

CONDENSING

EVOLUTION[®]

Higher Efficiency Heating Equipment



Making the Best Even Better

- **UP TO 99% EFFICIENCY**
AHRI Certified up to 97% Efficiency
- **RUGGED PRIMARY COPPER-FIN
HEAT EXCHANGER**
- **ISOLATED SECONDARY STAINLESS
STEEL CONDENSING UNIT**
- **FEATURE-RICH OPERATING
CONTROL**
- **UNMATCHED FIRESIDE
HEATING SURFACE**
- **ADVANCED COMBUSTION**
<10 PPM Ultra-Low NOX Emissions
<50dBA Noise Levels
- **MAINTENANCE-FREE BURNER**
10-Year Warranty
- **UL LISTED BOILER PACKAGE**



THERMAL[®]
SOLUTIONS
Innovative Equipment for Hot Water Systems

MAKING THE BEST EVEN BETTER

The NEW Condensing Evolution® (EVCA)

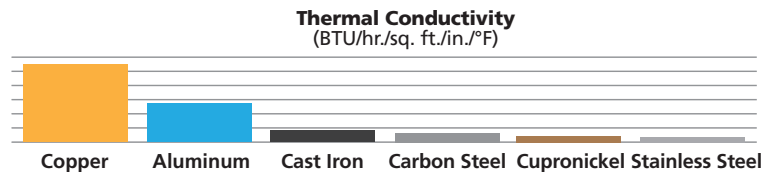
Thermal Solutions designed its Condensing Evolution ultra high efficiency boiler to further maximize fuel savings and provide long lasting energy solutions for today's green building efforts. Based upon the industry benchmark for quality, reliability and performance, the Evolution, our new condensing boiler combines the very best from this proven platform with the latest condensing methodologies. The result is not only a highly efficient product, but also one built to last.

Coupling an ultra-efficient stainless steel condensing unit to the rugged heat exchanger, maintenance-free burner, and feature-rich TSBC control of the Evolution, **Thermal Solutions delivers on efficiency and longevity — a two-pronged claim unmatched in the industry.**



Heat Transfer Properties

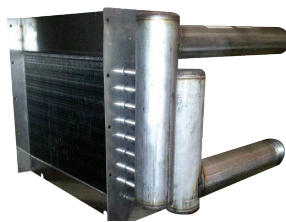
The heat transfer of copper is far superior than other materials used in condensing designs.



Primary Heat Exchanger

Rugged Primary Copper-Fin Heat Exchanger Design

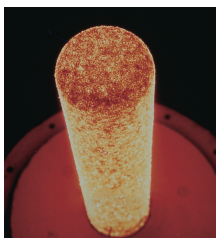
Central to the Condensing Evolution is the boiler's primary heat exchanger. Comprised of copper to maximize heat transfer, and boasting twice as much heating surface than our competition, combine for highly efficient yet low flux rates. Unique patent HF True Fin tubes are extruded from a solid piece of copper that results in high quality and unsurpassed heat transfer. The originator of the gasketless header design two decades ago, allow for easy inspection, cleaning and individual tube replacement. Thicker tubes (.072") and more robust heads assure durability, longevity, and makes it extremely forgiving in varying system conditions. Compare the weights!



Secondary Heat Exchanger

Isolated Secondary Stainless Steel Condensing Unit

The addition of a condensing unit, consisting of a 316L stainless steel heat exchanger and mixing loop arrangement, to our time tested boiler platform ensures higher efficiency and durability. All condensing is completely contained within the stainless secondary compartment that utilizes a cleanable, repairable and replaceable heat exchanger. Unlike competitive Firetube and Watertube products, which by design, expose the entire heat exchanger to the extremely corrosive effects of condensate. Whereas, Thermal Solutions completely isolates this process to the condensing component and the primary heat exchanger is never exposed to this harshly acidic environment. Pre-heating return water with discharged flue gas delivers added efficiency, completely confining condensate to a secondary component safeguards boiler longevity. Backed with a twenty year thermal shock warranty, Thermal Solutions upholds a higher standard and defining industry benchmark for both efficiency and long lasting reliability.



Ceramic Radiant Burner

Advanced Maintenance-Free Combustion

The Condensing Evolution ceramic radiant burner never requires inspection or maintenance and comes with the industry's longest burner warranty -- 10 years! Designed to operate with NOx emissions less than 10 ppm, the whisper quiet burner (< 50 dBA) runs at minimal excess air levels providing high efficient, trouble-free operation. The burner features a larger surface area and lower flux that allows for more uniform heating and higher heat transfer that extends the life of the copper tubes. A rugged cast-aluminum blower assembly, fitted with a replaceable combustion air filter that is 99% efficient to one micron, is used to keep the burner free of contaminants. A commercial-grade microprocessor based flame safeguard with LED diagnostic display, proven spark ignition and a UV flame scanner complete the Evolution's unsurpassed combustion system for safety and reliability. The Condensing Evolution boiler can be operated with its jacket panels removed avoiding the nuisance problems associated with pressurized compartments.



TSBC Module

Feature-Rich Operating Control

The Thermal Solutions Boiler Control (TSBC) is a complete boiler operating, monitoring and automated control system. The TSBC provides unparalleled design features such as advanced boiler modulation, intelligent multiple boiler staging (peer-to-peer) by connecting an RJ11 telephone wire between boilers for communication, auxiliary device control, and is easily integrated into a building management system making the TSBC the most advanced onboard boiler control in the industry.

EVOLUTION® CONDENSING UNIT FEATURES

Wide Range of Sizes:
750,000 - 3,000,000
BTU/HR

Heavy 16 gauge negative pressure steel jacking that protects the boiler & eliminates nuisance problems associated with pressurized compartments

Thermal Solutions Boiler Control (TSBC) is a complete boiler operating, monitoring and automated control system

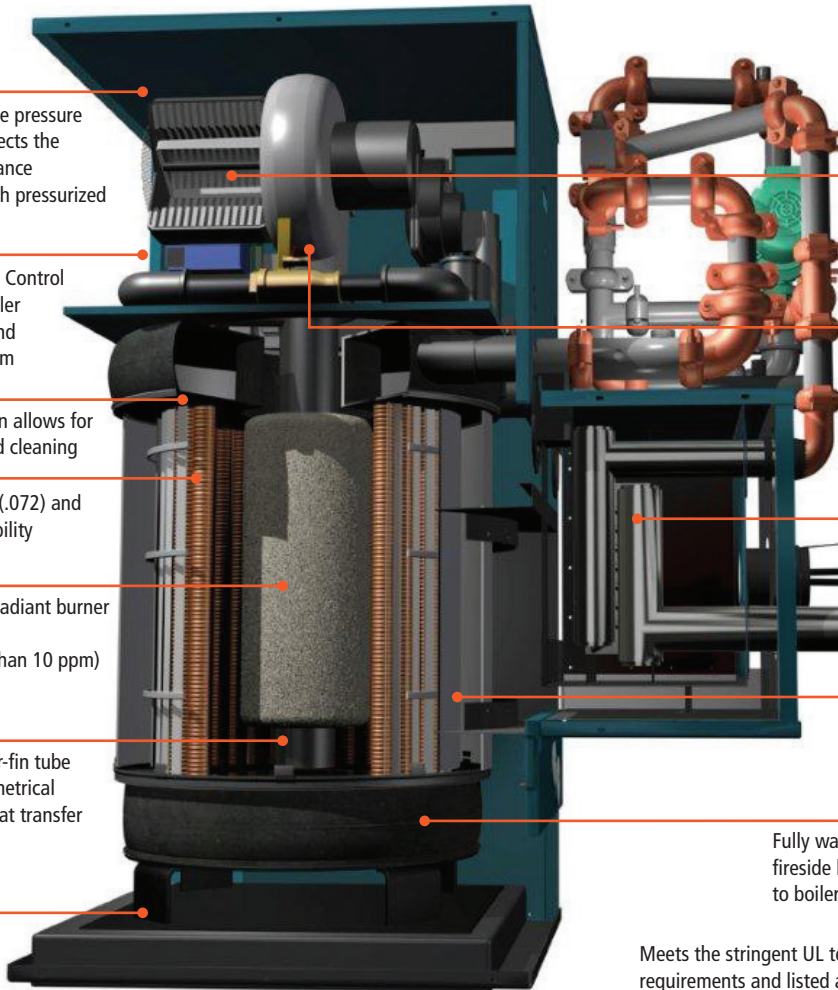
Gasketless header design allows for easy tube inspection and cleaning

Thick H/F True Fin tubes (.072) and robust headers for durability

Non-corroding ceramic radiant burner with no moving parts (NOx emissions to less than 10 ppm)

Vertical two-pass copper-fin tube configuration with symmetrical heating for improved heat transfer

Small footprint (10.7 sq.ft. / 21.9 sq.ft.) for space saving multiple-unit installation



Mixing loop blends pre-heated water from the condensing unit with the primary heat exchanger's hot water being supplied to the system

Replaceable combustion air filter 99% efficient to one micron to ensure burner reliability and trouble-free maintenance

Industrial cast-aluminum non-sparking blower assembly contributes to our whisper quiet (<50 dBA) operation

Isolated Secondary Stainless Steel Condensing Unit confines condensation to one area while increasing overall boiler thermal efficiency up to 99% in low return water temperature applications

Corrosion-resistant stainless steel enclosure surrounds combustion chamber

Fully water-backed tube sheet and unmatched fireside heating surface (13.4 sq.ft. - 16.4 sq.ft to boiler horse power) provides longevity

Meets the stringent UL testing requirements and listed as a boiler package



PRESSURE VESSEL DESIGN

- Primary copper fin-tube construction
- Secondary stainless steel heat exchanger
- Carbon steel or cast iron header design
- Gasketless heat exchanger
- ASME Sectoin IV Certified, "H" stamp
- MAWP 160 PSIG
- Max allowable temperature 250°F
- Twenty year thermal shock warranty
- 5-year primary heat exchanger warranty
- 3-year secondary heat exchanger warranty

COMBUSTION DESIGN

- Ceramic radiant burner, non-corroding
- Maintenance-free burner design
- Ultra low-NOx emissions (to <10 ppm)
- Whisper quiet operation (-50 dBA)
- Industrial cast-aluminum blower assy
- Variable frequency drive
- Electri spark-to-pilot ignition system
- 10-year burner warranty

BOILER EQUIPMENT

- Thermal Solutions Boiler Control (24 Vac)
- High limit w/ manual reset safety temp control
- Water flow switch
- Low water cut-off w/manual reset safety controller
- Inlet & outlet temperature sensors
- Combustion air switch
- Pressure & temperature gauge
- Safety relief valve (avail settings 30-50 PSI)
- Single point electrical supply (1 or 3-phase)
- 3-way mixing valve
- Internal blend pump

BURNER EQUIPMENT

- UL/FM/CSD-1 gas train
- Full modulation with infinite proportional firing
- Natural or LP gas
- Inlet gas pressure available from 4" wc to 5 psig
- Pilot gas valve & gas regulator
- Pilot/leak test cocks
- Modulating gas valve
- Low & high gas pressure switches w/ manual reset

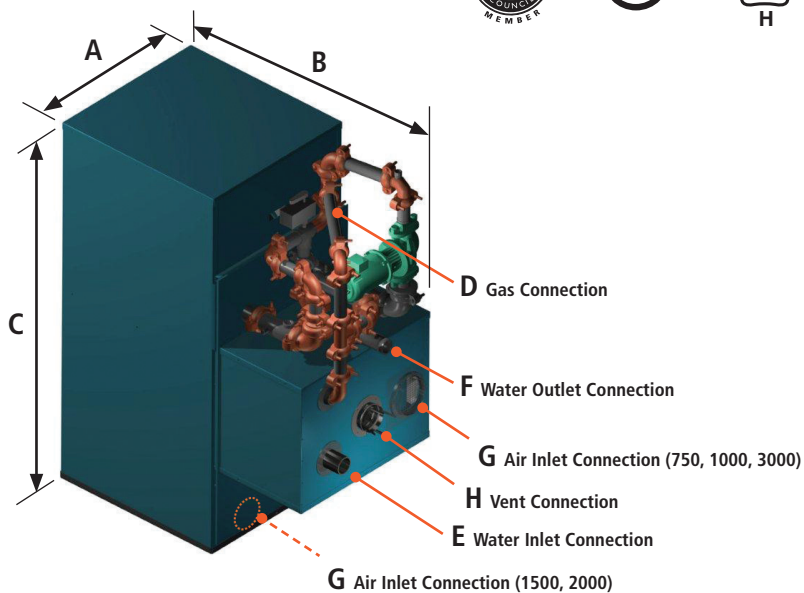
VENTING

- Sealed or room air combustion (Cat IV)
- Direct vent (sidewall or vertical) up to 50' (Cat IV)

TSBC CONTROL FEATURES

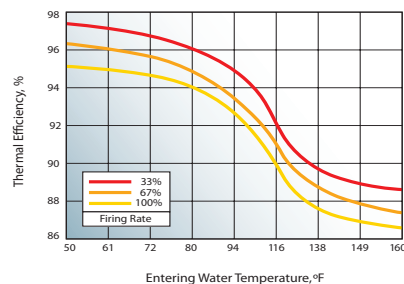
- Peer-to-peer network-multiple boiler staging (8 max)
- Outdoor air temp reset w/ programmable curve
- Remote system temperature
- Warm weather shutdown
- Domestic hot water priority
- Multiple auxiliary device control
- 2-line x 16 char. alphanumeric LCD display
- Modulation rate and percentage display
- Local/remote setpoint display
- Inlet & outlet temperature display
- Mixing valve demand percent display
- Operation runtime (hrs.) and cycles display
- Alarm and boiler inlet temperature alarm history
- 0-10 VDC input

Ratings and Dimensional Data

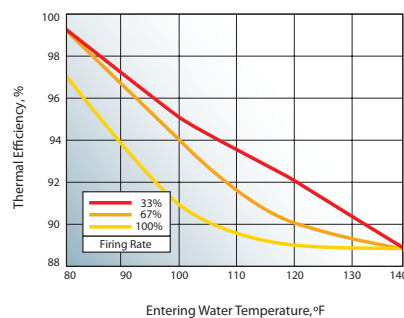


Thermal Efficiency

EVCA-750 through 2000



EVCA-3000



Evolution Condensing Models	EVCA-750	EVCA-1000	EVCA-1500	EVCA-2000	EVCA-3000
Input, MBH	750	1000	1500	2000	3000
Gross Output, MBH	699	939	1420	1900	2910
Net Ratings, Water MBH*	608	817	1235	1652	2530
Thermal Efficiency	93.2%	93.9%	94.7%	95.0%	97.0%
Boiler Horsepower	21.1	28.1	42.1	56.2	86.9
Sq. Ft. per BHP	13.4	13.4	13.5	13.5	16.4
Width: "A"	28.25" (717.55)	28.25" (717.55)	28.25" (717.55)	28.25" (717.55)	38.13" (968.50)
Depth: "B"	56.5" (1435)	56.5" (1435)	56.5" (1435)	53" (1346)	80.5" (2045)
Height: "C"	63.69" (1618)	67.94" (1725)	82.19" (2088)	93.81" (2383)	87.50" (2222)
Gas Connection: "D" NPT	1-1/2" NPT	1-1/2" NPT	1-1/2" NPT	1-1/2" NPT	2" NPT
Water Inlet: "E" NPT	2-1/2" NPT	2-1/2" NPT	2-1/2" NPT	2-1/2" NPT	4" NPT
Water Outlet: "F" NPT	2" NPT	2" NPT	2" NPT	2" NPT	4" Victaulic
Air Inlet Connection: "G"	6" (152.4)	6" (152.4)	8" (203.2)	8" (203.2)	8" (203.2)
Vent Connection: "H"	4" (101.6)	6" (152.4)	6" (152.4)	6" (152.4)	8" (203.2)
Shipping Weight: lbs.	1498	1584	1805	2026	3354

The Net AHRI Water Ratings shown are based upon a piping and pickup allowance of 1.15

The manufacturer should be consulted before selecting a boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc.

The ratings have been determined under the provisions governing forced draft boiler-burner units.

Dimensions are inches (mm)

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