

# **Thermal Design's Commitment To Green Building and LEED Certification**

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**Thermal Design Inc. is committed to greener buildings, sustainability and LEED through our Simple Saver System® insulation system and EnergyCraft HVAC Appliances. By installing our Simple Saver System and HVAC Appliances, commercial, industrial and other non-residential buildings can qualify for various LEED credits. The following links show you how:**

1. [The Simple Saver System's LEED Contribution Areas.](#)
2. [We reduce energy loads with our Simple Saver System by allowing for full thickness of the insulation and thus providing maximum installed R-values.](#)
3. [You receive optimized energy performance with our energy efficient EnergyCraft HVAC Appliances.](#)
4. [We use recycled content and recyclable materials in our insulation, fasteners, and steel strapping.](#)
5. [We provide building materials that assist in going beyond the required performance minimums.](#)
6. [We create thermal comfort for occupants with the Simple Saver System, optional ceiling fans, and EnergyCraft HVAC Appliances.](#)
7. [We avoid toxic or other emissions and non-recyclable materials.](#)

## **The Simple Saver System's LEED Contribution Areas**

Using the Simple Saver System and our EnergyCraft HVAC appliances may qualify your building for the following LEED credits. A building only needs 26 points to qualify for LEED certification. Using Thermal Design's products can help you obtain up to 22 possible LEED points. Click on the categories below to learn how.

### **Energy & Atmosphere (EA)**

EA Prerequisite 2: Minimum Energy Performance

EA Prerequisite 3: Fundamental Refrigerant Management

EA Credit 1: Optimize Energy Performance: up to 10 possible points

### **Materials & Resources (MR)**

MR Credit 4.1 Recycled Content: 1 point possible

MR Credit 4.2 Recycled Content: 1 point possible

MR Credit 5.1 Regional Materials: 1 point possible

MR Credit 5.2 Regional Materials: 1 point possible

MR Credit 6 Rapidly Renewable Materials: 1 point possible

### **Innovation and Design Process (ID)**

ID Credit 1.1-1.4 Innovation in Design: 1-4 points possible

### **Indoor Environmental Quality (EQ)**

Indoor Environmental Quality Prerequisite 1: Minimum IAQ Performance

EQ Credit 3.2 Construction IAQ Management Plan: Before Occupancy

(Option 2-Air Quality Testing): 1 point possible

EQ Credit 7.1 Thermal Comfort: 1 point possible

### **Other Green Qualities**

LEED is Leadership in Energy and Environmental Design. For more information visit [www.leadbuilding.org](http://www.leadbuilding.org)

## Energy & Atmosphere Prerequisite 2: Minimum Energy Performance

*Intent:* Establish the minimum level of energy efficiency for the proposed building and systems.

In order to qualify for any points in the Energy and Atmosphere LEED category, the building must comply with the mandatory provisions and prescriptive requirements of ASHRAE/IESNA Standard 90.1-2004.

### **Thermal Design's Contribution:**

#### *Insulation*

The ASHRAE Standard 90.1-2004 specifies the minimum R-values for roof and wall insulation in metal buildings. It states that for climate zones 1-5, which covers the United States, the minimum R-value for roofs is an R-19 ( $U=0.065$ ) and the minimum R-value for walls is an R-13. We offer up to an R-30 wall system and up to an R-43 roof system using our Simple Saver System. This exceeds the stated ASHRAE requirements for insulation R-values and allows your building to meet this LEED prerequisite.

#### *Building Envelope*

The ASHRAE Standard 90.1-2004 also specifies that the building envelope be well sealed. The Simple Saver System uses factory-made double extrusion welded seams. This preserves the very low vapor permeance and the vapor barrier integrity of our fabric that helps to create a well-sealed building envelope and helps prevent condensation.

#### *HVAC*

Our heating and air conditioning units exceed the minimum efficiency required by ASHRAE Standard 90.1-2004 with 13 and 14 SEER ratings. They are also Energy Star, ARI, and ETL tested and certified.

## Energy & Atmosphere Prerequisite 3: Fundamental Refrigerant Management Required

*Intent:* Reduce ozone depletion.

### **Thermal Design's Contribution:**

Our current air conditioner models use R-22 refrigerant that is a HCFC and is now allowed under this prerequisite. Goodman offers unit with R-410A that is an environmentally friendly refrigerant. Customers can contact Thermal Design at (800) 255-0776 to special order condenser units with the R-410A refrigerant.

## Energy & Atmosphere Credit 1: Optimize Energy Performance

*Intent:* Achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

The requirement to get points in the Optimize Energy Performance category of LEED is that the building "achieves increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use."

**Thermal Design's Contribution:***The EnergyCraft HVAC Appliances*

The EnergyCraft Heating and Cooling Appliances are extremely efficient 14 SEER units that exceed the baseline required SEER in ASHRAE 90.1-2004, giving you the ability to achieve increasing levels of energy performance above the baseline prerequisite.

*Insulation:**Full In-place R-values:*

Thermal Design offers the Simple Saver System with up to an R-30 in the walls and R-43 in the roof. The maximum baseline requirement for buildings in the US is R-13 in the walls (in climate zones 7 and 8) and R-19 in the roof. Putting in a higher R-value system than required allows you to achieve increasing levels of energy performance above the baseline prerequisite, and qualifies the building for LEED points.

The other advantage to the Simple Saver System is that it reduces energy loads compared to other systems by yielding the full designed in-place R-values without compression or voids common in other methods. The Simple Saver System creates the uniform depth space needed for full-specified insulation thickness. The insulation is not compressed; instead it is suspended between the purlins and held in place by our polyethylene fabric yielding the desired full installed R-value. Other methods such as over-the-purlin, where the insulation is compressed between the purlin and the roof sheet, can reduce the in-place R-values by almost 50%. Another method called long tab, or sag-n-bag, where the insulation is bagged between the purlins, causes voids and compression.

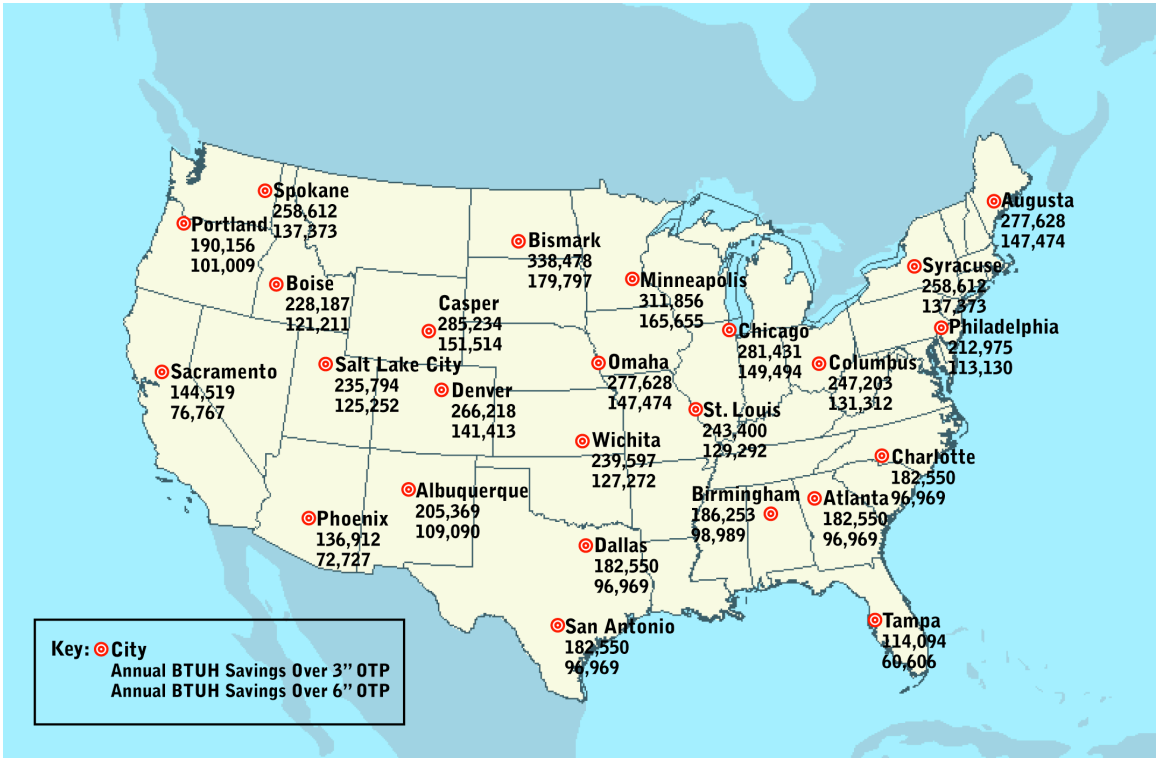
Even though the competition may be using the same thickness of insulation, once it is installed it performs far below the desired R-value even though the competition claims it has the higher R-value performance.

*Isolated Purlins and Girts:*

Another fact is that none of these other methods, over-the-purlin, long tab or sag-n-bag, conceal the purlins from the internal environment, which causes conduction and condensation problems. The Simple Saver System is designed to reduce exposed conductive purlin and girt surface areas from over 50% of the actual roof/wall area to a fraction of less than one percent. This greatly reduces conductive heat loss to the outside during winter, and heat gain during summer. The water vapor transmission rate is less than 0.02 grains per hour for the standard Simple Saver System.

*Superior System:*

The Simple Saver System is simply superior to the competitor's insulation methods. Properly sealed roof and wall systems prevent air infiltration and isolate the conductive steel structure from the conditioned space. The Simple Saver System provides both low U-values and low emissivity values stopping over 90% of all three types of heat transfer, greatly reducing the energy used in the building for heating and cooling. The energy saved depends on the heating and cooling needs and the building location in the country. Below is a map that shows the annual relative savings in BTUH throughout the nation compared to three-inch over-the-purlin and six-inch over-the-purlin insulation methods.



## Materials and Resources Credit 4.1: Recycled Content

*Intent:* Increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials.

In order to receive one point for MR Credit 4.1, the building must have “materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes as least 10% (based on cost) of the total value of the materials in the project.”

### **Thermal Design’s Contribution:**

Thermal Design’s products can help you achieve this goal. Our blanket insulation uses an average of 30% post-consumer recycled glass and 5% post-industrial recycled glass; available cellulose insulation is approximately 85% post-consumer recycled materials. Our steel fasteners use approximately 25% post-consumer recycled content. Our steel strapping uses on a monthly average 53% recycled materials, of which at least 10% comes from post-consumer scrap.

## Materials and Resources Credit 4.2: Recycled Content

*Intent:* Increase demand for building products that incorporate recycled content materials, thereby reducing the impacts resulting from extraction and processing of virgin materials.

You can receive 1 more point (in addition to the MR credit 4.1) for recycled content by using “materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes an additional 10% beyond MR Credit 4.1 (total of 20%, based on cost) of the total value of materials in the project.”

### **Thermal Design’s Contribution:**

Our recycled content values listed above can help you achieve this goal as well.

## Materials and Resources Credit 5.1 Regional Materials: 10% Extracted, Processed & Manufactured Regionally

*Intent:* Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.

### **Thermal Design’s Contribution:**

Thermal Design purchases insulation from manufacturers who ship from these locations: McPherson, Kansas and Kansas City, Kansas. Thermal Design purchases cellulose insulation from a manufacturer who ships from these locations: Albany, New York; Atlanta, Georgia; Charlotte, North Carolina; Delphos, Ohio; East St. Louis, Illinois; Norfolk, Nebraska; Phoenix, Arizona; Sacramento, California; Salt Lake City, Utah; Tampa, Florida; and Waco, Texas. Contact Thermal Design for more information.

To qualify for points in this area, projects must “use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% (based on cost) of the total materials value. If only a fraction of a product or material is

extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.”

## **Materials and Resources Credit 5.2 Regional Materials: 20% Extracted, Processed & Manufactured Regionally**

*Intent:* Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.

### **Thermal Design’s Contribution:**

Thermal Design purchases insulation from manufacturers who ship from these locations: McPherson, Kansas and Kansas City, Kansas. Thermal Design purchases cellulose insulation from a manufacturer who ships from these locations: Albany, New York; Atlanta, Georgia; Charlotte, North Carolina; Delphos, Ohio; East St. Louis, Illinois; Norfolk, Nebraska; Phoenix, Arizona; Sacramento, California; Salt Lake City, Utah; Tampa, Florida; and Waco, Texas. Contact Thermal Design for more information.

To qualify for points in this area, projects must “use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 20% (based on cost) of the total materials value. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.”

## **Materials and Resources Credit 6 Rapidly Renewable Materials**

*Intent:* Reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials.

### **Thermal Design’s Contribution:**

Thermal Design’s Simple Saver System can use cellulose as well as fiberglass for the insulation component to the system. Cellulose is a rapidly renewable material that can be typically harvested within a ten-year cycle or less.

## **Innovation and Design Process Credit 1.1-1.4: Innovation in Design (LEED-NC 2.2)**

*Intent:* To provide design teams and projects the opportunity to be awarded points for the exceptional performance above the requirements set by the LEED-NC Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED-NC Green Building Rating System.

**Suggested Strategy:** Provide a safe and healthy environment for both construction teams and building occupants with a Comprehensive Formaldehyde Reduction plan. Suggested items include:

- Specify no- or low-formaldehyde emitting products/appliances for each of the following if/as incorporated in the project: Composite wood and agrifiber (meet LEED-NC EQc4.4 credit requirements) and insulation made without formaldehyde.
- Environmental Tobacco Smoke (ETS) Control: meet LEED EQp2 credit requirements
- Thermal Comfort Design: meet LEED-NC Eqc7.1 credit requirements
- Monitor Air Quality: install indoor VOC/formaldehyde sensor

### **Thermal Design's Contribution:**

The Simple Saver System with our standard fiberglass insulation rolls reduces the amount of formaldehyde-emitting building materials, contributing in part to ID Credit 1.1-1.4 suggested strategy requirements.

## **Indoor Environmental Quality Prerequisite 1: Minimum IAQ Performance**

*Intent:* Establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well being of the occupants.

The LEED manual specifies that in order to receive any points a building must meet the minimum requirements of Sections 4 through 7 of ASHRAE 62.1-2004. These sections cover material regarding outdoor air quality, ventilation systems design, vapor barrier quality etc.

### **Thermal Design's Contribution:**

One way our system helps you achieve the prerequisite is by providing a vapor barrier which has a water vapor transmission rate of less than 0.02 grains per hour for the standard Simple Saver System.

## **Indoor Environmental Quality Credit 3.2: Construction IAQ Management Plan: Before Occupancy**

*Intent:* Reduce indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well being of construction workers and building occupants.

Requirements include: Develop and implement in Indoor Air Quality (IAQ) Management Plan for the pre-occupancy phase as follows: Option 2-Air Testing (maximum LEED-allowed formaldehyde air concentration: 50 ppb).

### **Thermal Design's Contribution:**

Using the Simple Saver System with our standard fiberglass insulation rolls reduces the amount of formaldehyde emitting building materials since the insulation is not a source of formaldehyde. Using this product contributes to the overall Construction IAQ Management Plan requirements.

## **Indoor Environmental Quality Credit 7.1: Thermal Comfort: Design**

*Intent:* Provide a comfortable thermal environment that supports the productivity and well being of building occupants.

### **Thermal Design's Contribution:**

The Simple Saver System helps to provide thermal comfort to building occupants with its superb high insulation values and vapor barrier that contribute to the building envelope. Thermal Design also offers high efficiency HVAC equipment that further contributes to occupants' comfort.

## Other Green Qualities Outside of LEED

### The Simple Saver System's Recyclable Materials

Our fiberglass insulation is 100% recyclable. Our fasteners and steel strapping can also be fully recycled.

### How the Simple Saver System Avoids Toxic or Other Emissions

- **Fabric**  
Our fabric is made of woven polyethylene fibers, a process that is a more environmentally sound choice compared to PVC fabrics which can emit toxic fumes upon combustion and cause many health risks during its production. Also see [http://www.greenaction.org/healthybuildings/documents/hb\\_overview.pdf](http://www.greenaction.org/healthybuildings/documents/hb_overview.pdf)
- **Insulation**  
Typical **GREENGUARD Indoor Air Quality Certified®** blanket insulation is available through our insulation manufacturers.