

HydroTherm[®]

KN SERIES BOILERS LEED CERTIFICATION WHITE PAPER

**LEED 2009 Version 3
for New Construction & Major Renovations**



Saving the planet one boiler at a time

**BOILERS MADE IN THE U.S.A.
Manufactured in Boyertown, PA
90% Recycled Content**



Hydrotherm

KN Series Boilers / LEED Certification

White Paper

Purpose

The purpose of this white paper is to give you a guide to use when choosing your energy efficient heating equipment and provide you with an overview of LEEDs certification and how Hydrotherm can help you achieve LEED points.

What is Green Building?

Green building is a practice in which we build in such a way to reduce the negative impacts of building while promoting the positive impacts on both indoor and outdoor environments. There are many areas of concern when we speak of green building, but the main areas of concern that are focused on by the United States Green Build Council and their LEED (Leadership in Energy and Environmental Design) program are as follows:

- 1) Sustainable Sites (SS)
- 2) Water Efficiency (WE)
- 3) Energy & Atmosphere (EA)
- 4) Materials & Resources (MR)
- 5) Indoor Environmental Air Quality (EQ)
- 6) Innovation & Design Practices (ID)
- 7) Regional Priority (RP)

LEED certification applies to Green Buildings, not individual products. In choosing your heating system, choosing a high efficiency, small footprint unit will contribute to different areas of your LEED certification helping you achieve your overall performance objective.

Green Building Benefits

There are many benefits that go along with Green Building. When you build green there are environmental, economic, health, and community benefits. Environmentally, by following the LEEDs certification program you can enhance and protect ecosystems and biodiversity, conserve natural resources, reduce solid waste, and improve air and water quality. Economically, green buildings are generally not any more costly to build than conventional structures, which is a large misconception. There may be somewhat higher up front costs, but overall you reduce the buildings operating costs and enhance the asset value and profits. It has been proven that employees working in LEED certified structures are more productive and satisfied with their jobs. Employees are more comfortable and healthy, which promotes lower health care costs. LEED buildings contribute to the overall quality of life.

Green Building Projections

The USGBC has projected that by 2010 the green building products market will be worth \$30-\$40 billion annually. Currently there are 18,403 member organizations in the USGBC which includes corporations, governmental agencies, nonprofits, and others. Since 2000, the USGBC's membership has more than quadrupled.

By 2010, 10% of commercial construction starts are expected to be green. Every day \$464 million worth of construction registers with LEED. There are LEED projects in 50 states and 91 countries.

Current US building statistics:

- Buildings represent 38.9% of U.S. primary energy use
- Buildings account for 38% of all CO2 emissions
- Buildings represent 72% of U.S. consumption
- Buildings use 13.6% of all potable water, the equivalent of 15 trillion gallons/year.
- Buildings use 40% of raw materials globally (3 billion tons annually)
- Estimated that 136 million tons of building related construction and demolition debris was generated in a single year in the US

The Driving Force behind Green Building

So what is driving the "Green" movement? First of all is the US Government and their high level of initiatives. Secondly, homeowners have a much higher demand for green construction. Lastly, improvements are being made every day in green building materials which make them more readily available.

Understanding LEEDs

The USGBC's LEED program is a leader in Green Building design and sustainability. LEEDs certifies building for New Construction, Existing buildings, Schools, Neighborhoods, Core & Shell, Commercial Interiors, Healthcare and Retail. Within each of these sectors you will find the 6 areas of concentration as listed above. Each area has key elements. Each element has prerequisites that must be followed before qualifying for further points in that area. To better understand the LEEDs program, please visit www.USGBC.org.

Let Hydrotherm KN boilers help you achieve LEED points.

Mestek, Hydrotherm's parent company, has been a member of USGBC since 2007. We recognize the importance of Green Building and LEED certification. Our KN boilers will provide you with the efficiencies, footprint, and design needed to help you achieve LEED points.

Hydrotherm is looking to the future and is committed to providing you with the best products to achieve your Green Building goals.

Carefully designing an energy efficient building will allow the HVAC system to be downsized resulting in significant savings

Summary

Green building is in beginning stages. There are many unknowns, many questions, not enough answers. As the years go on, these unknowns will start to change as we get more concrete data on existing Green Buildings. Green building is not going away. As we progress in the process, codes will change and concepts will become political hot points. Regardless, it's the wave of the future. We need to start embracing it now. Hydrotherm is keeping its eyes on the next wave, making sure we provide you with the necessary products to keep you ahead in the "Green" game.

Sources:

USBGC "Green Building by the Numbers" February 2009
LEED 2009 V3 for New Construction & Major Renovations



KN BOILER

LEED CERTIFIED JOBS

- **California Academy of Sciences, Golden Gate Park, San Francisco**
LEED Platinum
Installed 6 – KN20
http://www.calacademy.org/newsroom/releases/2008/leed_platinum.php
- **Fairview Research Center, Seattle WA**
LEED Silver
Installed 4 – KN20
http://www.mortenson.com/what_s_new/project_selection/seattle_awarded_new_fairview_research_center.html
- **Bellevue Towers, Bellevue, WA**
LEED Gold
Installed 10 – KN20
<http://www.bellevuetowers.com>
- **Westlake Terry, Seattle, WA**
LEED Gold
Installed 2 – KN10
<http://www.vulcanrealestate.com/TemplatePropertyPortfolio.aspx?contentId=86>
- **Waldorf School, San Francisco, CA**
LEED Gold Pending
Installed 1 – KN10. First LEED High School in San Francisco
<http://www.vulcanrealestate.com/TemplatePropertyPortfolio.aspx?contentId=86>

Sustainable Sites

SS Credit 5.2

Site Development – Maximize Open Space

1 Point

Intent:

To promote biodiversity by providing a high ratio of open space to development footprint.

Potential Product Application:

Hydrotherm's KN boilers are designed with a small footprint and flexible venting and piping options, all of which contribute to a reduced amount of open space needed for the heating system.

KN boiler aspects that contribute to maximizing open space:

- Our boilers have a small enough footprint to fit through a standard door opening, allowing for installation in smaller boiler rooms.
- Boilers are designed to be modular and contain communication modules to work any way needed
- No make up air units needed for combustion. The KN boilers are sealed combustion
- Uses smaller duct sizes versus conventional venting design
- Common venting on multiple boilers, vented horizontally or vertically
- Primary loop installation eliminates the need for a secondary loop and the additional equipment associated with it
- Less piping is needed due to the ability to install into two pipe changeover systems
- Boilers capable of variable flow and can operate at high delta T's. Reduces pipe size.

HYDROTHERM Products:

KN-2	H 51 1/8"	W 17 3/16"	L 28 3/8"
KN-4	H 51 7/8"	W 22"	L 35 3/8"
KN-6	H 53 1/8"	W 29 1/2"	L 36 3/4"
KN-10	H 52 5/8"	W 29 3/8"	L 43 5/8"
KN-20	H 57 5/8"	W 28 7/8"	L 66"

For further dimensional data, visit www.hydrothermkn.com

Water Efficiency

WE Credit 1

Water Efficient Landscaping

2-4 Points

Intent:

To limit or eliminate the use of potable water, or other natural surface or subsurface water resources available on or near the project site for landscape irrigation.

Potential Product Application:

A significant amount of condensate is produced in Hydrotherm's KN high efficiency boilers during operation.

Water Efficient Landscaping:

- Flue gas condensate can be treated and reused. Potential of producing 1 gph/100,000 BTU's when fully condensing.

HYDROTHERM Products:

KN-2, KN-4, KN-6, KN-10, KN-20

Energy and Atmosphere

EA Credit 1

Optimize Energy Performance

1-19 Points

Intent:

To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

Potential Product Application:

Hydrotherm products are designed to reduce environmental and economic impacts associated with excessive energy use.

- Exceeds hydronic heating system requirements of ASHRAE 90.1
- Maximizes operating efficiency, while minimizing wasted energy due to the 5:1 turndown ration
- The condensing of flue gases and unique jacket design ensures high operating efficiencies and minimizes thermal losses
- Boiler performance is optimized by using VFD controlled blower motors.

HYDROTHERM's Products:

KN-2, KN-4, KN-6, KN-10, KN-20

Energy and Atmosphere

EA Credit 5

Measurement and Verification

3 Points

Intent:

To provide for the ongoing accountability of building energy consumption over time.

Potential Product Application:

The KN Series Heat Net control measures energy performance of the boiler plant. This allows for the measuring of energy performance for at least 1 year post construction occupancy as required by LEED.

HYDROTHERM's Products:

KN-6, KN-10, KN-20

Indoor Environmental Quality

IEQ Credit 4.1

Low Emitting Materials – Adhesives & Sealants

1 Point

Intent:

To reduce the quantity of indoor air contaminants that are odorous, irritating, and/or harmful to the comfort and well-being of installers and occupants.

Potential Product Application:

All Hydrotherm products use low Volatile Organic Compound (VOC) adhesives and sealants that comply with South Coast Air Quality Management District (SCAQMD) Rule #1168.

HYDROTHERM's Products:

KN-2, KN-4, KN-6, KN-10, KN-20

Indoor Environmental Quality

IEQ Credit 4.2

Low Emitting Materials – Paints & Coatings

1 Point

Intent:

To reduce the quantity of indoor air contaminants that are odorous, irritating, and/or harmful to the comfort and well-being of installers and occupants.

Potential Product Application:

Volatile Organic Compound (VOC) limits on all paints and coatings used on all of our products do not exceed the limits established by Green Seal Standard GS-03.

HYDROTHERM's Products:

KN-2, KN-4, KN-6, KN-10, KN-20

Regional Priority

RP Credit 1

Regional Priority

1-4 Point(s)

Intent:

To provide an incentive for the achievement of credits that address geographically-specific environmental priorities.

Potential Product Application:

Determine and pursue the prioritized credits for the project location.

Regional councils, chapters, and affiliates have identified the environmental concerns that are locally most important for every region of the country. A project that earns a regional priority credit will earn one bonus point in addition to any points awarded for that credit. Up to four extra points can be awarded.

A database of Regional Priority credits and their geographic applicability is available on the USGBC website, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1984>

HYDROTHERM's Products:

KN-2, KN-4, KN-6, KN-10, KN-20

