FLEXCORE®
SYMMETRICAL FIRETUBE

CONDENSING BOILER TECHNOLOGY

Bringing firetube hydronic boilers and control technologies to unprecedented levels of performance.

HEATNET® 3.0

RBI®
RELIABLE. BOLD. INNOVATIVE.

FLEXCORE®
SYMMETRICAL FIRETUBE

FlexCore Symmetrical Firetube boilers bring hydronic heating products to unprecedented levels of operating efficiency.

FlexCore was designed, developed and engineered by the experts at RBI.

Engineered for performance and longevity, FlexCore utilizes a perfectly temperature-balanced heat exchanger that provides not only the highest efficiencies but also a durability beyond that of any competitive firetube boiler on the market.

Features and Benefits

- 1000 - 6000 MBH
- 96.8% AHRI Certified*
- Symmetrical Firetube Heat Exchanger
- Primary/Secondary, Full Flow and Variable Flow Systems
- Full Modulation (10:1, 1000-3000/5:1, 3500-6000)
- O2 Monitoring
- Patented "Turbo Pilot" 8,000 BTU/h Ignition
- HeatNet 3.0 Integrated Control Platform
- Touchscreen Programming & Diagnostics
- Modbus, LonWorks, BACnet BMS Integration
- Low NOx & CO
- Modern Jacket Design
- Premium Efficiency
- Superior Durability
- Easy Installation & Maintenance
- Versatile Footprint Fits Through 36" Door (ALL SIZES)
- PVC/CPVC & Polypropylene (PP) Vent
- Sika Vortex Flow Sensor

*Efficiencies and turndown vary by size.

Scan or Click

AHRI CERTIFIED® www.ahridirectory.org

All “firetube” boilers are designed to do the same thing: Heat water in an efficient manner.

That is where the comparison ends!

The RBI difference...

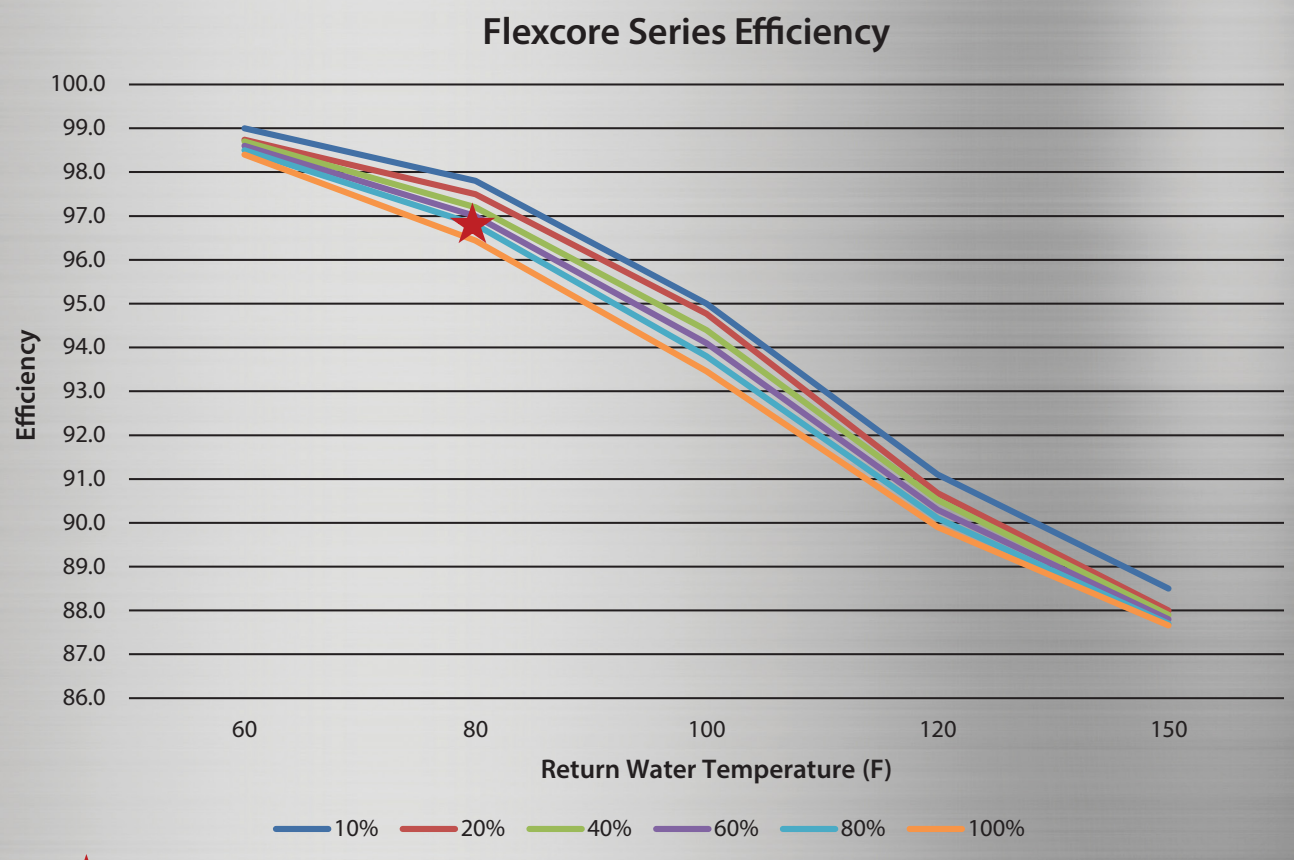
FlexCore Symmetrical Firetube boilers are designed for the long haul with no tradeoffs in efficiencies. In order to operate at premium condensing efficiencies many factors come into play that can affect the design, performance and, as importantly, the durability.

FlexCore is engineered to provide perfect temperature symmetry around an ultra-high efficient core. Flue gas temperatures are even and a consistent temperature rise across all the tubes results in a unrivaled <5° temperature difference across the heat exchanger with NO intra-tubular stresses as seen in many of today’s competitive designs.

RBI “flexes” its strength by design. At its core is a piston-like heat exchanger engineered to eliminate the expansion and contraction stresses seen in today’s boilers by creating a temperature balanced symmetrical upper tube sheet reminiscent of a diaphragm that absorbs the stresses from this piston-like motion at any water temperature delta.

Condensate is removed through FlexCore’s linear design resulting in ultra-high efficiencies in a compact design with minimal corrosive effects.

FlexCore scrubs every last bit of heat from the combustion gases keeping stresses low and efficiencies high at all modulation rates, making FlexCore the most efficient boiler on the market today.



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HEATNET 3.0

VIRTUOSO$_2$

ADVANCED HIGH TURNDOWN CONTROLS

- High Turndown

FlexCore boilers (1000-3000) are available with our **NEW Virtuoso$_2$** high turndown system. Working off the legendary Tru-Flow air/fuel coupling system; the engineers at RBI have developed an air shutter driven system expanding the turndown ratio to 10:1.

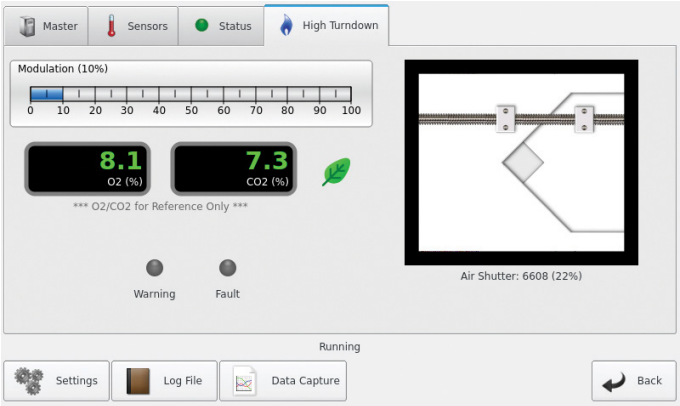
The uniquely designed air shutter system is positioned between the venturi and the blower inlet. The air shutter opens and closes electronically depending on the firing rate. The air shutter and blower design protect against intake and flue pressure fluctuations by maintaining blower RPM; providing complete combustion stability across the firing rate without sacrificing performance and reliability at any turndown ratio.

O_2 Monitoring:

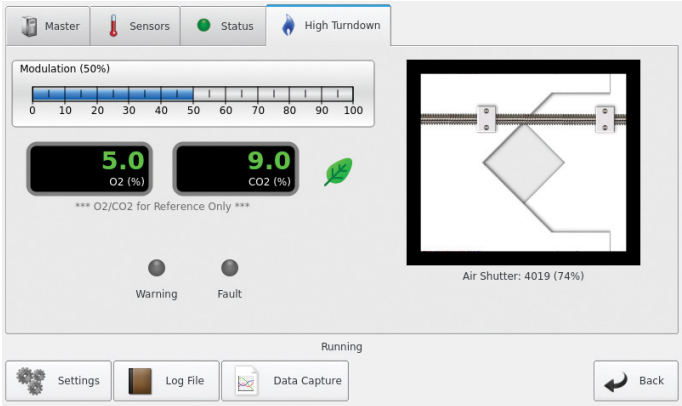
Temperatures and air density changes can effect boiler combustion. O2 sensors measure oxygen levels in the exhaust. The Virtuoso$_2$ control platform incorporates a proven Bosch O2 sensor for real-time monitoring that can be instantly accessed by operators and technicians for instant adjustments for improved efficiencies and lower emissions.

- Improved Efficiencies
- Lower Emissions
- Better Burner Distribution
- Precision Firing-rate Control
- Less Cycling
- No Restrictions on Water Temp
- Improved Comfort & Overall Performance
- Matched Input Across all Firing Rates
- No Nuisance Lockouts - Less Maintenance
- No Environmental Fluctuations (wind)

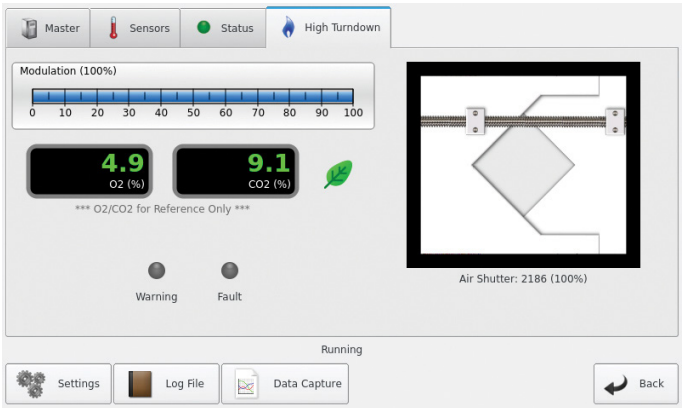
10% Turndown



50% Turndown



100% Full Fire



The Turbo Pilot®, Rugged & Reliable

Another investment in the reliable performance that's built into the FlexCore is its patented Turbo Pilot system. RBI's Turbo Pilot is a industry proven ignition system with 1000's of units installed globally.

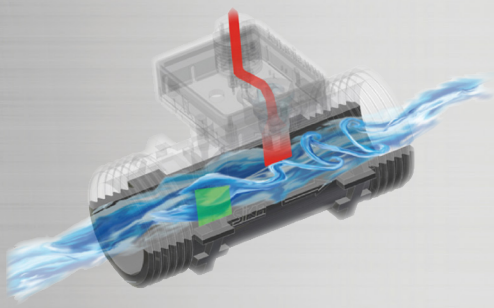
A robust 8,000 BTU/h ignition system, Turbo Pilot is far more reliable and durable than any hot surface ignition and direct spark system. The Turbo Pilot gives burner ignition a surefire, powerful ignition source even in applications with fluctuating gas pressures.

Patented Turbo Pilot 8,000 BTU/h Surefire Ignition System

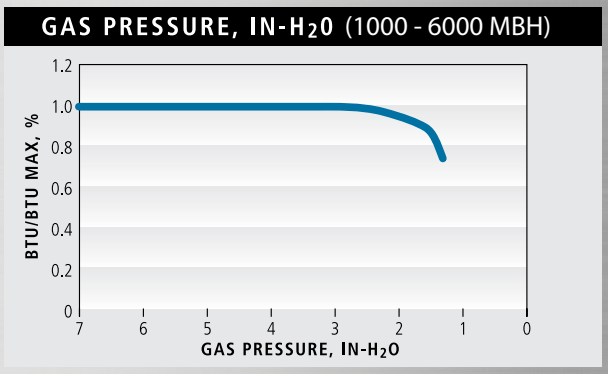
UV detection keeps system diagnostics informed about performance; a technician can also use the observation port to confirm spark/flame without removing the pilot or burner assembly.

Increase Efficiency Without Compromise

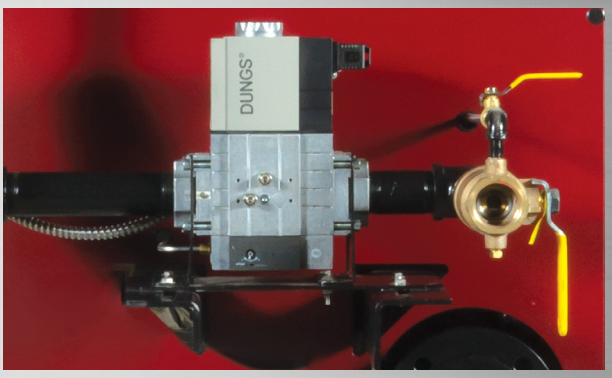
RBI's state-of-the-art air/fuel coupling combustion control system is instantly responsive and completely adaptable. This unique boiler combustion control system is designed to keep the FlexCore running safe, clean and efficient. The system reacts to changes in air and instantly compensates fuel supply by adjusting input to maintain a constant air/fuel mixture across the modulation range. The unique design of the air/fuel mixing system ensures a complete and consistent air/fuel mixture to the burner which increase combustion efficiency and repeatability all while maintaining low emissions.



All FlexCore Firetube Series boilers include a SIKA vortex flow sensor mounted in a by-pass configuration and mapped to indicate the boiler flow in (gpm). The SIKA flow sensor utilizes vortex technology which is then converted to an electrical signal sent directly to the HeatNet Boiler Management System for real time flow annunciation. The SIKA flow sensor is fully adjustable throughout the boiler model operating range.



FlexCore units are capable of full-fire output at a minimum of 3" wc.



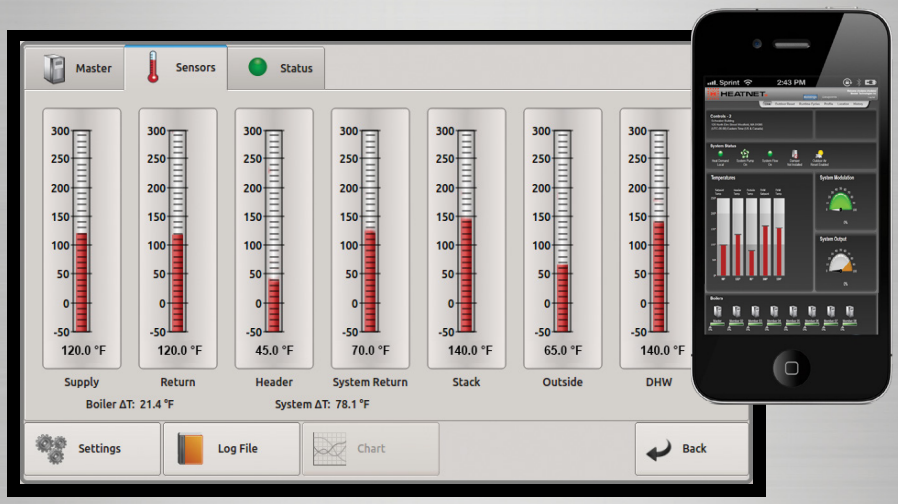
Advanced gas train design monitors and regulates gas input based on combustion air pressure, which in turn provides highly repeatable air/fuel ratio throughout the operating range.

HEATNET® 3.0

rbiwaterheaters.com/HeatNet

Every premium efficiency boiler manufactured by the Mestek Boiler Group is integrated with HeatNet 3.0® – an innovative, digital Boiler Management System that provides consistency and feedback through digital communication. By continuously monitoring several system characteristics, HeatNet 3.0 modulates boiler firing rates to maximize turndown ratios and maintain peak efficiency – no matter the load.

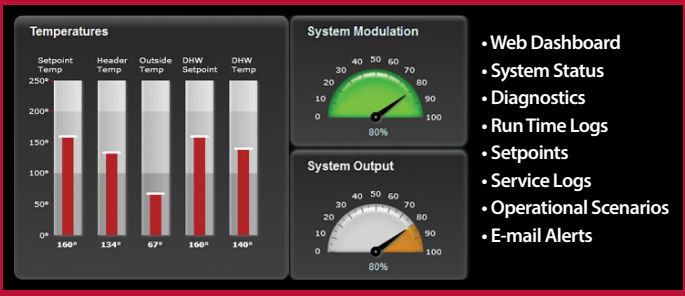
HeatNet 3.0 doesn't just benefit stand-alone boilers; it is a valuable and cost-saving tool in operating a multi-boiler Master/Member network of up to 16 boilers, including mixed-size units. By functioning as a boiler management system, HeatNet 3.0 can incorporate a mixture of condensing boilers and non-condensing boilers to eliminate costly third-party, wall-mounted boiler control platforms.



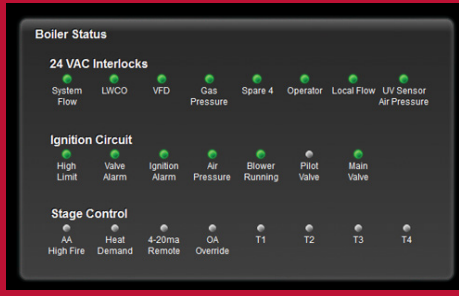
- Digital Touch Screen Programming
- Lead/Lag Cascade (16 Units)
- Mixed-Size Unit Communication
- Adaptive Modulation
- Circular Pump/VFD/Valve Control
- BMS Integration
- Freeze Protection & Delta T Monitoring
- Hybrid/base Load Capability
- Priority Boiler Control
- Domestic Hot Water Communication
- Web-Based Remote Monitoring/Dashboard
- Diagnostics and Troubleshooting
- Set Points
- Exclusive Remote Monitoring Capability with HeatNet Online

HeatNet Online:
Remote Monitoring, Boiler Performance Control & System Protection

HeatNet Online allows for real-time remote monitoring of boiler temperatures, limit circuit inputs, diagnostics and overall system performance.



- Web Dashboard
- System Status
- Diagnostics
- Run Time Logs
- Setpoints
- Service Logs
- Operational Scenarios
- E-mail Alerts



Troubleshoot From Anywhere

Building Dashboard
- Supports Multiple Systems
- "Live" Data Updated Every 60 Seconds
- Setpoint, Header, DHW Set, DHW (if enabled) Stack (if detected)
- System Modulation, System Output
- Visual Cues for Firing Boilers

System History
- Visual Trending
  - Header Temp
  - Modulation
  - DHW Temp
  - Setpoints (Operating, DHW)
- "Zoom" Charting Scales from Hour to Minute Interval
- Log Entries
  - Full Log Event
    - Event Description
    - System Detail
  - No 1000 Log Limit

Service Log History
- Individual Entries Can Be Stand Alone or Attached to Warnings, Faults
- File Upload
  - Allows Technicians to Upload Pictures From Phone
- Dynamic Link
  - Links to Product Specific Support Literature

FLEXCORE® SYMMETRICAL FIRETUBE

Boiler Product Specifications
CK1000-CK6000

	CK1000	CK1500	CK2000	CK2500	CK3000	CK3500	CK4000	CK4500	CK5000	CK6000
Boiler Ratings and Capacities										
Input MBH	1,000	1,500	1,999	2,500	3,000	3,499	3,998	4,500	5,000	6,000
Output MBH (High Fire)	955	1,426	1,901	2,397	2,904	3,327	3,802	4,329	4,795	5,808
AHRI Thermal Efficiency (%)	95.5	95.1	95.1	95.9	96.8	95.1	95.1	96.2	95.9	96.8
Turn Down	10:1	10:1	10:1	10:1	10:1	5:1	5:1	5:1	5:1	5:1
Boiler HP	28.5	42.6	56.8	71.6	86.8	99.4	113.6	129.3	143.2	173.5
Fuel Type	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas
Category	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV
Water Volume (gal)	42	40	62	58	56	102	124	96	116	112
Design Data - (Max working Press)	160 psig	160 psig	160 psig	160 psig	160 psig	160 psig	160 psig	160 psig	160 psig	160 psig
ASME Sect IV Fireside Htg Surface (sq-ft)	82	124	168	202	235	292	336	359	404	470
ASME Sect IV Waterside Htg Surface (sq-ft)	85	132	174	211	244	306	348	376	422	488
Cv GPM (1PSIG)	87	85	93	100	132	165	168	155	166	178
Electrical (Standard)	120V-1ph	230V-1ph	230V-1ph	230V-3ph	230V-3ph	230V-3ph	230V-3ph	230V-3ph	230V-3ph	230V-3ph
Electrical (Optional - 3ph)	N/A	208-575V	208-575V	208-575V	208-575V	208-575V	208-575V	208-575V	208-575V	208-575V
Boiler FLA (amps)	17.6	13.0	13.0	11.0	11.0	20.6	20.6	20.6	20.6	20.6
Min. Gas Pressure (w.c.)	3	3	3	3	3	3	3	3	3	3
Max. Gas Pressure (w.c.)	14	14	14	14	14	14	14	14	14	14
Boiler Temp Rise/Press Drop										
Max. Flow Rate (gpm) @ 20 delta t (f)	95.5	142.7	190.2	239.8	290.5	332.9	380.4	433.1	479.7	581
Min. Flow Rate (gpm) @ 100 delta t (f)	19.1	28.5	38	48	58.1	66.6	76.1	86.6	95.9	116.2
40°F - delta t (Flow Rate, gpm)	47.8	71.4	95.1	119.9	145.3	166.4	190.2	216.5	239.8	290.5
Pressure drop (ft-hd)	0.7	1.6	2.4	3.3	2.8	2.3	3.0	4.5	4.8	6.1
60°F - delta t (Flow Rate, gpm)	31.8	47.6	63.4	79.9	96.8	111	126.8	144.4	159.9	193.7
Pressure drop (ft-hd)	0.3	0.7	1.1	1.5	1.2	1.0	1.3	2.0	2.1	2.7
80°F - delta t (Flow Rate, gpm)	23.9	35.7	47.5	60	72.6	83.2	95.1	108.3	119.9	145.3
Pressure drop (ft-hd)	0.2	0.4	0.6	0.8	0.7	0.6	0.7	1.1	1.2	1.5
Max Vent (Equiv. ft)	100	100	100	100	100	100	100	100	100	100
Max Combustion Air (Equiv. ft)	100	100	100	100	100	100	100	100	100	100
Boiler Trim										
Number of Relief Valves	1	1	1	1	1	2	2	2	2	2
Relief Valve Pressure Rating (PSI)	50	50	50	50	50	50	50	50	50	50
Inlet Water Connection (in)	3	3	3	3	3	4	4	4	4	4
Outlet Water Connection (in)	3	3	3	3	3	4	4	4	4	4
Gas Connection (in)	1	1-1/2	1-1/2	1-1/2	1-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2
Vent Outlet Connection (in)	5	6	6	8	8	10	10	10	12	12
Standard Vent Material	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS
Optional Non Metallic Vent Material	PVC/CPVC/PP	PVC/CPVC/PP	PVC/CPVC/PP	PVC/CPVC/PP	PVC/CPVC/PP	PP	PP	PP	PP	PP
Combustion Air Connection	6	8	8	8	8	10	10	10	12	12
Dimensions										
Height (in)	80	80	80	80	80	80	80	80	80	80
Width (in)	32	32	32	32	32	34	34	34	34	34
Depth (in)	70	70	72.4	72.4	72.4	109.4	109.4	109.4	109.4	109.4
Operating Weight (lbs.)	1725	1780	2290	2340	2425	4070	4580	4200	4685	4885
Shipping Weight (lbs.)	1515	1555	1880	1955	2055	3420	3745	3600	3920	4150
Clearance Service/Combustible										
Front (in)	36/6	36/6	36/6	36/6	36/6	36/6	36/6	36/6	36/6	36/6
Rear (in)	24/6	24/6	24/6	24/6	24/6	24/6	24/6	24/6	24/6	24/6
Right Side (in)	24/6	24/6	24/6	24/6	24/6	24/6	24/6	24/6	24/6	24/6
Left Side (in)	24/6	24/6	24/6	24/6	24/6	24/6	24/6	24/6	24/6	24/6
Top (in)	30/6	30/6	30/6	30/6	30/6	30/6	30/6	30/6	30/6	30/6

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FLEXCORE® SYMMETRICAL FIRETUBE

Boiler Product Specifications - Metric
CK1000-CK6000

	CK1000	CK1500	CK2000	CK2500	CK3000	CK3500	CK4000	CK4500	CK5000	CK6000
Boiler Ratings and Capacities										
Input kW	293	440	586	733	879	1,025	1,172	1,319	1,465	1,758
Output kW (High Fire)	280	418	557	703	851	975	1,114	1,269	1,405	1,702
AHRI Thermal Efficiency (%)	95.5	95.1	95.1	95.9	96.8	95.1	95.1	96.2	95.9	96.8
Turn Down	10:1	10:1	10:1	10:1	10:1	5:1	5:1	5:1	5:1	5:1
Boiler HP	28.5	42.6	56.8	71.6	86.8	99.4	113.6	129.3	143.2	173.5
Fuel Type	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas	Nat Gas
Category	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV	CAT II/IV
Water Volume (lit)	160	151	234	219	210	385	468	363	438	424
Design Data - (Max working Press)	160 psig	160 psig	160 psig	160 psig	160 psig	160 psig	160 psig	160 psig	160 psig	160 psig
ASME Sect IV Fireside Htg Surface (sq-mt)	7.62	11.5	15.6	18.8	21.8	21.7	31.2	33.3	37.6	43.6
ASME Sect IV Waterside Htg Surface (sq-mt)	7.9	12.3	16.2	19.6	22.6	28.5	32.4	34.9	39.2	45.2
Cv GPM (1PSIG)	87	85	93	100	132	165	168	155	166	178
Electrical (Standard)	120V-1ph	230V-1ph	230V - 1ph	230V-3ph	230V-3ph	230V-3ph	230V-3ph	230V-3ph	230V-3ph	230V-3ph
Electrical (Optional - 3ph)	N/A	208V-575V	208-575V	208-575V	208-575V	208-575V	208-575V	208-575V	208-575V	208-575V
Boiler FLA (amps)	17.6	13.0	13.0	11.0	11.0	20.6	20.6	20.6	20.6	20.6
Min. Gas Pressure (w.c.)	3	3	3	3	3	3	3	3	3	3
Max. Gas Pressure (w.c.)	14	14	14	14	14	14	14	14	14	14
Boiler Temp Rise/Press Drop										
Max. Flow Rate (L/s) @ 20 delta-t (c)	6.0	9.0	12.0	15.1	18.3	21.0	24.0	27.3	30.3	36.7
Min. Flow Rate (L/s) @ 100 delta-t (c)	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.5	6.1	7.3
40 deg c - delta t (Flow Rate, L/s)	3.0	4.5	6.0	7.6	9.1	1.5	12.0	13.7	15.1	18.3
Pressure drop (kPa)	2.1	4.8	7.2	9.9	8.4	7.0	8.8	13.5	14.4	18.4
60 deg c - delta t (Flow Rate, L/s)	2.0	3.0	4.0	5.0	6.1	7.0	8.0	9.1	10.1	12.2
Pressure drop (kPa)	0.9	2.1	3.2	4.4	3.5	3.1	3.9	6.0	6.4	8.2
80 deg c - delta t (Flow Rate, L/s)	1.5	2.2	3.0	3.8	4.5	5.3	6.0	6.8	7.6	9.2
Pressure drop (kPa)	0.5	1.2	1.8	2.5	2.0	1.8	2.2	3.4	3.6	4.6
Max Vent (Equiv. ft)	100	100	100	100	100	100	100	100	100	100
Max Combustion Air (Equiv. ft)	100	100	100	100	100	100	100	100	100	100
Boiler Trim										
Number of Relief Valves	1	1	1	1	1	2	2	2	2	2
Relief Valve Pressure Rating (PSI)	50	50	50	50	50	50	50	50	50	50
Inlet Water Connection (in)	3	3	3	3	3	4	4	4	4	4
Outlet Water Connection (in)	3	3	3	3	3	4	4	4	4	4
Gas Connection (in)	1	1-1/2	1-1/2	1-1/2	1-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2
Vent Outlet Connection (in)	5	6	6	8	8	10	10	10	12	12
Standard Vent Material	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS
Optional Non Metallic Vent Material	PVC/CPVC/PP	PVC/CPVC/PP	PVC/CPVC/PP	PVC/CPVC/PP	PVC/CPVC/PP	PP	PP	PP	PP	PP
Combustion Air Connection	6	8	8	8	8	10	10	10	12	12
Dimensions										
Height (mm)	2031.9	2031.9	2031.9	2031.9	2031.9	2031.9	2031.9	2031.9	2031.9	2031.9
Width (mm)	812.8	812.8	812.8	812.8	812.8	863.6	863.6	863.6	863.6	863.6
Depth (mm)	1778	1778	1838.3	1838.3	1838.3	2770.7	2770.7	2770.7	2770.7	2770.7
Operating Weight (kgs.)	782	807	1039	1061	1100	1846	2077	1905	2125	2216
Shipping Weight (kgs.)	687	705	853	887	932	1551	1699	1633	1778	1882
Clearance Service/Combustible										
Front (mm)	914/153	914/153	914/153	914/153	914/153	914/153	914/153	914/153	914/153	914/153
Rear (mm)	610/153	610/153	610/153	610/153	610/153	610/153	610/153	610/153	610/153	610/153
Right Side (mm)	610/153	610/153	610/153	610/153	610/153	610/153	610/153	610/153	610/153	610/153
Left Side (mm)	610/153	610/153	610/153	610/153	610/153	610/153	610/153	610/153	610/153	610/153
Top (mm)	762/153	762/153	762/153	762/153	762/153	762/153	762/153	762/153	762/153	762/153

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