



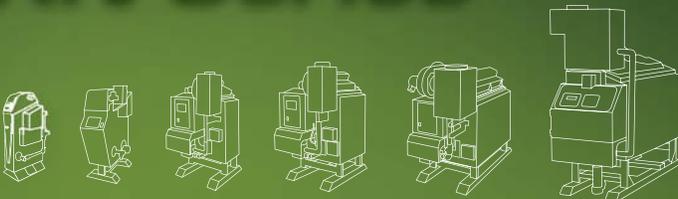
GET MORE

KN-SERIES GAS-FIRED CONDENSING CAST-IRON BOILERS
WITH HEATNET INTEGRATED BOILER MANAGEMENT SYSTEM
DELIVER ENVIRONMENTALLY FRIENDLY SOLUTIONS FOR ANY SIZE COMMERCIAL
CHALLENGE, WITH INDUSTRY-PROVEN DURABILITY, RELIABILITY AND PERFORMANCE.



AND LEAVE LESS

HydroTherm[®]
KN-Series



Installing KN-fidence

with Our Complete Line of Gas-Fired High-Efficiency Condensing Cast-Iron Boilers

In today's commercial hydronics market, size does matter—the volume of the public space in a building; the boiler's mechanical room footprint; and the level of emissions a unit releases all have to be considered. So how do architects, engineers, contractors, and building owners get the big-time performance needed to tackle any size commercial application while reducing their impact on the environment?

The KN-Series is purposefully engineered to be big and little where it matters most. Our boilers are specially designed to generate 200,000 – 3,000,000 BTUs and adapt to changes in the operating environment—with minimal moving parts and a small footprint—while retaining high efficiency. The HeatNet Integrated Boiler Control Platform constantly monitors performance, allowing our boilers to operate at up to 99% efficiency with high system turndown. Coupled with low NO_x and CO₂ emissions, as well as significant reduction in energy consumption, the KN-Series' complete line of condensing, cast-iron boilers is an environmentally friendly, cost-effective option for every application.



Tru-Flow™ Fuel/Air Coupling



Greener Way to Go

From fabrication to application, KN-Series boilers are an environmentally friendly option for your light commercial and commercial installations. Our specially designed cast-iron heat exchangers are manufactured utilizing over 90% post-consumer recycled materials and are completely recyclable themselves! Once installed, boilers operate at up to 99% efficiency, while producing low NO_x and CO₂.

- **Completely assembled boilers in total use over 80% post-consumer recycled materials**
- **Plastic components made from 40% post-consumer recycled materials**
- **LEED Certified**
- **92.7% AHRI Certified thermal efficiency on all models with up to 99% maximum at full turndown**

Cast-Iron Revival

Cast-iron brings more to the table than you'd expect. The key to the KN-Series revolutionary design is our high-mass, durable, cast-iron heat exchanger, which holds heat energy longer than traditional materials used in condensing boilers. Its superior longevity and reliability helps increase its cost effectiveness, in terms of installation, maintenance and energy consumption.

- **5 times the wall thickness of stainless steel and aluminum**
- **Accepts 10:1 range of water flows**
- **100 PSI maximum working pressure**



Responsive to changing conditions and able to adapt to the unexpected, Tru-Flow™ Fuel/Air Coupling helps keep KN-Series boilers running cleanly and efficiently. This unique control system constantly measures the combustion air and fine-tunes the amount of fuel being released to match, ensuring the proper mixture at all firing rates.

Working in conjunction with the integrated HeatNet boiler management system, Tru-Flow helps match load conditions to boiler output, providing efficiencies of up to 99% with full burner modulation. Tru-Flow constantly regulates the flow of both fuel and air to achieve an optimal one-to-one fuel mixture, and automatically adjusts itself if one of the flows is compromised, ensuring continuous safe and reliable operation.

Made in the USA



From raw materials to the state-of-the-art digital control system, the complete KN-Series product offering is proudly manufactured at our facility in Boyertown, Pennsylvania. Utilizing decades of foundry and manufacturing expertise, KN-Series boilers are cast, machined, wired, and assembled to the tightest tolerances possible, resulting in a finished product that's all American in terms of innovation, reliability, and craftsmanship.



Integrated Boiler Management System

Intelligence Built In

HeatNet, Hydrotherm's proprietary integrated boiler management system, is the driving force behind Hydrotherm's energy optimization philosophy for its high-efficiency equipment. HeatNet is designed for precise system control and is standard on all KN-Series boilers.

Through continuous monitoring of several system characteristics, including boiler temperatures, limit circuit inputs, and overall system demands, HeatNet modulates boiler firing rates to maximize turndown ratios to maintain peak efficiency regardless of the load.

Versatile

In addition to maintaining peak efficiency in our stand-alone boilers, HeatNet can operate as part of a multi-boiler Master/Member network of up to 16 boilers, where typical Master/Member systems using 2, 3, 4 or 5 boiler configurations can see total turndown ratio of 10, 15, 20, or even 25:1 or more depending on the number of units in the application.

HeatNet can also function as a boiler management system, incorporating a mix of both condensing and non-condensing boilers, or in base-load applications with existing boilers, eliminating the need for costly additional third-party, wall-mounted control platforms.

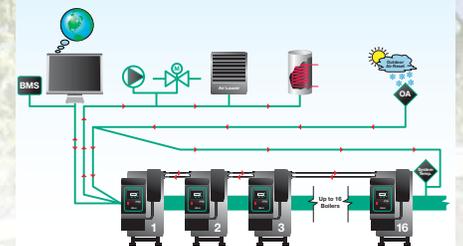
HeatNet "learns" the optimal firing rates of a given application, thereby determining the system's load for maximum energy efficiency. The variable control settings for Mod/Max firing rates allow technicians to adjust the maximum firing rates, enabling all boilers to run at extremely efficient levels until all units in the sequence have fired. HeatNet keeps the firing rate as low as possible, taking advantage of increased efficiencies at lower inputs. Boiler firing rotations can be programmed for First On/First Off, First On/Last Off or "True Rotation." HeatNet also modulates the local boiler pump for Primary/Secondary systems, ensuring optimum boiler Delta T.

Straightforward

HeatNet's intuitive interface, with plug-and-play connections, speeds the installation, set-up, and diagnostic process for technicians. HeatNet's electronics are conveniently located in a self-contained control enclosure, with all internal components and terminal blocks easily accessible. The standard HeatNet control uses a Modbus protocol with optional processor boards for BACnet- and Lon Works-based building management systems. Its proprietary design allows for seamless flash drive or laptop-driven updateable firmware, adding continuous value and boiler system control without physical control platform updates that can make some equipment obsolete.



HeatNet 'On Board' Control, working in conjunction with the BMS, provides multi-function control of KN-Series boilers, circulator pumps, motorized or on/off isolation valves, combustion air louvers/dampers, domestic hot water storage tanks and outdoor air reset.



Made With Savings in Mind

The KN-Series is engineered to make installation and maintenance simple, straightforward, and fast—saving you both time and money. KN boilers come factory packaged, ready to perform at their peak right out of the box.

- **Compact footprint accommodates standard doorways; smaller mechanical rooms**
- **Down-fire design for easy access to all components**
- **HeatNet's simple menu and plain text display speed diagnostics and set-up**
- **CO₂ levels adjust with turn of a metric allen key (low fire) and slide damper (high fire)**
- **Self-contained 8,000 BTU pilot with interrupted spark ignition and air-cooled UV sensors; requires no field adjustment**
- **21-year thermal shock warranty**

Versatility by Design

Modern applications call for flexibility. The KN-Series was designed to accommodate real-world challenges, providing versatility in configurations, piping, and ventilation.

- **Operate as a single unit or part of larger Master/Member network (up to 16)**
- **Flexible modulation of 10, 15, 20 or even 25:1 based on 2, 3, 4 or 5 boiler unit networks; up to 16 units**
- **Ideal for front-end loading configurations**
- **Variable volume water flow, up to 10:1 range, minimizing piping**
- **No inlet water temperature limitations**
- **Low pressure drops through heat exchanger capable of Delta Ts of 20 – 100° with single-pump system piping (reverse return) or primary/secondary piping**
- **Vent runs of up to 80 equivalent feet (KN-2 through KN-20) and up to 120 equivalent feet on the KN-30**
- **Accommodates numerous venting configurations, including Category II and IV**
- **Combustion air obtained from fresh air intake or mechanical room**

The KN-20 Turns Up the Heat at Iconic Fort Lauderdale Hotel

The storied Westin Diplomat Resort & Spa was in need of a solution. The pipes connecting this premier resort to its boiler room across the street were leaking, causing damage to the roadway above, and the resort couldn't afford the millions of



dollars in repairs or to close down for construction. The resort's management needed a cost-effective solution that could handle the total system load and be installed quickly for a seamless changeover.

Engineers recommended abandoning the old boiler room and constructing a new one, situated on the fourth level of the resort's parking garage. The smaller space meant units with smaller footprints, but with the resort's load requirements, the smaller boilers still had to have high BTUs and ultra-high efficiencies.



Working with a market representative, the engineers designed an efficient system that linked together

nine KN-20 boiler units, and had the capacity to incorporate two more units if the resort's needs were to change. The resort's management is thrilled with the new system, including the unexpected fuels savings of roughly 18 – 20% over the previous system.

KN-2 200,000 BTUs



The Energy Star-rated KN-2 boiler is ideally suited for residential and light commercial needs, including new construction and retrofits. With a maximum of 200,000 BTUs and modulation down to 40,000 BTUs minimum, the KN-2 can be used for a variety of applications—such as hydronic space heat, radiant heat and snow melt—with the same levels of efficiency and durability as the larger units.



Case Study



Mother Nature Would Approve

Where better for some of the industry's most efficient boilers to take up residence than in the facilities of a popular nature preserve? Located in Bartlett, IL, the Bartlett Park District Nature Center is nestled in the James "Pate" Phillip State Park and houses both an educational center for visitors and the regional offices for the Illinois Parks District. To help uphold their promise of protecting and preserving the environment, these facilities utilize two KN-2 boilers and an additional KN-4 boiler for all of their hot water needs—a clean solution that supports a green message.

KN-2 Specifications

	Nominal	Min	Max
Gas pressure, inches W.C.	7	2	14
Voltage, 120 V 1ph 60hz			
Flow, GPM		2	36
Temperature rise, F		20	100
Flue length, equiv. ft		0	100
Air inlet length, equiv. ft		0	100
Water volume, gals	3		
Flue diameter, in	3"		
Current, amps	2.75		
Cv, GPM @ 1psid	20		
Boiler HP	5.3		
Input MBH	199		
Output MBH	184		
Fuel type	Nat. Gas/LP		
ASME design data max	100PSI +250°F		
Negative flue pressure	-0.2" W.C.		
Positive flue pressure	0.25" W.C.		
Height	51 1/8"		
Length	17 3/16"		
Width	28 3/8"		
LBS	540 lbs		

KN-4 400,000 BTUs

The KN-4's Delta T capabilities and fully modulating 400,000 BTUs make this unit ideal for addressing the challenges of the growing radiant heat and snow melt markets. KN-4's small vent size allows you to utilize existing vent work as a chase for the new equipment in retrofit applications. And its small footprint makes incorporating its power into the design of new constructions simple.



KN-4 Specifications

	Nominal	Min	Max
Gas pressure, inches W.C.	7	2	14
Voltage, 120 V 1ph 60hz			
Flow, GPM		4	72
Temperature rise, F		20	100
Flue length, equiv. ft		0	100
Air inlet length, equiv. ft		0	100
Water volume, gals	4.5		
Flue diameter, in	4"		
Current, amps	5		
Cv, GPM @ 1psid	40		
Boiler HP	10.4		
Input MBH	399		
Output MBH	369		
Fuel type	Nat. Gas/LP		
ASME design data max	100PSI +250°F		
Negative flue pressure	-0.2" W.C.		
Positive flue pressure	0.25" W.C.		
Height	51 7/8"		
Length	22"		
Width	35 3/8"		
LBS	753 lbs		

Case Study



A Wealth of Knowledge Goes into the Design

Listed on the National Register of Historic Places and deemed a landmark building by the Seattle Landmarks Preservation Board, the West Seattle Branch of the city's Public Library was in line to receive a renovation, including the replacement of its current boiler system. The boiler had reached the end of its useful life, and the building itself had received an energy rebate from the local utility provider, Puget Sound Energy. To heat the two-story, 9,460-square-foot structure engineers installed two KN-4 boilers, selected for their efficiency, ease of installation, and small footprint. The KN-4's ability to draw in mechanical room air for combustion and vent through an existing stack helped preserve the original look of the building, while the output capacity heated the space effectively, despite the challenges posed by the building's tall ceilings and operable windows.

KN-6 600,000 BTUs



In addition to 600,000 BTUs in a compact footprint, the KN-6's fully modulating cast-iron design and condensing efficiency make it ideally suited to handle the modern demands of today's commercial building applications, including corporate office facilities. With its low fuel consumption and intelligent onboard controls, the KN-6 is an environmentally friendly choice for your next project.



Case Study



A Gold Star Organization, with a Platinum Rating

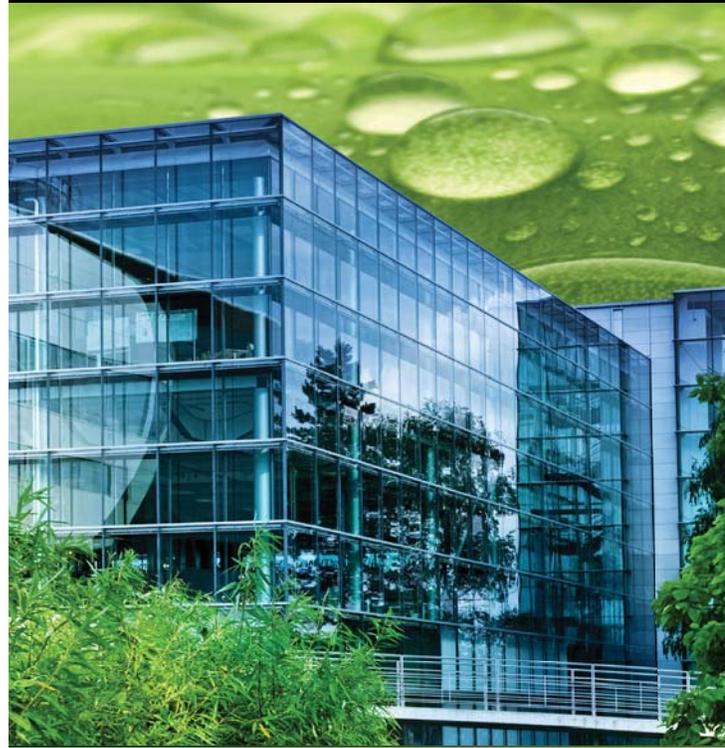
Two firsts achieved on a single project is an accomplishment in and of itself. But it's made all the sweeter because of whom the building is for. The KN-6 boiler was part and parcel to the development and success of the new Ronald McDonald House of Austin and Central Texas, the first green Ronald McDonald House in the world. Better still, the efficiency and effectiveness of the KN-6 helped this special housing development—a unique, peaceful setting where visiting families can live while their children receive medical treatment in the area—achieve LEED-Platinum standards. This is the highest level of sustainable building that can be reached in the US, and the Ronald McDonald House of Austin and Central Texas is first structure in Austin, and only the third in the state of Texas, to obtain this rating.

KN-6 Specifications

	Nominal	Min	Max
Gas pressure, inches W.C.	7	2	14
Voltage, 120 V 1ph 60hz			
Flow, GPM		10	100
Temperature rise, F		20	100
Flue length, equiv. ft		6	80
Air inlet length, equiv. ft		0	80
Water volume, gals	9.5		
Flue diameter, in	5"		
Current, amps	5		
Cv, GPM @ 1psid	60		
Boiler HP	16		
Input MBH	600		
Output MBH	556		
Fuel type	Nat. Gas		
ASME design data max	100PSI +250°F		
Negative flue pressure	-0.2" W.C.		
Positive flue pressure	0.25" W.C.		
Height	53 1/8"		
Length	36 3/4"		
Width	29 1/2"		
LBS	1040 lbs		

KN-10 1,000,000 BTUs

Producing 1,000,000 BTUs, the KN-10 is engineered to meet the low fuel use, low installation cost, and small footprint demands of today's commercial boiler market. Like all boilers in the KN-Series, the KN-10 combines the condition-tolerant and heat-retaining characteristics of cast iron with the fuel savings of full-modulation condensing performance, resulting in one of the most innovative boilers on the market.



KN-10 Specifications

	Nominal	Min	Max
Gas pressure, inches W.C.	7	2	14
Voltage, 120 V 1ph 60hz			
Flow, GPM		15	150
Temperature rise, F		20	100
Flue length, equiv. ft		6	80
Air inlet length, equiv. ft		0	80
Water volume, gals	14		
Flue diameter, in	6"		
Current, amps	8		
Cv, GPM @ 1psid	100		
Boiler HP	26		
Input MBH	1000		
Output MBH	927		
Fuel type	Nat. Gas		
ASME design data max	100PSI +250°F		
Negative flue pressure	-0.2" W.C.		
Positive flue pressure	0.25" W.C.		
Height	52 5/8"		
Length	43 5/8"		
Width	29 3/8"		
LBS	1360 lbs		

Case Study



Helping Complete the Experience

The clientele of the Mercedes Benz Dealership in Burlington, Ontario, expects a certain level of comfort—in the vehicles they drive and places where those vehicles are showcased. To create an environment fitting of the Mercedes Benz brand, this 50,000-square-foot facility was designed and features a floor-to-ceiling glass façade; exterior snow and ice melt systems for display vehicle areas and building entrances; and radiant in-floor heating to keep everyone inside comfortable. To handle the heating demands of this elegant showroom, three KN-10 boilers were installed in 2008. This project is an ideal fit for the KN-10's low water temperature and condensing technology, and the three boilers were easily configured to provide 2,000,000 BTUs and 1,000,000 BTUs of dedicated heating power to the radiant heating and snow melt systems, respectively.

KN-20 2,000,000 BTUs



At 2,000,000 BTUs, the KN-20 can perform in some of the harshest environmental conditions, including the Barrow Observatory, just outside Barrow Point, AK. Its durable, reliable, cast-iron design and full-modulation condensing performance, coupled with low fuel consumption, low installation cost, and small footprint, make this boiler ideally suited for your next big project.



Case Study



Made to Go All Season Long

Home to Canada's National Soccer Team and the country's first Major League Soccer team, the Toronto FC, BMO Field wanted to improve the quality of the stadium's playing surface so it better reflected the athleticism of the premier players who take to the field. As Canada's first soccer specific stadium, the facility has the capacity to seat 20,000 "football" fans who, like the players themselves, were excited about the artificial turf's removal and subsequent replacement by natural grass. But with the soccer season running from March through November, and the colder Toronto climate, an innovative system was put in place to ensure the field remained in top, playable condition throughout the year. Called a Turf Conditioning System, this technology utilizes four KN-20 boilers to supply the necessary 8 million BTUs that not only keep the grass healthy and green, but also prevents the ground from freezing, reducing the chance of player injury.

KN-20 Specifications

	Nominal	Min	Max
Gas pressure, inches W.C.	7	2	14
Voltage, 230 V 1ph 60hz			
Flow, GPM		30	300
Temperature rise, F		20	100
Flue length, equiv. ft		6	80
Air inlet length, equiv. ft		0	80
Water volume, gals	26		
Flue diameter, in	8"		
Current, amps	11		
Cv, GPM @ 1psid	190		
Boiler HP	53		
Input MBH	1999		
Output MBH	1853		
Fuel type	Nat. Gas		
ASME design data max	100PSI +250°F		
Negative flue pressure	-0.2" W.C.		
Positive flue pressure	0.25" W.C.		
Height	57 5/8"		
Length	66"		
Width	28 7/8"		
LBS	2450 lbs		

KN-30 3,000,000 BTUs

The largest of the KN-Series of boilers, the KN-30 produces 3,000,000 BTUs, while maintaining the features that KN boilers are recognized for—the long-lasting durability of cast-iron and the efficiency of condensing boilers, all in a compact footprint. The KN-30 is built to meet the largest, most challenging demands of today's condensing commercial boiler market.



KN-30 Specifications

	Nominal	Min	Max
Gas pressure, inches W.C.	7	3	14
Voltage, 240 V 3ph 60hz			
Flow, GPM		45	450
Temperature rise, F		20	100
Flue length, equiv. ft		6	120
Air inlet length, equiv. ft		0	120
Water volume, gals	38		
Flue diameter, in	8"		
Current, amps	6.5		
Cv, GPM @ 1psid	278		
Boiler HP	79		
Input MBH	3000		
Output MBH	2781		
Fuel type	Nat. Gas/LP		
ASME design data max	100PSI +250°F		
Negative flue pressure	-0.2" W.C.		
Positive flue pressure	0.9" W.C.		
Height	71 13/16"		
Length	80 31/32"		
Width	31 9/32"		
LBS	3500 lbs		

Boiler Overview

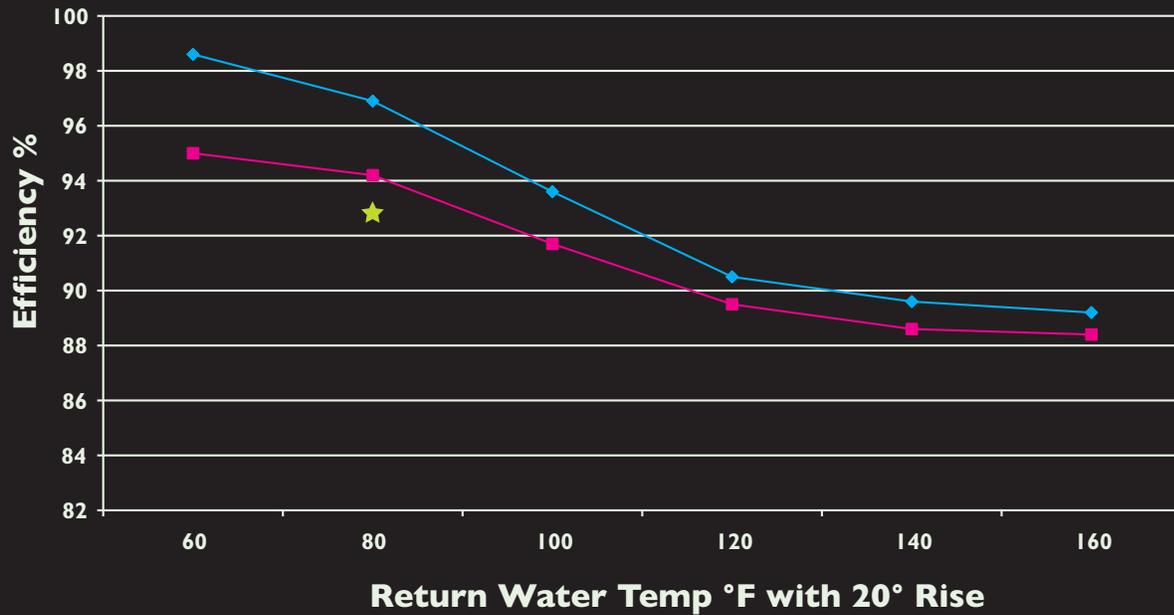


Based on Time-Tested Results

The KN-30 joins the proven foundation of KN-Series boilers, combining superior longevity and reliability with maximum efficiencies and serviceability. Hydrotherm engineers have further streamlined the KN's powerful design, producing the most versatile boiler yet.

Addressing the wants and needs of today's demanding system applications, the KN-30 incorporates a state-of-the-art Dungs MBC gas valve and "Whirlwind" blower package, allowing for decreased vent sizes with increased vent lengths. This also eliminates the need for traditional and expensive VFDs, while still delivering pinpoint blower modulation through direct communication with KN's HeatNet integrated control platform.

KN Series Annual Mean Thermal Efficiency



★ – AHRI Certified 92.7% Efficient

■ – Annual Mean Thermal Efficiency is a calculated average utilizing cumulative run hours and corresponding load. (ASHRAE Degree Day & BIN Method/Fundamentals 19.17)

◆ – Maximum Modulation Efficiency (Low Fire)

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