would operate as designed – condensing as you expect and delivering the highest efficiency possible.

However, in the *real world*, external variables arise causing faults and problems that can wreak havoc on your system, such as:

- Combustion O_2 level fluctuations
- Air temperature and pressure changes
- Humidity, occupancy/load variations
- Low ΔT operation
- Gas quality and pressure changes

These problems lead to system inefficiency, increased utility costs, unit downtime and costly unscheduled maintenance.

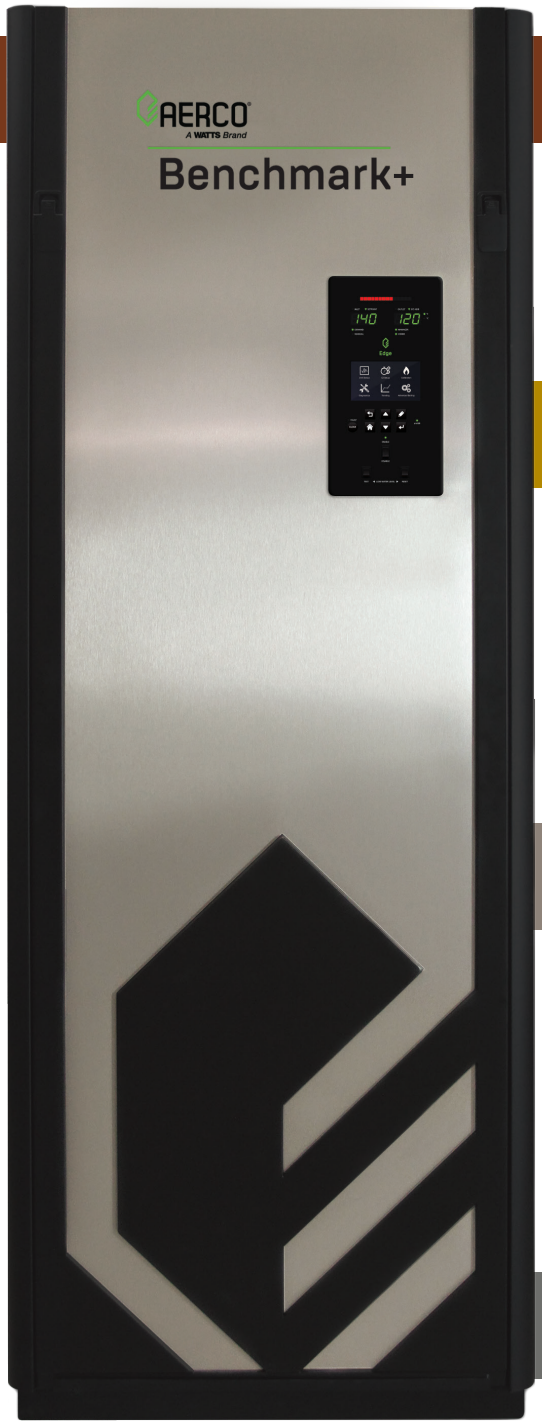
A Smarter Way to Heat

The Benchmark Platinum, the "Smart Boiler," optimizes your system for the real world by self-correcting these problems and giving you predictive maintenance tools to ensure your system operates optimally, maximizes efficiency and delivers big savings.

Industry-Best Warranty

Gives you the best, most comprehensive coverage in the industry so you can rest easy knowing you've bought a reliable, premium system that will last for years to come, without impacting your annual budget

- Lifetime Thermal Shock
- 15 year heat exchanger
- 10 year parts
- 10 year warranty service



Smallest footprint in the industry translates to big installation savings and can present opportunities to expand space for school-student activities!

Integrated Tools that Lead to Lowest Cost of Ownership

Edge
Advanced Controller

Designed to save you time and money, and make system operation easier resulting in the lowest cost of ownership.

- Save money by reducing install, start-up and annual operating costs
- Simplify start-ups and maintenance
- Strengthen system design, performance and efficiency
- Edge [ii] Mobile App enables full unit setup and control as well as enhanced diagnostics and configuration capabilities

AERtrim
Patented O_2 Trim

Ensures your system works properly with precise air/fuel ratios during combustion, lowering operating and maintenance costs.

- Self-adjusts the combustion process to ensure optimal O_2 levels despite ever-changing environmental factors unrelated to the boiler itself
- Saves energy and lowers operating costs by delivering the exact fuel needed
- Reduces unscheduled maintenance
- Increases condensing zone in heat exchanger to maximize efficiency and deliver additional seasonal efficiency gains
- Decreases emissions. Benchmark+ meets the most stringest emissions rules which helps provide and maintain better air quality for students

onAER
Predictive Maintenance

Allows access to real-time system performance so you're not merely correcting faults, but predicting when you need to take action to prevent them.

- See exactly how efficient your units and plants are, how many cycles per hour, O_2 levels and more
- Know at-a-glance when you need to perform maintenance
- Pro-actively review data and trends to ensure units are operating optimally
- Receive instant alerts if a unit is down and see which ones need attention - view possible causes and suggested actions
- Maintain historical records of startup, service and maintenance performed on your equipment

Dual Returns
Maximum Efficiency

Keeps high temperature and low temperature return water separate to increase the heat exchanger's condensing zone, maximizing efficiency.

- Improves overall system plant thermal efficiency by up to an additional 7%
- Extends boiler condensing operating hours
- Saves energy
- Pair Benchmark+ with the AERCO SmartPlate EV for a best-in-class combination plant solution with an ultra-compact footprint

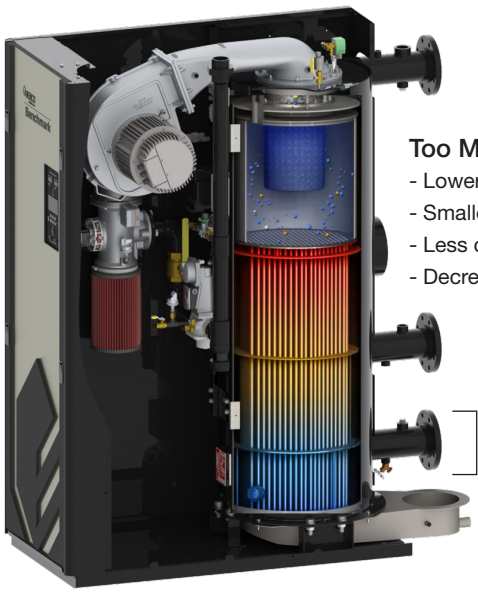
AERtrim® – Patented O_2 Trim Technology

Advanced combustion control systems in high efficiency boilers need to maintain precise air/fuel ratios in order to work properly and maximize efficiency. However, environmental variations (such as humidity, atmospheric pressure, filter dust loading, delivered gas energy content and other factors) can often create problems in gas and oil-fired boilers causing them to deviate from the ideal oxygen-fuel ratio.

If O_2 levels are too low, it can cause unstable combustion resulting in faults and increased unscheduled maintenance. Conversely, if O_2 levels are too high, the Dew Point will be lower and the boiler is less likely to condense – and if the boiler isn't condensing, you're not getting the energy savings you should.



Too Little O_2
- Flame loss or other faults
- Increased emissions
- Additional unscheduled maintenance

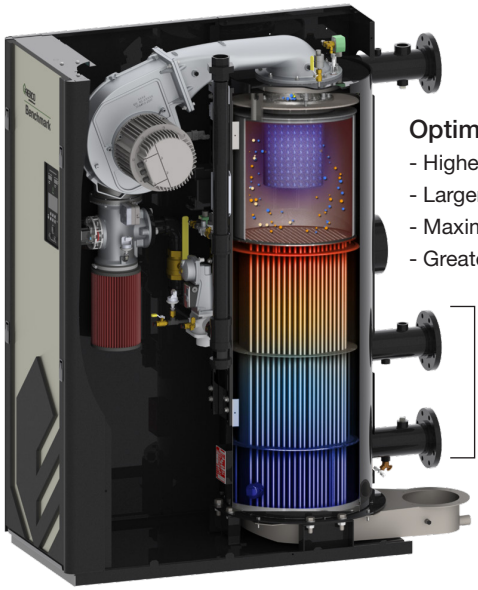


Too Much O_2
- Lower dew point
- Smaller condensing zone
- Less condensation
- Decreased energy savings

Condensing Zone
90% Efficiency
118° Dew Point

AERtrim Ensures Your System is Working Properly; Lowers Operating and Maintenance Costs

AERCO's innovative, patented AERtrim monitors the actual conditions of the Benchmark Platinum and self-adjusts its combustion process to ensure your system is operating at optimal O_2 levels and peak system efficiency. With proper O_2 levels, you'll have greater uptime reliability, save money with increased efficiencies, produce lower emissions, and create the ideal environment for condensing to occur.



Optimal O_2 Levels
- Higher dew point
- Larger condensing zone
- Maximum efficiency
- Greater savings

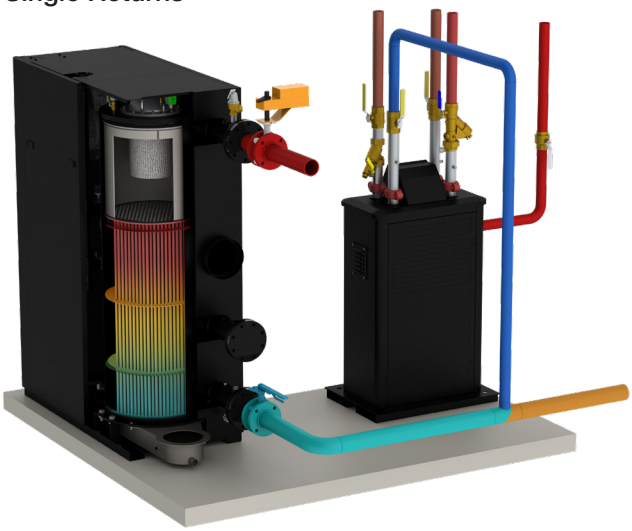
Condensing Zone
95% Efficiency
130° Dew Point

U.S. Patent: 9,175,853

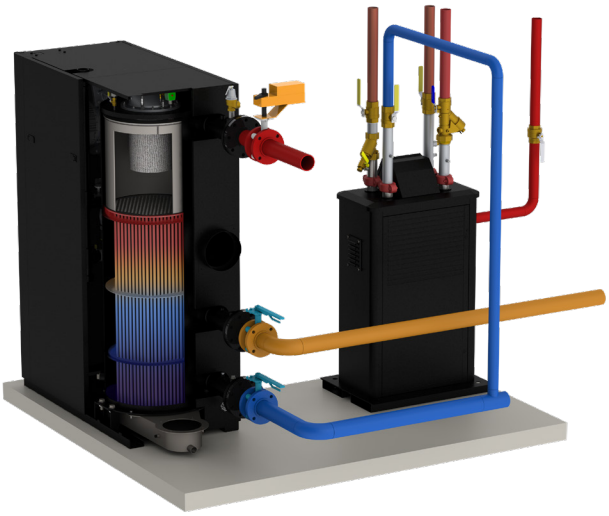
Dual Returns Maximize Efficiency up to Additional 7%

Most traditional boilers only have Single Returns which limit engineers to designing generic applications that force the blending of hot and cold water temperatures, reducing efficiencies. However, Benchmark Platinum's Dual Returns allow engineers to take full advantage of diverse load demands specific to a site and design a customized system that maximizes operational efficiencies.

Single Returns



Dual Returns



Applications

Dual Returns are ideal for systems with multiple return water temperatures (higher ΔT zones with lower return temperatures) and applications that include combination systems including:

- Space heating with domestic hot water combination systems
- Multi-zone space heating
- Radiant floor heating
- Pool heating
- Snow melt
- Air pre-heating and reheating
- Supplementary heat for heat pump system

Mobile App

For greater flexibility, the Edge [ii] Mobile App enables full unit setup and control. The app incorporates all the functionalities as the touchscreen controller, but features the added benefit of enhanced diagnostics and configuration capabilities on a large screen. You'll also be able to trend multiple parameters of unit performance on one screen and submit service forms from the app. Edge [ii] Mobile App also gives you the freedom to move around the unit when configuring, diagnosing and troubleshooting.



onAER® Predictive Maintenance

AERCO's onAER Predictive Maintenance is an affordable, easy-to-use health of system monitoring that gives you instant access to unit performance details, event history, maintenance schedules and more. onAER helps ensure your system operates at peak performance while reducing cost of ownership.

Reduce Cost of Ownership

- Avoid lost revenue due to undetected equipment faults and downtime
- Generate regular reports that aid in decision making and cost-saving improvements
- Prevent unnecessary wear-and-tear/premature failure of your equipment

Increase Reliability and Energy Savings

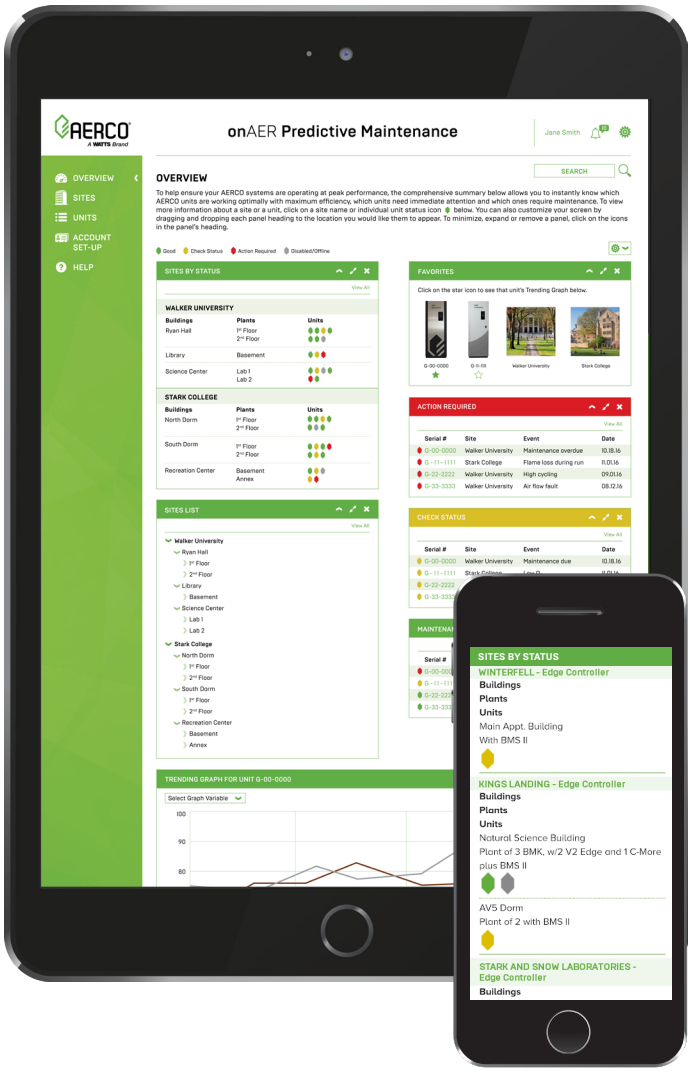
- Optimize system performance with real-time data
- Identify energy-saving opportunities by trending multiple data points including efficiency, cycles per hour, O_2 levels, temperature readings, etc.

Decrease Service Calls up to 50%

- Identify and fix potential issues before they become a problem and reduce labor costs from emergency service calls
- Implement a more responsive and scheduled maintenance plan

onAER typically identifies 4-5% system efficiency losses which can translate into $2,000 to $6,000* in fuel savings

Plant BTU	10 Year Identified Savings
2,000,000	$12,000
4,000,000	$21,000
6,000,000	$25,000
8,000,000	$31,000
10,000,000	$47,000
12,000,000	$55,000
14,000,000	$75,000
16,000,000	$81,000



*Based on typical AERCO heating system design

Simplify Service and Reduce Unscheduled Maintenance

Reduce Downtime with Instant Alerts

- Receive immediate email alerts about a fault or decline in equipment performance
- Pro-actively resolve issues quickly
- Prevent more serious problems from developing

Simplify On-Site Repairs

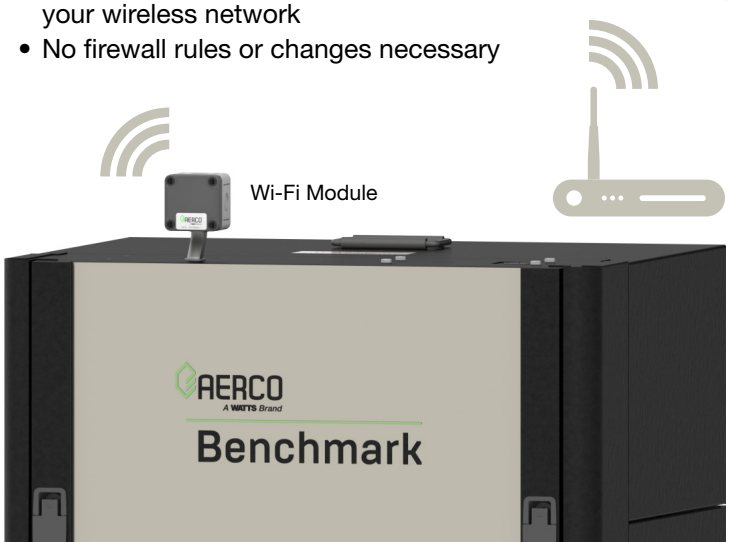
- Armed with performance and historical fault details technicians can arrive equipped with parts to allow them to work faster and more cost-efficiently
- View list of possible causes and suggested actions to help technicians fix problems quickly
- Submit maintenance/service and start-up forms via onAER

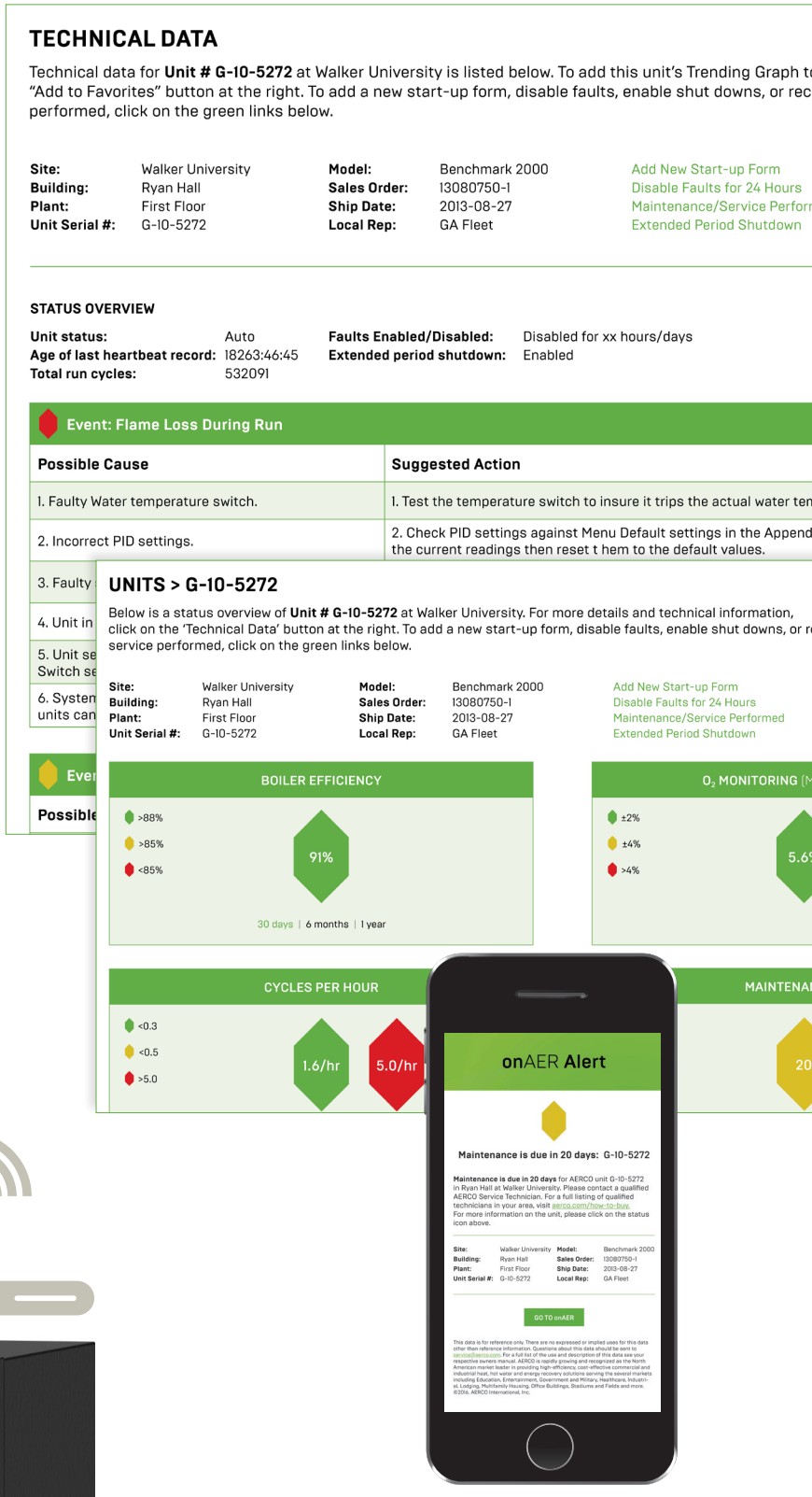
Solve Non-Critical Problems on Your Time

- Schedule service at your convenience
- Minimize facility and occupant disruptions

Secure, Remote Monitoring and Management

- Easily installed over secure, authorized ethernet connection
- Data travels outbound only eliminating any security risks
- Wi-Fi module is available to connect to your wireless network
- No firewall rules or changes necessary





Unmatched Reliability and ROI

Benchmark Platinum boilers provide maximum efficiency and deliver significant ROI to thousands of customers including increased energy savings, reliable heat, and lower installation and operational costs — all in a space-saving, compact footprint.

Saves Space, Easy to Install

The Benchmark Platinum is a powerful boiler packed into a small footprint. Each stainless steel unit fits through standard 36" doorways and can travel via elevators – no need to tear down walls, use cranes or other expensive tools. In fact, our Benchmark Platinum 6000 is the smallest of its kind – up to a third the size of the competition.

Superior Construction for Greater Uptime Reliability

AERCO's 439 stainless steel heat exchanger delivers a longer life through a simplified design that has only two moving parts. The condensing heat exchanger is built to withstand thermal shock and eliminates the need for traditional boiler pumping equipment. The forced draft, modulating burners operate with unmatched turndown to minimize cycling and maximize seasonal efficiency while simplifying the venting system. AERCO's patented air/fuel delivery system and fully modulating burner reduces cycling losses, as well as wear and tear.

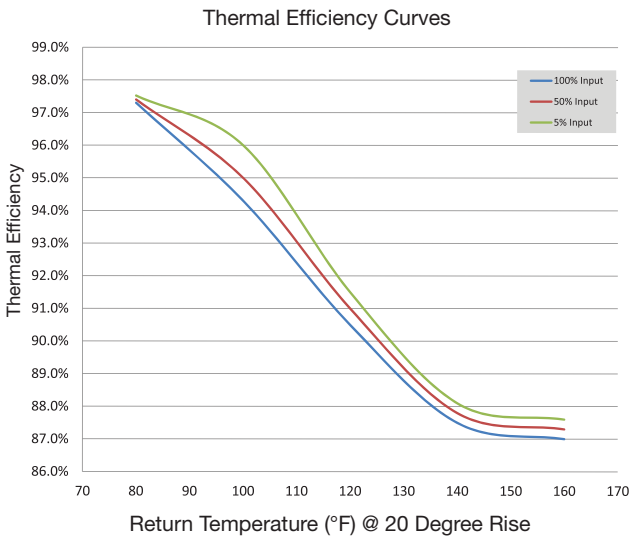
Boiler Sequencing Technology (BST) – Load Sharing Strategy Maximizes Energy Efficiency

It requires less energy for a group of modulating boilers, each firing at "part load," to heat a building, than for a single boiler operating at "full fire" to carry the entire workload. To meet building demand, the BST employs as many boilers as available, each operating at its most efficient firing rate. Because the BST reacts in real-time (up to 8 boilers), users can take a unit offline for maintenance at any time or bring on back-up boilers for extremely cold conditions without changes to your system's performance. And as individual boilers are added or deleted, the energy delivered is automatically adjusted to prevent fluctuations in the header temperature of the plant.

Simple to Service

Removable enclosure panels provide easy access to all piping making the Benchmark Platinum extremely easy to service which simplifies lifetime maintenance. It's also compatible with popular EMS software, and can be remotely controlled providing detailed LCD diagnostics that can help prevent any issues from developing.

High Efficiency, Increased Energy Savings



*For BMK1000

State-of-the-Art Technology and Features

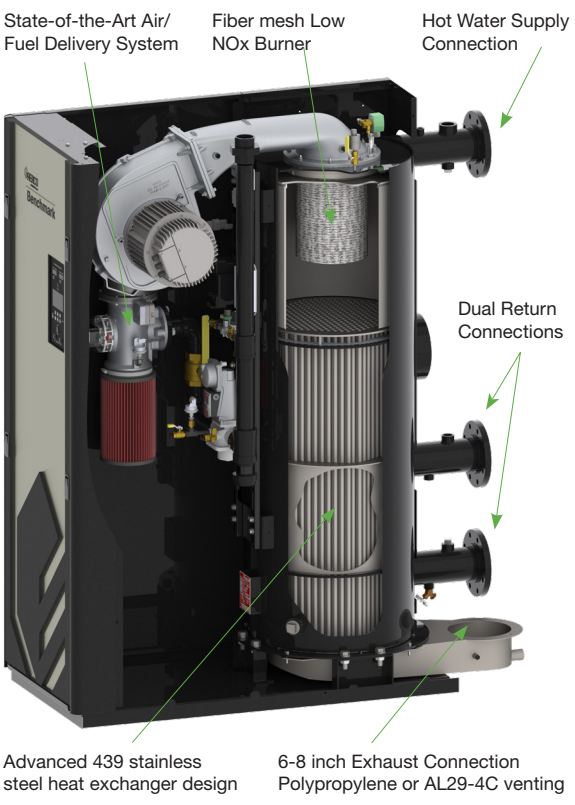
The Greenspec® Listed Benchmark Platinum boilers are perfect for “green” designs. Their small footprint, flexible venting/piping options, high efficiency and lower operating costs can help facilities earn LEED points. Benchmark® Platinum has been designed with several environmental advantages.

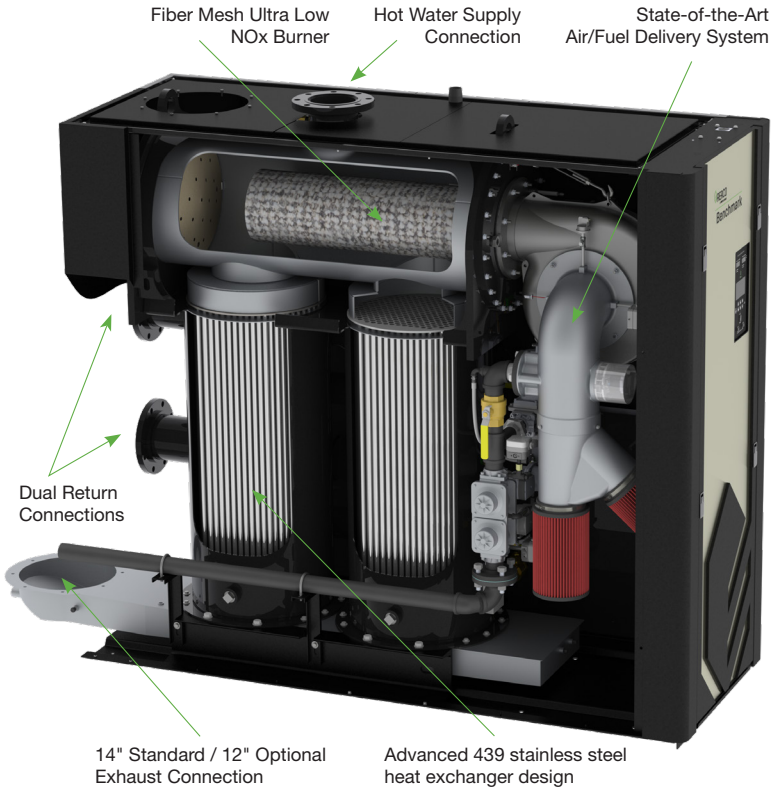
750, 1000, 1500, 2000, 2500, 3000, 4000, 5000N

- 15:1 - 20.1 turndown
- AERtrim standard
- Dual Return connections standard
- Durable and reliable 439 stainless steel firetube heat exchanger
- Capable of variable primary flow installations
- Low NOx emissions (20 ppm or less at all firing rates)
- 9 ppm optional calibration*
- Compact footprint – all models fit through standard doorway
- Ducted combustion air capable
- Venting versatility with AL29-4C, Polypropylene, CPVC**, or PVC**
- Available in natural gas, propane, and dual fuel
- Optional gas train with VPS (Valve Proving System) for 4000 and 5000N models

5000, 6000

- 12:1 - 15:1 turndown
- AERtrim standard
- Dual Return connections standard
- Durable and reliable 439 stainless steel firetube heat exchanger
- Capable of variable primary flow installations
- Low NOx emissions (20 ppm or less at all firing rates)
- 9 ppm optional calibration (BMK6000 requires 14” exhaust venting)
- Compact footprint – up to a third the size of the competition
- Ducted combustion air capable
- Venting versatility with AL29-4C, Polypropylene
- Available in natural gas and dual fuel
- Optional gas train with VPS (Valve Proving System)





*BMK 750-2000, 4000/5000N only **BMK 750/1000 only

Save Big with Installation Advantages

Smallest Footprint in the Industry!
Benchmark Platinum has the smallest footprint in the industry! Its 6000 model is the most compactly designed 6 million BTU/hr boiler in the market – up to a third the size of the competition. All units easily fit through a standard doorway and can be transported via a freight elevator which translates into big savings on installation. All units are delivered as a single, fully assembled unit. Its quiet operation along with its doorway-sized, small footprint makes it ideal for both new construction and retrofit applications.

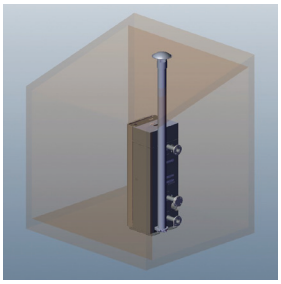
Venting Versatility for Easy Installation
Benchmark Platinum products provide numerous venting options including sidewall, through-the-roof, and ducted combustion capabilities (direct-vent). They're approved for venting with PVC, CPVC, Polypropylene, or AL29-4C materials are all available and provide broad installation flexibility and savings.
Take for example the Benchmark Platinum 6000. Due to its high efficiency and low flue gas temperatures, the Benchmark Platinum 6000 can be installed with 12" flue venting – no other 6000 MBH boiler is able to use polypropylene venting under all operating conditions.
Not only does the ability to use polypropylene venting prove the Benchmark Platinum 6000's superior efficiency, but it also provides big savings on total cost, as well as the flexibility to customize its fit making the units even easier to install.

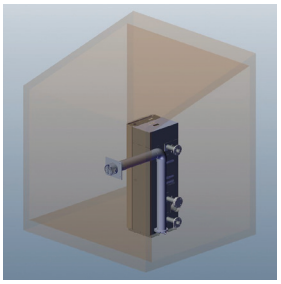
Zero Side Clearance for Easy Maintenance
Benchmark Platinum can be serviced via the front or top of the boiler, as well as the side. This flexibility allows units to be configured side by side.

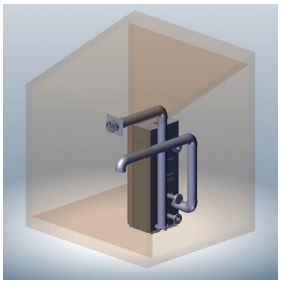

BMK Platinum 3000

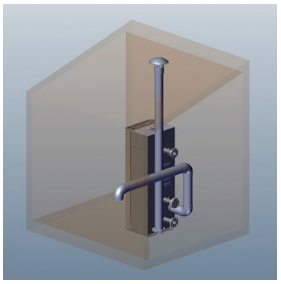

Outdoor solution available

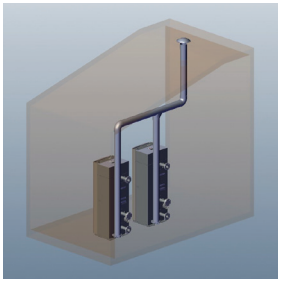
Vent Configurations

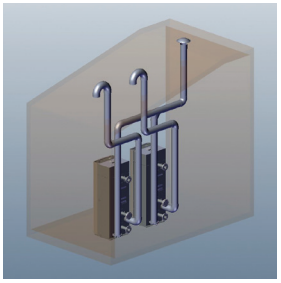

Vertical vent/room air

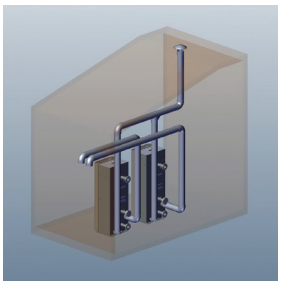

Sidewall vent/room air

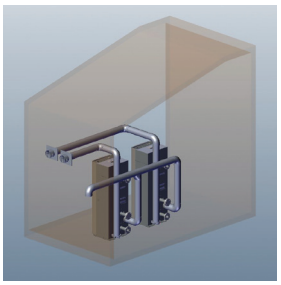

Direct-vent


Vertical vent/sidewall air


Common vertical vent/room air


Common vertical vent/ individual vertical air


Common vertical vent/ individual sidewall air


Individual sidewall vent/ common sidewall air

Consult an AERCO representative for additional venting configuration inquiries.

Accessories



Motorized Valves
The Belimo F6...HDU Series 2-way butterfly valves are designed to meet the needs of HVAC and commercial application requiring bubble tight shut-off for liquids. Typical applications include boiler isolation, chiller isolation, cooling tower isolation, change-over systems, air handler coil control, bypass and process control applications. Valves specifically designed for easy installation on BST configured boiler plants are available as well.



Condensate Neutralizer Kit
AERCO Condensate Neutralizers are ideal for condensing boilers and furnaces operating on natural gas or propane. The condensate is acidic and has the potential to harm the environment and the sewer system. The AERCO Condensate Neutralizer will raise the pH of the condensate to a more neutral level before it is discharged to drain.



Buffer Tanks
AERCO buffer tanks are ASME certified pressure vessels designed for use with high efficiency, low volume systems that incorporate low-mass condensing boilers. They add thermal mass, dampen fast transitions and minimize boiler cycling that occurs during zero or low domestic load conditions. Available in two and four-port (Primary-Secondary) configurations.



Venting Mufflers
AERCO offers 6”, 8”, and 14” exhaust mufflers that are specifically designed with flanged ends to fit directly on the exhaust manifold of Benchmark boilers. The flanged-end design allows the muffler to be used with any venting system manufacturer – the only adapter required is an AERCO starter piece at one or both ends of the muffler.

Specifications and Dimensions

	750	1000	1500	2000	2500
Adjustable Temp. Control	50°F to 190°F				
Ambient Temperature	0°F to 130°F				
Accuracy	+/-4°F				
Thermal Efficiency (80° - 180°F)	95.6%	96.8%	94.6%	94.6%	93.5%
Input (Nat. Gas)	750,000 BTUH	1,000,000 BTUH	1,500,000 BTUH	2,000,000 BTUH	2,500,000 BTUH
Net Output (Nat. Gas)	697,000 BTUH	930,000 BTUH	1,395,000 BTUH	1,860,000 BTUH	2,325,000 BTUH
Turndown Ratio	15:1	20:1			15:1
Flue Connection Dia	6” Diameter			8” Diameter	
Flue Material (per local code)	PVC, CPVC, PP or AL29-4C		AL29-4C, PP	PP or AL29-4C	
Water Inlet and Outlet	3” 150# Flange		4” 150# Flange		
Dual Rear Returns	✓				
Gas Connection	1” NPT Male		2” NPT Male		
Gas Pressure Requirements*	14” WC Maximum, 4” WC Minimum at Full Load				
Min/Max Water Flow	12-175 GPM		25-250 GPM		
Condensate Connection	3/4” NPT Female		1.5” Tube		
Max Condensate Flow	6 GPH	8 GPH	9 GPH	10 GPH	17 GPH
Pressure Rating	160 PSIG at 210°F				
NOx Emissions Cert.	SCAQMD, TCEQ				BAAQMD, TCEQ
Standard Listing and Approvals	UL, CUL, ASME				
Gas Train Options	FM Compliant, FM Compliant with Valve proving, Factory Installed, Double Block and Bleed (Formerly IRI)				
Electrical Requirements	120/1/60 20 AMP (13 AMP FLA)		120/1/60 20 AMP (16 AMP FLA)		208/3/60 20 AMP (10 AMP FLA) 460/3/60 15 AMP (5 AMP FLA)
Water Pressure Drop	3.0 PSIG @100 GPM		3.0 PSIG @170 GPM		3.0 PSIG @218 GPM
Water Volume	16.25 gallons	14.25 gallons	44 gallons	40 gallons	58 gallons
Weight, Installed (dry)	669 lbs.	700 lbs.	1,406 lbs.	1,500 lbs.	2,000 lbs.

*Values are for Natural Gas FM Compliant gas trains only. See Benchmark Gas Components & Supply Design Guide GF-2030 for Propane, DBB & Duel Fuel gas train gas pressure requirements.

Model	Width	Depth	Height
BMK Platinum 750	28”	25”	78”
BMK Platinum 1000	28”	25”	78”
BMK Platinum 1500	28”	43.6”	78”
BMK Platinum 2000	28”	43.6”	78”
BMK Platinum 2500	28”	56”	78”

Model	Width	Depth	Height
BMK Platinum 3000	28”	56”	78”
BMK Platinum 4000	34"	63.5"	78.2"
BMK Platinum 5000N	34"	63.5"	78.2"
BMK Platinum 5000	35”	89.3”	79.8”
BMK Platinum 6000	35”	89.3”	79.8”

Please find complete dimensions on the Benchmark Platinum tech data sheet.

Specifications and Dimensions

	3000	4000	5000N	5000	6000
Adjustable Temp Control	50°F to 190°F				
Ambient Temperature	0°F to 130°F				
Accuracy	+/-4°F				
Thermal Efficiency (80° - 180°F)	94.6%	94.1%	93.8%	93.9%	94.5%
Input (Nat. Gas)	3,000,000 BTUH	4,000,000 BTUH	4,990,000 BTUH	5,000,000 BTUH	6,000,000 BTUH
Net Output (Nat. Gas)	2,790,000 BTUH	3,720,000 BTUH	4,640,000 BTUH	4,650,000 BTUH	5,580,000 BTUH
Turndown Ratio	15:1	15:1	20:1	12:1	15:1
Flue Connection Dia	8” Diameter	12” Flue/ 10” Air Intake		14 Inch Optional / 12 Inch Flue Venting	14 Inch Optional / 12 Inch Flue Venting
Flue Material (per local code)	PP or AL29-4C	PP or AL29-4C		PP or AL29-4C	PP or AL29-4C
Water Inlet and Outlet	4” 150# Flange	6” 150# Flange		6” 150# Flange	6” 150# Flange
Dual Rear Returns	✓				
Gas Connection	2” NPT Male	3” NPT Male		2" NPT Male / 3" NPT Male*	
Gas Pressure Requirements*	14” WC Maximum, 4” WC Minimum at Full Load			14" WC to 2 psi / 4" WC to 10" WC*	
Min/Max Water Flow	25-350 GPM	35-500 GPM		75-600 GPM	
Condensate Connection	1.5” Tube	1.5” Tube			
Max Condensate Flow	20 GPH	30 GPH		40 GPH	
Pressure Rating	160 PSIG at 210°F			80 PSIG at 210°F / 150 PSIG at 210°F	
NOx Emissions Cert.	BAAQMD, TCEQ			SCAQMD, TCEQ	SCAQMD, TCEQ, BAAQMD
Standard Listing and Approvals	UL, CUL, ASME				
Gas Train Options	FM Compliant, FM Compliant with Valve proving, Factory Installed, Double Block and Bleed (Formerly IRI)			FM Compliant 14" - 2PSI, FM Compliant 14" - 2PSI with Valve Proving System (VPS), FM Compliant 4" - 10", FM Compliant 4" - 10" with Valve Proving System (VPS)	
Electrical Requirements	208/3/60 20 AMP (10 AMP FLA) 460/3/60 15 AMP (5 AMP FLA)	460/3/60 20 AMP (12 AMP FLA) 208/3/60 40 AMP (23 AMP FLA)		208/3/60 30 AMP (19 AMP FLA) 460/3/60 20 AMP (9 AMP FLA) 575/3/60 20 AMP (7 AMP FLA)	
Water Pressure Drop	3.0 PSIG @218 GPM	3.0 PSIG @ 475 GPM		4.0 PSIG @ 500 GPM	
Water Volume	55 gallons	75 gallons		110 gallons	
Weight, Installed (dry)	2,170 lbs.	2,200 lbs.		3,000 lbs.	

*For BMK 5000 / 6000 offers an optional model for low gas pressure.

AERCO®

A WATTS Brand

Heating and Hot Water Solutions

AERCO International, Inc. • 100 Oritani Drive • Blauvelt, NY 10913
USA: T: (845) 580-8000 • Toll Free: (800) 526-0288 • AERCO.com

© 2022 AERCO