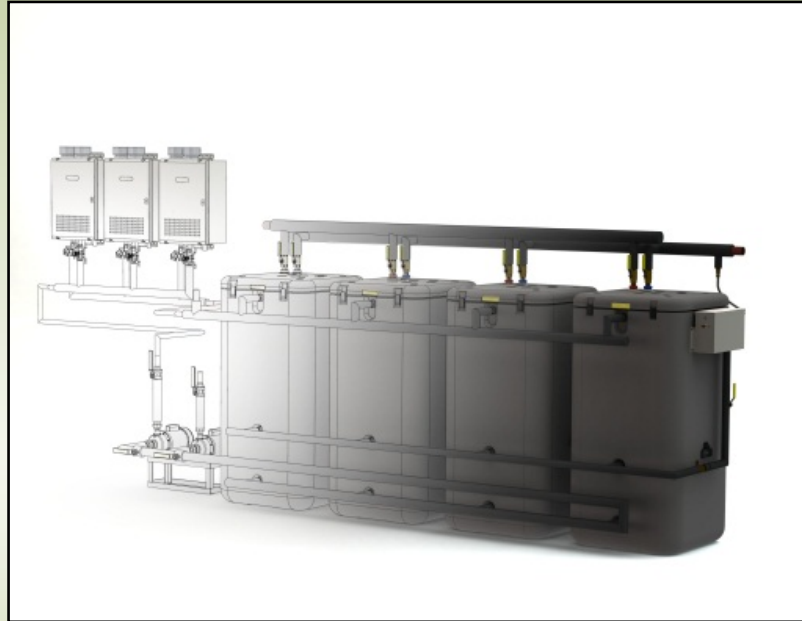


# SUN EQUINOX HEATING SYSTEMS



Solar Usage Now is a “Hot Water Solutions Company”. Our SUN Equinox is a pre-engineered plug and play hot water and space heating system, utilizing one of the most time tested and efficient systems in the world. It can stand alone or solar thermal and/or heat recovery can be added to provide greater efficiencies.

We will be introducing two additional modules to the SUN Equinox, providing air-conditioning and linear electric generation, all from hot water. The air-conditioning system will be available in 1-ton, 3-ton and 5-ton units. The linear electric generator will be capable of producing 20 kW (10 kW can power the average home). Any excess electricity produced can be sold and put back into the grid.

We have worked with the prestigious Gas Technology Institute ([www.gastechnology.org](http://www.gastechnology.org)) since the introduction of this technology into United States, making the SUN Equinox the most tested hybrid system in America. Over the last several years we have enjoyed many great successes, with installations at four U.S. military bases, dozens of schools, apartments, restaurants, hotels and pools.

# The SUN Equinox Heating System Overview

The SUN Equinox is a combination hot water storage tank and water heater system. The actual heat is not stored in the domestic water but in the clearly separate storage water. The heat volume which can be stored and extracted is correspondingly large. The storage tank water is filled once during commissioning and is only used for heat storage. It is neither replaced nor consumed. The storage tank is made of impact resistant polypropylene, able to handle temperatures over 180°. The space in between is insulated with heat-conserving foam. This produces excellent heat insulation values and keeps surface losses to a minimum.

The SUN Equinox System embodies unique technology which sets it apart as the most efficient, durable and low maintenance system available. The system was developed in energy conscience Europe and was designed not only to be energy efficient but to be used in conjunction with solar thermal and/or heat recovery.

The SUN Equinox is designed to engineering specifications and is guaranteed to perform. It is built in our factory and shipped to the job site ready to install, thus reducing installation costs. The solar field is perfectly balanced with the system for maximum solar contribution. Traditional commercial systems require a great deal of technical skill and the purchase of component parts from several different manufacturers. The SUN Equinox is the first true plug-and-play system. It should be the last hot water system you ever purchase.

Think of the SUN Equinox as a battery using water. The heating of the storage tank water and the charging of the storage tank can be carried out in various ways:

- Heating the Water using a Stainless Steel Heat Exchanger
- Solar Energy - Directly Heating the Storage Tank Water using a Drainback Solar Panel System
- Waste Heat – Directly Heating the Storage Tank Water using a Desuperheater
- Heating the Water using a Condensing, Modulating External Boiler

The domestic water is heated in a pipe register heat exchanger made of corrugated stainless steel, which is immersed in the storage tank water. This insures no contamination of the domestic water.



# The SUN Equinox Heating System Advantages

## Lime Scale Free

Lime Scale is known as the “Energy Thief”. Many do not understand the negative byproducts of heating water.

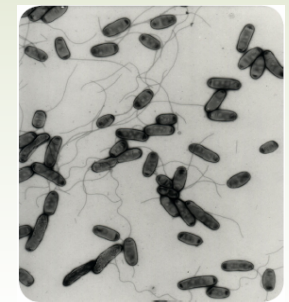
Water is often called the universal solvent because it dissolves most substances with which it comes in contact. Water contains such things as calcium-carbonate (lime), magnesium, silica, iron and phosphate. 85 percent of this country’s area is served with water containing concentrations of dissolved minerals sufficient to form scale. When water is heated, it undergoes a chemical reaction causing the dissolved minerals to “precipitate” out as solids. The amount of the precipitant, or scale, is directly proportional to the volume of water used and its temperature. As the temperature of water increases, so does the rate of corrosion. Heated water releases corrosive gases, such as oxygen and carbon dioxide, which increases the electrical conductivity of water.



## Anti-Legionella Storage Tank

There are more than 35 types of Legionella bacteria. At least 17 of these produce illness. The main consequences is Pontiac fever, a flu-like symptom which can subside after a few days in healthy people. Legionnaire’s disease causes severe bacterial lung infections and in 15 to 20 percent of these cases, the infection leads to death. Recent cases include:

- June 25, 2012 – Boyne City, Michigan (3 family members on life support)
- February 12, 2012 – Best Western, Albany, NY (6 guests become ill)
- February 9, 2012 – Miami Valley Hospital, Dayton, OH (4 death’s linked to outbreak)
- January 31, 2012 - Luxor Hotel, Las Vegas (1 guest death confirmed)
- January 11, 2012 - Aurora Hospital in Cudahy, WI (8 out-patient people infected)
- February 3, 2010 – Ohio State University pays \$1.2 million in man's Legionnaires' death



The SUN Equinox is known internationally as the “Sanicube” and has been in service for over 25 years. This storage unit insures optimum inherent water-hygienic properties, since the water to be heated is ducted and heated through a stainless steel corrugated tube heat exchanger system. The domestic hot water is entirely contained in a piping system. Water that is charged first is also the first to be removed (first-in first-out principle). The water-hygienic advantages of the “Sanicube” are thus considerable. The outstanding water-hygienic advantages have been confirmed by an extensive test undertaken by the Hygiene Institute at the University of Tübingen.

# The SUN Equinox Heating System

## Return on Investment & Internal Rate of Return

120 Room Hotel, Charlotte, North Carolina

### Standard Boiler with Tank System

Cost to heat a gallon of water at an 80 degree rise with an 88% efficient system @ .60¢ a therm = .005 per gallon average  
Daily average use : 4,275 GPD X .005¢ = \$21.38 per day or \$7,801.88 per year

### SUN Equinox Heating System with Ten 30 Evacuated Tube Collectors

Cost to heat a gallon of water at an 80 degree rise with a 93% efficient system @ .60¢ a therm = .004 per gallon average  
Each collector will produce an average of 60 gallons of hot water per day.  
10 Collectors X 60 GPD = 600 GPD  
Daily average use : 4,275 GPD - 600 GPD solar contribution = 3,675 GPD required to heat  
Daily use minus solar contribution 3,675 GPD X .004¢ = \$14.70 per day or \$5,365.50 per year  
Accumulated savings = \$2,436.38

### Return on Investment (ROI) & Internal Rate of Return (IRR)

Cost of system installed with collectors = \$56,500.00

ROI - Less than one year

Cost of Alternate replacement unit = \$41,500.00

IRR - Provides a 24.77% IRR

Federal Tax Credit = \$12,450.00

Cash Flow - Provides a cash stream  
of \$2,536.38 of tax free money per year.

Accelerated Depreciation = \$14,110.00

10 year saving = \$36,874.80

System Savings with Solar = \$2,436.38

The analysis does not include any state incentives which  
could produce additional financial benefits.

Total Saving and Credits = \$70,496.38

First Year Balance = + \$13,996.38

This is a conservative estimate and does not include system  
loss, pipe loss, standby loss, inflation or increases in fuel cost.

# The SUN Equinox Heating System

## Summary – Page 1

The SUN Equinox “Sanicube” is a corrosion-free plastic hot water storage tank with a stainless steel corrugated pipe heat exchanger. It is a combination of a hot water storage tank and flow water heater system with properties which are particularly water hygienic.

The calculation of the required number of Equinox storage tanks and the corresponding total heating output depends on the required maximum withdrawal quantity (withdrawal per unit of time) and on the withdrawal profile based on the dimensioning. Inside large widely dispersed buildings, it can be worthwhile to distribute several Equinox storage tanks decentralized inside the building and install them as close as possible to the consumers, thereby minimizing heat losses and saving on pumps and expensive pipelines.

Hotels and hospitals often require large volumes of hot water instantly. The volume of heat stored in the Equinox is so large that a momentary increase in demand can be covered, even if the recharging output of the heat generator is comparatively small. Short-term hot water output from each Equinox unit therefore does not depend on the output of the heat generator to any great extent. If several Equinox storage tanks are connected to each other in a large system, the outputs of the individual storage tanks are added to each other.

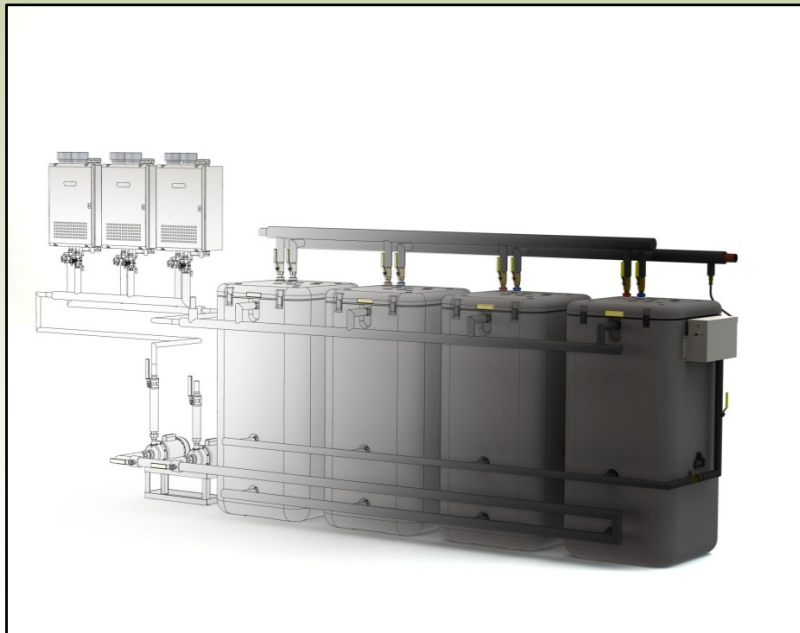
Solar Usage Now has developed a Design Manual for Engineers, Architects, Contractors and End-Users to explain all of the different configurations we can utilize to provide the best hot water heating solution. Included is the specification information needed to attain this solution.

### Summary of Benefits of the SUN Equinox Heating System

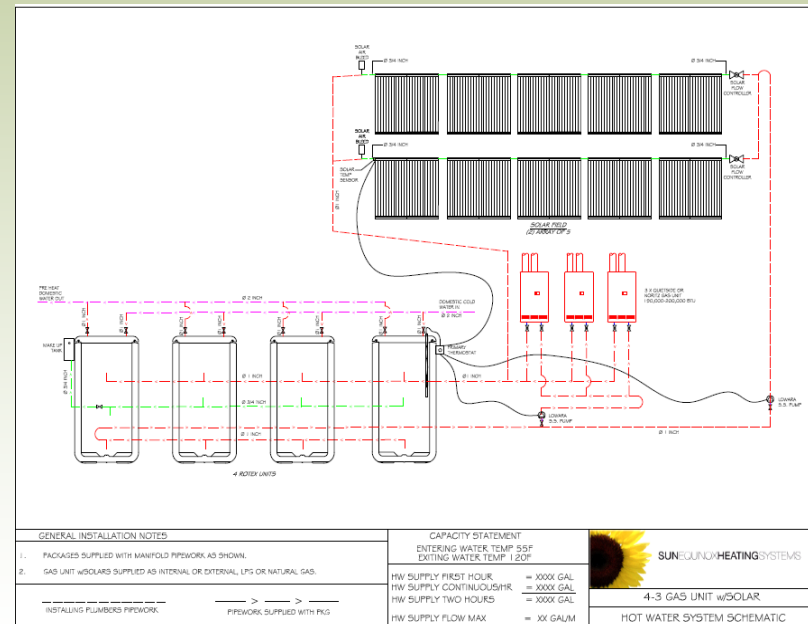
- Highly Effective Stratified Storage Tank
- Optimum Water Hygiene
- Zero Lime Build Up
- Highly Efficient Gas Heaters with Redundancy
- Unpressurized and Direct Drain Back Solar System
- Ideal for Solar Use
- Solar Energy for Hot Water and Space Heating
- High Performing ARRA Compliant Flat or Evacuated Tube Solar Collectors
- Operates Without Anti-freeze Agents
- Major Tax incentives, both State and Federal
- Cash Flow Advantages
- Great ROI
- High IRR
- Low Installation Cost
- Low Maintenance Cost
- Low Life Cycle Cost
- Commercial and Residential Applications

# The SUN Equinox Heating System Summary – Page 2

The SUN Equinox is Designed to be a  
Highly Efficient Gas Heating System



The SUN Equinox is Designed  
to be Solar Drain Back Ready



# The SUN Equinox Heating System

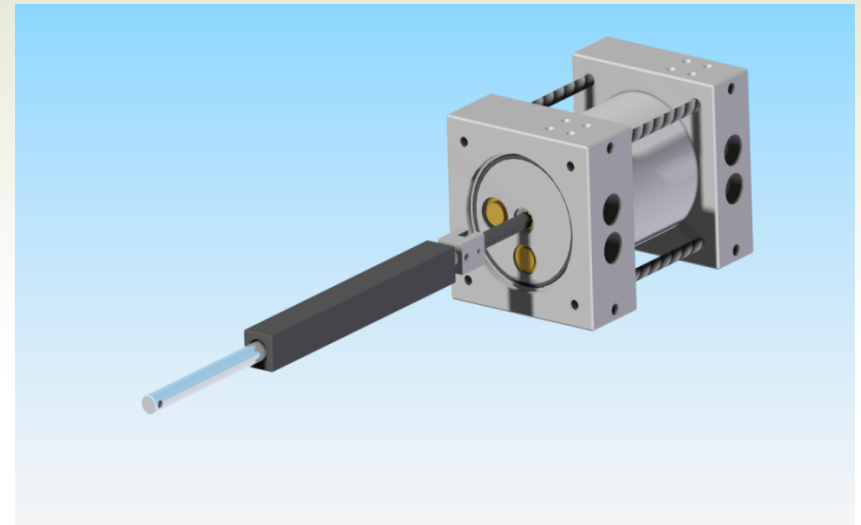
## The Future



VaporGenics has developed a system for the trucking industry which provides heating and air-conditioning for the cab using hot water generated from the waste heat produced by the engine. This technology will be used to bring two additional modules to the SUN Equinox Heating System. These will provide air-conditioning and electricity, all from hot water! Today the Sun Equinox Heating System provides domestic hot water and heat. Soon it will include air-conditioning and electricity!

Click below for VG Air-Conditioning Video

<http://www.youtube.com/watch?v=ms1DK50MtrE>



# The SUN Equinox Heating System

## 1,000's of Installs in Australia and Asia

### Schools & Apartments:

- University Utara Kedah – Malaysia
- Glebe Apartments – Australia
- Land Mark Apartments – Australia
- Sunlord Towers – Australia
- Victoria Park - Australia

### Hotels & Restaurants:

- Pizza Hut – Asia
- McDonalds – Australia
- Novotel Darling Harbor Sidney – Australia
- Novotel Brisbane – Australia
- Ayers Rock Resort – Australia
- Majestic Hotel - Malaysia
- Star City Hotel – Malaysia
- The Saujana Hotel – Malaysia
- The Gardens Hotel – Malaysia
- Cradle Mountain Resorts – Australia
- Redang Kalong Resort – Malaysia

### Hospitals & Nursing Homes:

- Bathurst Base Hospital – Australia
- Nepean Hospital – Malaysia
- Campbelltown Hospital – Australia
- Dorrigo Hospital – Australia
- Macksville Nursing Home - Australia

### Commercial:

- Premium Sanitized Juice Factory - Malaysia
- Sierra Seputeh Housing Project – Malaysia
- Long Bay Prison – Australia
- CPC/Remand Prison – Australia
- Junee Aquatic Complex - Australia

### Military:

- Wagga RAAF Base - Australia
- Kapooka Army Base and Hospital – Australia
- Australian Defense Force Academy – Australia



# The SUN Equinox Heating System

## Partial Projects List

### Schools:

- Leipsic High School - Leipsic, OH
- JFK/Obama Middle School - Cleveland, OH
- Eaton Elementary - Eaton, OH
- Eaton High School - Eaton, OH
- Rothenberg High School - Cincinnati, OH
- Maple Heights High School - Maple Heights, OH
- University of California at Davis - Davis, CA
- Presidio High Schools - Presidio, TX
- Defiance College - Defiance, OH

### Commercial:

- Samuel Billings Center - Charlotte, NC
- Bart Villa Apartment - Bloomington, IN
- Shannon Glenn Apartments - Bloomington, IN
- College Mall Apartments - Bloomington, IN
- Wabash Valley Correctional Facility - Wabash, IN
- Spectrum Healthcare - Grand Rapids, MI

### Hotels & Restaurants:

- La Quinta Inns & Suites -Charlotte, NC
- Nick's English Hut Restaurant - Bloomington, IN

### Military:

- Fort Eustis - Newport News, VA
- Fort Campbell - Fort Campbell, TN/KY
- Camp Lejeune - Camp Lejeune, NC
- Fort Jackson - Columbia, SC

### Other:

- Gas Technology Institute (Research & Testing Lab) - Des Plaines, IL
- Portland Municipal Buildings - Portland, IN
- YMCA - Dallas, TX
- The Ohio State University Solar Decathlon Home
- Collingwood Recreation Center - Cleveland, OH

# The SUN Equinox Heating System

## Partial Client List

- **Gas Technology Institute - Illinois**
- **Spectrum Healthcare - Michigan**
- **Piedmont Natural Gas - North Carolina**
- **Solar Solutions - Michigan**
- **Sertech Solar - Indiana**
- **MPI Solar - Indiana**
- **Defiance College - Ohio**
- **Rise Eco-Technologies - North Carolina**
- **J.R. Pierce - California**
- **CORE Solutions - Michigan**
- **New Energy Homes - Indiana**

- **Storck Solar Designs - California**
- **Woolpert Designs - Ohio**
- **Avtech Services - British Columbia**
- **Balfour Beatty - Texas**
- **Dynamix Engineering - Ohio**
- **Eco Smart Energy - Texas**
- **Energy Optimizers USA - Ohio**
- **Zager Plumbing - Florida**
- **Ohio Radiant Floors - Ohio**
- **Power Smart Systems - Ohio**
- **Inovateus Solar - Indiana**
- **Informed Energy - Australia**



# Company and Contact Information

Solar Usage Now, LLC was founded in 2006 to address the solar thermal needs of individuals, businesses and institutions in the United States. Thom Blake, the owner of the Company has been involved in the thermal arena since the late 70's. Our Country Home Enterprises, Inc. is the parent company and was founded in 1985 to serve the retail environment industry. Our customers include, but not limited to, The Limited, Bath & Body Works, Bass Pro Shops, Cabela's, Vera Bradley, Hollister's, Victoria's Secret, Pink, GAP and American Eagle.

The company has multiple facilities dedicated to the production of retail environments totaling over 50,000 square feet. The solar division recently moved to a 22,500 square foot facility in Hamilton, Indiana which is now dedicated to the advancement of our solar products. In addition, Our Country Home owns and operates the Country Shops of Grabill, The Coffee Cabin and H. Souder and Sons General Store, Inc. The corporation has over 100 employees.

In 2009, Solar Usage Now became the sole importer of the Rotex Storage Heat Exchanger for the United States and Canada. Renamed the SUN Equinox Heating System, we have partnered with Informed Energy of Australia to bring this exciting technology to the Western Hemisphere.

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