SunEarth

PRODUCT CATALOG

www.SUNEARTHINC.com

SUNEARTH INC.

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SUNEARTH **WHAT WE DO**

SunEarth manufactures the Empire and SunBelt series liquid flat plate solar thermal (hot water) collectors. The Empire series sets the industry standard for quality, performance, durability and value. The Empire collector continues to outpace the competition on a dollar per delivered BTU basis. The SunBelt series was specifically designed for the extreme climate of the American southwest. SunBelt collectors are engineered for reliable performance in areas of the country where system overheating can be an issue.

SunEarth's tough and versatile SolarStrut and RexRack mounting hardware provides an engineered solution for all standard residential and commercial mounting applications.

In addition to the Empire and SunBelt liquid flat plate collectors, SunEarth manufactures and supplies seven other primary products. These are the CopperHeart integral collector storage system, the SunSiphon packaged thermosiphon system, the Oasis low temperature pool and spa collector, standard /collectors/sunburst/ and custom all copper roll-formed absorber plates, Solar Strut, RexRac and CompRail integrated mounting systems and hardware. With the exception of the Oasis copper pool collector, our products are engineered for use in residential and commercial medium temperature domestic hot water heating (DHW) systems.

SunEarth offers five of the six leading solar thermal system technologies, including forced-circulation glycol, drainback, integral collector storage (ICS), thermsiphon systems and forced-circulation open loop. Our customers want and deserve products and systems that are climate appropriate. One type of collector or packaged system cannot adequately fit all residential and commercial market applications found in North America – what works in Puerto Rico and Hawaii will not work in Wisconsin. SunEarth believes in offering our customers a variety of product and system choices that are designed to ensure years of trouble-free operation and energy savings regardless of their locale.

COLLECTOR **EMPIRE SERIES**

BEST FOR

Best choice for residential, multi-family or commercial systems

KEY FEATURES

- Available in twleve models, four sizes
- Can be used in glycol forced circulation, drainback, or open-loop system configurations depending upon the climate and application

THE SOLAR PROFESSIONAL'S **FIRST CHOICE**

The Empire Series has everything that professional contractors demand in a solar collector: sleek appearance, high performance, versatility, ease of installation, and rugged field-tested durability. SunEath's Empire Series collectors have over 34 consecutive years of engineering and design experience built into every product. The Empire Series collectors **define** quality and value in the North American market.

The Empire collectors' versatility make them the best choice for residential, multi-family or commercial systems. Large diameter Type-M copper riser tubes allow the Empire collector to be used in glycol forced circulation, drainback, or open-loop system configurations depending upon the climate and application.

Available with either 1" or 1.5" internal headers, the Empire makes multi-family and commercial projects simpler to design, install, and maintain. The Empire's large commercial headers allow more collectors to be safely installed in a bank while continuing to accommodate normal expansion and contraction in the fully plumbed array.

SunEarth Empire Series collectors come in four sizes with a choice of two high performance absorber coatings. Including our two commercial collectors, the Empire Series is available in twelve models.

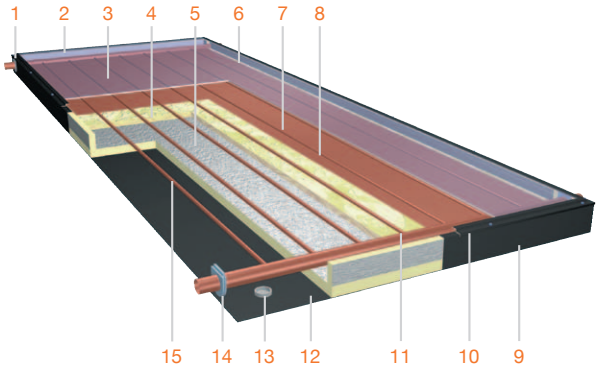
Solar water heating should never be a gamble. With SunEarth's Empire Series collectors professional contractors rest easy. They know their customers will enjoy trouble free and persistent energy savings for many years to come.

EMPIRE SERIES **SPECIFICATIONS**

MODEL #	EC/EP21	EC/EP24	EC/EP32	EC/EP-32-1.5	EC/EP40	EC/EP40-1.5
WIDTH	40.000 IN	36.125 IN	48.125 IN	48.125 IN	48.125 IN	48.125 IN
LENGTH	76.000 IN	98.250 IN	98.250 IN	98.250 IN	122.250 IN	122.250 IN
DEPTH	3.250 IN	3.250 IN	3.250 IN	3.250 IN	3.250 IN	3.250 IN
GROSS AREA	21.120 FT^2	24.610 FT^2	32.790 FT^2	32.790 FT^2	40.810 FT^2	40.810 FT^2
NET APERTURE	18.700 FT^2	21.880 FT^2	29.810 FT^2	29.810 FT^2	37.330 FT^2	37.330 FT^2
DRY WEIGHT	70.000 LBS	80.000 LBS	106.000 LBS	115.000 LBS	141.000 LBS	150.000 LBS
FLUID CAPACITY	0.720 GAL	0.780 GAL	1.000 GAL	1.410 GAL	1.200 GAL	1.610 GAL
DESIGN FLOW RATE	0.540 GPM	0.620 GPM	0.830 GPM	0.830 GPM	1.040 GPM	1.040 GPM
PRESSURE DROP AT DFR	0.003 PSIG	0.005 PSIG	0.006 PSIG	0.004 PSIG	0.009 PSIG	0.006 PSIG
MAX FLOW RATE	12.000 GPM	12.000 GPM	12.000 GPM	25.000 GPM	12.000 GPM	25.000 GPM
MAX OPERATING PRESS	160.000 PSIG	160.000 PSIG	160.000 PSIG	160.000 PSIG	160.000 PSIG	160.000 PSIG
STD. HEADER WIDTH	43.375 IN	39.750 IN	51.375 IN	51.375 IN	51.375 IN	51.375 IN
STD. HEADER DIAMETER	1.000 IN NOMINAL	1.000 IN NOMINAL	1.000 IN NOMINAL	1.500 IN NOMINAL	1.000 IN NOMINAL	1.500 IN NOMINAL
HEADER, CENTER TO CENTER	71.250 IN	93.625 IN	93.625 IN	93.625 IN	115.625 IN	115.625 IN

EMPIRE SERIES **KEY FEATURES**

1. Riveted Corners
2. Stainless Steel Fasteners
3. Low Iron Tempered Glass
4. Low-Binder Fiberglass Insulation
5. Rigid Foam Insulation
6. Secondary Silicone Glazing Seal
7. Copper Absorber Plate
8. Black Chrome or Moderately Selective Black Paint Absorber Coating
9. Integral Mounting Channel
10. Primary EPDM Glazing Seal
11. Minimum 5% Silver Brazed Joints
12. Painted Aluminum Backsheet
13. Vent Plugs
14. EPDM Grommets
15. Type M Copper Riser Tubes and Manifolds



THERMAL **PERFORMANCE**

CATEGORY T_I-T_A (T_I = INLET FLUID, T_A = AMBIENT AIR)		MODELS BTU/FT^2 • DAY EC	MODELS BTU/FT^2 • DAY EP
CLEAR 2000 BTU/FT^2 • DAY	A(-9°F)	1,360	1,290
	B(9°F)	1,250	1,210
	C(36°F)	1,070	1,035
	D(90°F)	700	600
	E(144°F)	330	150
MILDLY CLOUDY 1500 BTU/FT^2 • DAY	A(-9°F)	1,020	965
	B(9°F)	910	890
	C(36°F)	745	720
	D(90°F)	400	315
	E(144°F)	95	-
CLOUDY 1000 BTU/FT^2 • DAY	A(-9°F)	690	645
	B(9°F)	580	570
	C(36°F)	420	410
	D(90°F)	120	70
	E(144°F)	-	-

COLLECTOR **SUNBELT**

BEST FOR

System longevity in hot climates.

KEY FEATURES

- Lower stagnation temperature than collectors using sputtered ceramet or black chrome absorber plate coatings
- Prolonged propylene glycol and storage tank life expectancies, and lower initial cost

CLIMATE APPROPRIATE **PERFORMANCE**

The SunBelt is a simple, yet well engineered collector that generates appropriate annual system performance in the warmest climates, for example the desert Southwest. In our judgment this is one of, if not the, toughest 365 day climates in the world. At a time when many inexperienced solar thermal manufacturers are touting the benefits of high efficiency collectors and absorber coatings regardless of climate conditions, SunEarth's 34 years of experience in the U.S. marketplace has led us to take a different approach.

In general, system overheating in many parts of the United States is a far more common and potentially damaging problem than under performance. The SunBelt's many benefits include a lower stagnation temperature than collectors using sputtered ceramet or black chrome absorber plate coatings, prolonged propylene glycol and storage tank life expectancies, and lower initial cost.

SunBelt Series collectors feature an attractive and rugged anodized extrusion, a standard SunEarth all copper absorber coated with water based flat black paint, tempered glass, polyisocyanurate insulation, and standard ¾ IN headers.

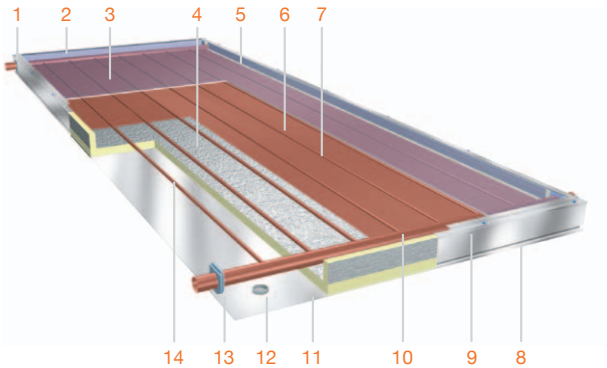
MODEL #	SB-24-.075	SB-32-.075	SB-40-.075
WIDTH	36.125 IN	48.125 IN	48.125 IN
LENGTH	98.250 IN	98.250 IN	122.250 IN
DEPTH	3.250 IN	3.250 IN	3.250 IN
GROSS AREA	24.610 FT^2	32.790 FT^2	40.810 FT^2
NET APERTURE	21.880 FT^2	29.810 FT^2	37.330 FT^2
DRY WEIGHT	79.000 LBS	105.000 LBS	140.000 LBS
FLUID CAPACITY	0.780 GAL	1.000 GAL	1.200 GAL
DESIGN FLOW RATE	0.620 GPM	0.830 GPM	1.040 GPM
PRESSURE DROP AT DFR	0.009 PSIG	0.014 PSIG	0.025 PSIG
MAX FLOW RATE	5.000 GPM	5.000 GPM	5.000 GPM
MAX OPERATING PRESS	160.000 PSIG	160.000 PSIG	160.000 PSIG
STD. HEADER WIDTH	39.750 IN	51.375 IN	51.375 IN
STD. HEADER DIAMETER	0.750 IN NOMINAL	0.750 IN NOMINAL	0.750 IN NOMINAL
HEADER, CENTER TO CENTER	93.625 IN	93.625 IN	115.625 IN

THERMAL **PERFORMANCE**

CATEGORY T_I-T_A T_I = INLET FLUID T_A = AMBIENT AIR		MODELS BTU/FT^2 • DAY
		SB
CLEAR 2000 BTU/FT^2 • DAY	A(-9°F)	1,335
	B(9°F)	1,135
	C(36°F)	855
	D(90°F)	340
	E(144°F)	-
MILDLY CLOUDY 1500 BTU/FT^2 • DAY	A(-9°F)	1,015
	B(9°F)	820
	C(36°F)	545
	D(90°F)	105
	E(144°F)	-
CLOUDY 1000 BTU/FT^2 • DAY	A(-9°F)	690
	B(9°F)	505
	C(36°F)	250
	D(90°F)	-
	E(144°F)	-

SUNBELT SERIES **KEY FEATURES**

1. Riveted Corners
2. Stainless Steel Fasteners
3. Tempered Glass
4. Rigid Foam Insulation
5. Secondary Silicone Glazing Seal
6. Copper Absorber Plate
7. Black Black Paint Absorber Coating
8. Integral Mounting Channel
9. Primary EPDM Glazing Seal
10. Minimum 5% Silver Brazed Joints
11. Aluminum Backsheet
12. Vent Plugs
13. EPDM Grommets
14. Type M Copper Riser Tubes and Manifolds



ABSORBER **PLATE SUNBURST SERIES**

BEST FOR

Replacement Absorber for Existing Collectors.

KEY FEATURES

- All copper absorber plate
- The SunBurst absorber plate is designed for operating pressures up to 160 PSIG
- Available with Semi-Selective Paint or Black Chrome coating
- Available in custom sizes to fit most existing collectors

ALL COPPER ABSORBER

The extraordinary SunBurst all copper absorber plate is the heart of each SunEarth liquid flat plate collector. Each SunBurst absorber is constructed of a thick .008 roll- formed copper sheet that is continuously soldered to a Type-M copper header and riser piping assembly utilizing a non-corrosive solder paste. The riser piping is a minimum 1/2" O.D. Type-M copper tubing. The header piping is a minimum 7/8" O.D., 1 1/8" O.D. or 1 5/8" O.D. Type-M copper tubing depending upon the collector model chosen. The riser to header bond is made with a phosphorous brazing alloy with no less than 5% silver content and conforms to the American Welding Society's BCuP-3 classification. The SunBurst absorber plate is designed for operating pressures up to 160 PSIG.

The SunBurst absorber has been independently tested by U.L Laboratories to UL Standard 1279, Section 30.2 for liquid containment. The absorber was submitted to an internal hydrostatic pressure of 2.5 times the rated positive pressure of 160 PSIG, or 400 PSIG, for one hour without evidence of leakage or rupture.

SUNBURST SERIES **SPECIFICATIONS**

MODEL #	PS/BS21	PS/BS24	PS/BS32	PS/BS40	PS/BS40-1.5
GROSS AREA	19.700 FT^2	24.610 FT^2	32.790 FT^2	40.810 FT^2	40.810 FT^2
DRY WEIGHT	18.000 LBS	20.000 LBS	26.000 LBS	33.000 LBS	36.000 LBS
FLUID CAPACITY	0.780 GAL	0.780 GAL	1.000 GAL	1.200 GAL	1.610 GAL
DESIGN FLOW RATE	0.540 GPM	0.620 GPM	0.830 GPM	1.040 GPM	1.040 GPM
PRESSURE DROP AT DFR	0.015 PSIG	0.017 PSIG	0.018 PSIG	0.020 PSIG	0.020 PSIG
MAX FLOW RATE	12.000 GPM	12.000 GPM	12.000 GPM	12.000 GPM	12.000 GPM
MAX OPERATING PRESS	160.000 PSIG	160.000 PSIG	160.000 PSIG	160.000 PSIG	160.000 PSIG
STD. HEADER WIDTH	43.375 IN	39.750 IN	51.375 IN	51.375 IN	51.375 IN
HEADER, CENTER TO CENTER	71.500 IN	93.625 IN	115. 93.625 IN	115.625 IN	115.625 IN

SUNBURST SERIES **KEY FEATURES**

1. Minimum 5% Silver Brazed Joints
2. High Temp Absorber Coating
3. Permanent Sweat Connection
4. UV Resistant Copper Construction
5. Rolled Formed Copper Absorber Plate
6. Minimum Type M Copper Riser Tubes and Manifolds

Need a custom sized absorber plate for your existing collector?

Call SunEarth for a quote.

COLLECTOR **OASIS**

BEST FOR

Pool and spa heating.

KEY FEATURES

- All copper absorber plate
- The oasis is unaffected over time by ultraviolet radiation.
- Alternative to conventional propylene plastic pool collectors.

ALL COPPER **POOL COLLECTOR**

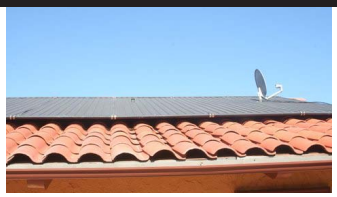
The Oasis all-copper pool and spa collector provides professional distributors and contractors with an alternative to conventional propylene plastic pool collectors. Unlike plastic pool collectors, the Oasis is unaffected over time by ultraviolet radiation. For best results, SunEarth recommends that the Oasis collector be used in conjunction with a stainless steel or titanium heat exchanger.

The White House pool and spa is heated by SunEarth Oasis all-copper pool collectors The roof-integrated installion was conceived by Solar Design Associates of Harvard, MA.

Pool collectors are typically rated by the Florida Solar Energy Center (FSEC) in the same way that glazed collectors are rated by the SRCC under OG-100 guidelines. Because pool collectors such as the Oasis are un-insulated, the performance drops rapidly with increasing temperature difference.

FSEC has developed daily collector output summaries for rated collectors operating at various temperatures. The daily irradiance used for these summaries is 1600 BTU/SQ. FT - DAY, which is typical of a mildly cloudy day. Most pool collectors will operate in the 95 °F category.





OASIS SERIES **SPECIFICATIONS**

MODEL #	OP-32	OP-40	OP-48
WIDTH	45.625 IN	45.625 IN	45.625 IN
LENGTH	95.250 IN	117.375 IN	IN
GROSS AREA	30.180 FT^2	37.190 FT^2	45.330 FT^2
DRY WEIGHT	33.000 LBS	39.000 LBS	48.000 LBS
FLUID CAPACITY	1.300 GAL	1.500 GAL	1.700 GAL
DESIGN FLOW RATE	3.200 GPM	4.000 GPM	4.800 GPM
PRESSURE DROP AT DFR	0.018 PSIG	0.020 PSIG	0.022 PSIG
MAX FLOW RATE	12.000 GPM	12.000 GPM	12.000 GPM
MAX OPERATING PRESS	160.000 PSIG	160.000 PSIG	160.000 PSIG
STD. HEADER WIDTH	45.250 IN	45.250 IN	45.250 IN
HEADER, CENTER TO CENTER	93.750 IN	115.625 IN	142.625 IN

THERMAL **PERFORMANCE**

TEMP COLLECTOR	OUTPUT BTU/DAY	
	OP-32	OP-40
95°F	28,800	35,000
122°F	14,200	17,400
212°F	0	0

White House

OASIS SERIES **KEY FEATURES**

1. 15% Silver Brazed Joints
2. High Temp Absorber Coating
3. Permanent Sweat Connection
4. UV Resistant Copper Construction
5. Rolled Formed Copper Absorber Plate
6. Minimum Type M Copper Riser Tubes and Manifolds

COMPONENTS **SOLAR DIFFERENTIAL CONTROLS**

INDUSTRY LEADING

SunEarth has partnered with Steca GmbH, a prime manufacturer of solar control electronics, to provide the U.S. market with the next generation of advanced differential controls. SunEarth controls are distinguished by their technical sophistication, functionality, simplicity and competitive pricing. All SunEarth controls are listed by ETL, a nationally recognized testing laboratory.

SunEarth controls are menu-driven and include a large LCD that provides the homeowner or commercial user with a variety of real time information about system operation and performance.

SOLAR CONTROLS

SETR0301U

TR0502U

TR 0603MC U

DIFFERENTIAL CONTROL **SPECIFICATIONS**

MODEL #	SETR0301U	SETR0502U	SETR0603MCU
DISPLAY	Animated LCD	Animated LCD	Animated LCD
OPERATING VOLTAGE	120 VAC/60 HZ	120 VAC/60 HZ optional 240 VAC /60 HZ	120 VAC/60 HZ optional 240 VAC /60 HZ
LINE CORD	7', 18 AWG rated at 221 °F	7', 18 awg rated at 221 °F	7', 18 awg rated at 221 °F
AMBIENT TEMP OPERATING RANGE	32 °F - 113 °F 0 °C - 45 °C	32 °F - 113 °F 0 °C - 45 °C	32 °F - 113 °F 0 °C - 45 °C
INPUTS	3 for Temp Sensors, Varistor Protected *PT1000-PROBE* *PT1000-LUG*	4 Temp Recording, 1 Temp Recording Pulse, 1 Direct Sensor *(TEMP/FLOW RATE)*	5 Temp Recording, 1 Temp Recording Pulse, 1 Direct Sensor *(TEMP/FLOW RATE)*
OUTPUTS	1 for Circulating Pump, Fuse Protected *MAX LOAD 0.5 HP (120 V~)* *LITTELFUSE 215.004* 1 for Circulating Pump, *FUSE PROTECTED*	1 Relay Switched Output *MAX LOAD 0.5 HP (120 V~)* 1 Triac Output: *SPEED CONTROL* *MAX LOAD 1.5 HP (120 V~)*	1 Relay Switched Output *MAX LOAD 0.5 HP (120 V~)* 2 Triac Output: *SPEED CONTROL* *MAX LOAD 1.5 HP (120 V~)*

MONITOR

STECA TKRW2

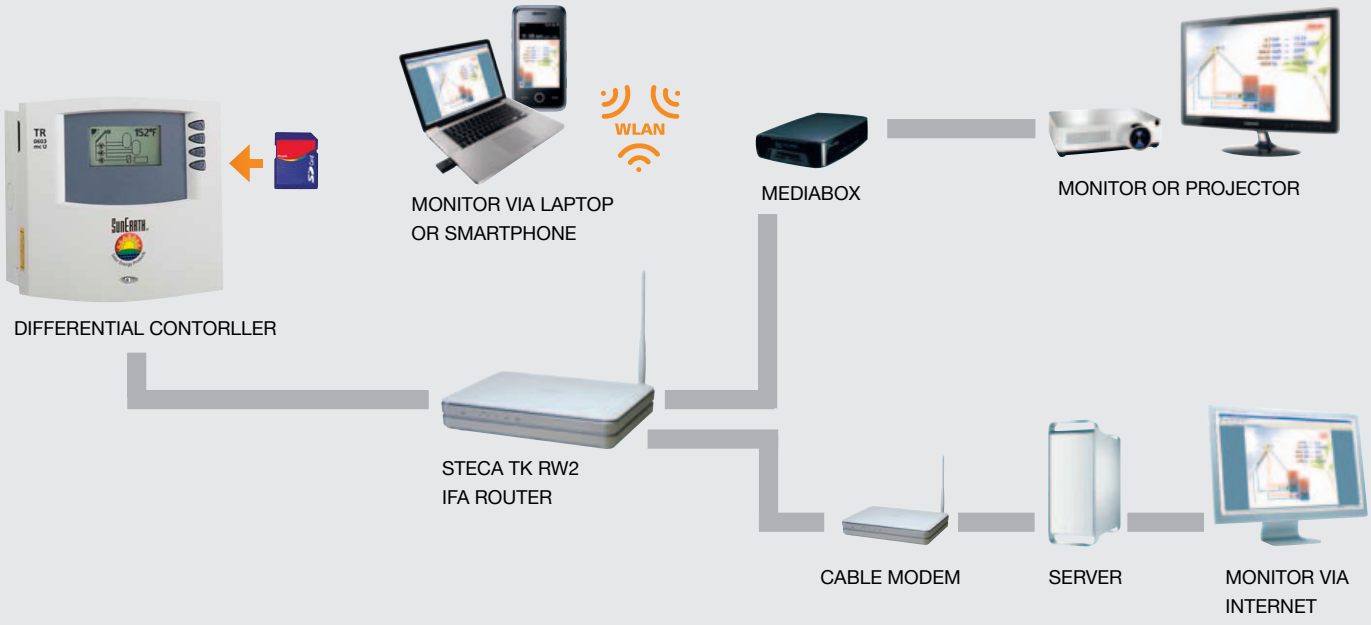
CONTROLLER BASED MONITORING

The TKRW2 monitoring router communicates with the TR0603mcU controller for on-line visualization of all controller inputs, inlcuding temperature, flow and BTU metering. Temperature and performance data are clearly displayed for analysis in an Internet browser window. This works in a simple way: The thermal controllers cyclically send measurements to the IFA router. The controller processes the data and forwards it to a central server via cable modem. The server archives this information and presents it visually in the Internet - as system images, graphics, tables, diagrams and even as a slide show. These visualisations can also be sent from the IFA router to a smartphone or laptop via WLAN or via mediabox to a monitor or a projector.

Not only the momentary values for each solar energy system are visualised but also the changes in temperature over time using easy to understand diagrams. If a heat meter is also used then, in addition to momentary values, the system is even capable of displaying energy balances and CO_2 savings.

The operator can use the Internet to monitor their system information from any location in the world. This allows simultaneous management and monitoring for correct operation of multiple systems. The raw data archived on the server can be downloaded for detailed analysis. Historical information is permanently available for comparative monitoring of system functions. This allows malfunctions and the origins of faults to be quickly recognized, analysed and corrected, which greatly improves the operational reliability of the system.

SOLAR MONITORING **SET UP**



COMPONENTS **PERFORMANCE MONITORING**

ON-LINE MONITORING

These monitoring devices provide “performance based” residential energy monitoring.The ultra-low-cost solution brings the benefits of web-based monitoring within reach of all customers. Installation is simple and requires no on-site configuration or networking experience. Simply plug in the sensors and connect to an existing router and the unit self-configures to begin sending data immediately. These monitors present realtime and historical data in an easy to understand format.

The SunReports design philosophy is to “make energy easy”, easy to install, easy to use, and easy to understand. Installer and Customer web portals are accessible anywhere there is a web-browser and an Internet connection. Access SunReports monitoring from home, office, or around the world via any web-enabled desktop computer, laptop, netbook, or smart phone. **The same unit is capable of monitoring solar PV, solar Hot Water, and solar Pool Heating systems.**

SOLAR MONITORS

APOLLO I

APOLLO II

SOLAR MONITORING **SPECIFICATIONS**

MODEL #	APOLLO I	APOLLO II
TYPICAL USE	Residential	Commercial
DIMENSIONS	5.5 IN x 4.0 IN x 1.4 IN	5.5 IN x 4.0 IN x 1.4 IN
OPERATING TEMP	32 °F - 104 °F	32 °F - 122 °F
INPUT POWER	5 VDC, 1A	5 VDC, 1A
REGULATORY	FCC-15 Class A	FCC-15 Class B, CE Mark, C-Tick
FLOW METER	Compatible with one	Compatible with two
INCLUDED	1 Apollo1 Device 1 Ethernet Cable 1 Inverter Cable 2 A/C Load (CT1 & CT2) 1 Grundfos Flow Sensor Adapter Cable 1 Triple Temperature Sensor Cable 1 Pressure Switch Cable* 1 A/C Adapter (universal input, US plug) Quick Start Guide * Pressure Switch Sold Separately	1 Apollo2 Device 1 Ethernet Cable 1 Inverter Cable 2 A/C Load (CT1 & CT2) 2 Grundfos® VFS Series Flow Sensor Cables 1 Six-Sensor Temperature Cable 1 Pressure Switch Cable 1 A/C Adapter (universal input, US plug) Quick Start Guide(s)

COMPONENTS **SOLAR TANKS**

SOLAR TANKS

SOLAR HE TANK

SOLAR STORAGE TANK

PROVEN RELIABILITY

SunEarth provides both indirect and direct solar storage tank options. Our indirect tanks incorporate a double-wall, vented, external heat exchanger and are designed for all climates subject to annual mild – hard freeze conditions. The indirect tank is the right choice for SunEarth's SRCC OG-300 approved Solaray and Cascade system options.

Our direct, or open-loop tank, is the ideal choice for climates that do not experience freeze conditions. It also may be used in cold climates with solar water heating systems that employ a side-arm (rather than integral) heat exchanger. The direct tank should be chosen for SunEarth's SRCC-OG-300 approved SunSaver and SunSource systems.

Stainless and carbon steel ASME pressure vessels 20 to 20,000 gallons also available upon request.

SOLAR TANK **SPECIFICATIONS**

MODEL #	SU80-1	SU80TC-1	SU80HE-1	SU120-1	SU120TC-1	SU120HE-1
GALLON CAPACITY	80.000 GAL	80.000 GAL	80.000 GAL	119.900 GAL	119.900 GAL	119.900 GAL
CONNECTION	SIDE	TOP	SIDE	SIDE	TOP	SIDE
ELEMENT WATTAGE UPPER	4500 W	4500 W	4500 W	4500 W	4500 W	4500 W
HEIGHT	58.750 IN	58.750 IN	58.750 IN	62.000 IN	62.000 IN	62.000 IN
DIAMETER	24.500 IN	24.500 IN	24.500 IN	28.250 IN	28.250 IN	28.250 IN
APPROX SHIP WT.	192.000 LBS	192.000 LBS	222.000 LBS	336.000 LBS	336.000 LBS	380.000 LBS
APPROX R-FACTOR	R-17.3	R-17.3	R-17.3	R-16.7	R-16.7	R-17.3

COMPONENTS **COPPERSTOR DRAINBACK TANKS**

DURABLE

The CopperStor represents a cost effective advance in drainback tank design. Fabricated from spun-end seamless copper tubing with no ferrous metal components, the CopperStor is nearly impervious to corrosion and allows for direct sweated connections without the need for troublesome dielectric unions.

- High temperature 15% silver brazed joints ensure high strength and are not affected by lower temperature flames used for sweating the connections.
- A 3/4" brass cap on the top of the units creates a simple and cost effective method for checking the fill level with a dipstick.
- CopperStor tanks are finished with a water-based matte black paint and wrapped in 1/2" Rubatex insulation to minimize heat loss and sound.

CopperStor drainback tanks have been designed for use with the SunEarth Cascade OG-300 solar water heating system, but they may be incorporated into most other professionally engineered drainback systems.

DRAINBACK TANKS

DB-5

DB-7.5

TYPICAL APPLICATIONS

CopperStor drainback tanks can be seamlessly coupled with the SunEarth HE tanks to create a drainback version of our popular SolaRay closed loop design. Using the SunEarth HE tank eliminates the need for the second pump on the potable water side that adds both cost and complications found in other drainback designs. The CopperStor drainback tank can easily be hung from the wall adjacent to the SunEarth HE tank for easy and unobtrusive installation.

For retrofit applications where it is not economical to replace the existing storage tank, the Copperstor may be used in combination with our SunTherm heat exchangers to convert existing solar systems to freeze-proof drainback designs.

COPPERSTOR **SPECIFICATIONS**

MODEL #	DB-5.0	DB-7.5	DB-10.0
WIDTH	12.000 IN	18.000 IN	24.000 IN
LENGTH	50.000 IN	50.000 IN	50.000 IN
DEPTH	5.000 IN	5.000 IN	5.000 IN
DRY WEIGHT	42.000 LBS	56.000 LBS	84.000 LBS
FLUID CAPACITY	5.000 GAL	7.500 GAL	10.000 GAL
WET WEIGHT	82.000 LBS	117.000 LBS	164.000 LBS
MAX OPERATING PRESS	160.000 PSIG	160.000 PSIG	160.000 PSIG
CONNECTION PIPE DIA.	0.750 IN	0.750 IN	0.750 IN

COMPONENTS **PUMP GROUP**

PUMP GROUP

SRS-145-5.1

LABOR SAVING

SunEarth SolarStation is a pre-assembled package of quality components in a neat, compact insulated enclosure. Every SolarStation is supplied with a SunEarth 0301U differential control. The control is available either installed into the SolarStation enclosure or separately for field installation.

The SolarStation is a simple, labor saving, attractive and economical solution for plumbing closed-loop glycol systems.

FEATURES AND COMPONENTS

The SolarStation is a pre-engineered assembly of quality components in a neat compact enclosure with an advanced differential controller. A simple, labor saving, attractive solution for closed loop glycol solar systems.

- Cast iron three speed pump
- SunEarth differential controller
- Removable cover
- Combination brass ball valves and check valves with bypass setting
- Pressure relief valve with pressure gage and expansion tank connection
- Fill and drain valves with ¾ IN hose thread
- Compression fittings for ¾ IN Type L copper tube to collectors and tank
- Visual flow meter and flow balancing valve

PUMP GROUP **SPECIFICATIONS**

MODEL #	**SRS-145-5.1**
HEIGHT	9.840 IN
WIDTH	12.120 IN
DEPTH	2.380 IN
FLOW RANGE	0-17 GMP
HEAD RANGE	0-19 FT
PUMP MOTOR	2 POLE, SINGLE PHASE
MAX LIQUID PRESS	145 PSI
MAX INLET PRESS	15.6 PSI (AT 230°F FLUID TEMP)
MAX FLUID TEMP	230°F (AT 104°F AMBIENT TEMP)
SUPPLY VOLTAGE	115 V
PUMP POWER	1/25 H.P.

THERMAL **PERFORMANCE**

SPEED SETTING	**OUTPUT** CURRENT	POWER
1 LOW SPEED	0.55 A	60 W
2 MEDIUM SPEED	0.66 A	80 W
3 HIGH SPEED	0.75 A	87 W

PLATE HEAT EXCHANGERS

SunEarth's copper brazed plate heat exchangers are constructed entirely from 316L stainless steel. The individual plates within the unit are embossed with a chevron pattern that creates a lattice of interwoven flow channels promoting turbulent flow. Turbulence dramatically improves heat transfer rates while reducing the deposits within the unit. SunPlate heat exchangers may contain anywhere from 10 to 200 individual brazed plates creating a large number of parallel 2-3 psi low pressure flow paths. The versatile SunPlate heat exchanger can stack well over 200 square feet of heat transfer surface area in a unit that has a footprint of 1.2 square feet.

SunPlate heat exchangers are available in both single and double wall.

The small footprint of our flat plate heat exchanger makes it economical to obtain very effective heat transfer in closed loop systems on par with open loop designs. Our flat plate heat exchangers are available in two footprint sizes: the SPL31 and the larger SPL110. The smaller SPL31 contains up to 150 plates and the SPL100 has a capacity of 200 plates. Both units are available in 10 plate increments and come standard with male NPT fittings (sweat fittings may be custom ordered).

HEAT EXCHANGERS

LB31-10

LB31-10 CUTAWAY

TYPICAL APPLICATIONS

- Typically used in double pumped configurations for commercial scale glycol or drainback systems.
- Offer higher performance and typically lower cost than immersed tube bundles for larger commercial scale systems.
- Our flat plate heat exchangers can boost collector output by 10-15% over immersed bundles by dropping the collector loop temperature closer to the temperature of the storage tank.
- Although this increased output may not outweigh the added cost and complexity of the pump in smaller installations, the higher output in larger systems often outweighs the disadvantage of the second pump.
- Arrays of anywhere from 2 to 240 collectors can be accommodated with the two frame sizes of the SPL31 and SPL110.
- Because of their extremely compact size, the units have very low heat losses and do not need to be insulated.
- The heaviest SPL31 weighs only 48 lbs. and the heaviest SPL110 is 190 lbs. meaning that they can be wall-hung to minimize demands for space in tight mechanical rooms.

PLATE HEAT EXCHANGER **SPECS**

MODEL #	SPL31	SPL110
WIDTH	4.800 IN	9.800 IN
CAPACITY SIZING	9.000 FT^2	50.000 FT^2
PLATE CAPACITY	10-150	30-200
DEPTH IN	0.36+.09NP	0.36+.09NP
CONNECTIONS	1.000 IN, 1.500 IN	1.500 IN
MAX OPERATING PRESS	232.000 PSIG	232.000 PSIG

TUBE-IN-SHELL HEAT EXCHANGERS

Tube-in-shell (Tube) heat exchangers are constructed entirely from 316 L stainless steel to offer extreme durability and protection from corrosion in DHW and chlorinated pool & spa applications. The compact design of these units allows for more surface area to be packed in a shorter length, making them an ideal candidate for natural convection sidearm designs. Heat transfer is enhanced through low profile grooves rolled into the tubes that create moderate turbulence on the potable water side without the problematic mineral deposition often found in finned units. The smaller B-130 is ideal for residential systems with up to 64 sq. ft. of collector area, and the larger B-180 is well suited for larger systems and small hydronic heating applications.

These heat exchangers are also well suited for solar pool and spa application. Due to the high flow rates found in pool filter circuits, tube-in-shell units are usually preferred over brazed plate units. The table below lists the tube in shell units, their dimensions and the maximum array area they can handle while maintaining performance on par with open-loop designs. The standard tube in shell unit is constructed of 316L Stainless Steel, which has excellent corrosion resistance to chlorinated pool water provided the chemical balance and pH of the pool water is closely regulated. Titanium heat exchangers are significantly more expensive, but have superior chemical resistance. For salt water pools and spas, titanium heat exchangers are required.

HEAT EXCHANGERS

B-LINE SERIES

SHELL SIDE PORT

TUBE SIDE PORT

TUBE-IN-SHELL HEAT EXCHANGER **SPECIFICATIONS**

MODEL #	B-130	B-180	B-250	B-300	B-500	B-1000
DIAMETER	4.500 IN	5.500 IN	5.500 IN	5.500 IN	5.500 IN	6.500 IN
LENGTH	15.600 IN	15.100 IN	20.200 IN	24.900 IN	42.700 IN	36.100 IN
HEAT TRANSFER AREA	3.600 FT^2	4.700 FT^2	6.800 FT^2	9.000 FT^2	16.800 FT^2	21.500 FT^2
MAX ARRAY AREA	180.000 FT^2	250.000 FT^2	350.000 FT^2	400.000 FT^2	700.000 FT^2	1,400.000 FT^2
SHELL SIDE FLOW	7.100 GPM	7.900 GPM	9.300 GPM	10.600 GPM	14.500 GPM	25.100 GPM
SHELL SIDE PRESS DROP	1.200 PSIG	0.400 PSIG	0.600 PSIG	0.900 PSIG	1.300 PSIG	2.400 PSIG
SHELL SIDE FLOW	52.800 GPM	55.500 GPM	71.300 GPM	79.300 GPM	95.100 GPM	185.200 GPM
SHELL SIDE PRESS DROP	1.700 PSIG	1.100 PSIG	1.700 PSIG	2.500 PSIG	3.200 PSIG	4.200 PSIG
TUBESIDE CONNECT	NPTF	3/4 " NPTF	1.0" NPTF	1.0" NPTF	1.0" NPTF	2.0" NPTF
SHELLSIDE CONNECT	NPTF	1.5" NPTF	1.5" NPTF	1.5" NPTF	2.0" NPTF	2.0" NPTF

COMPONENTS **BALANCE OF THE SYSTEM**

COMPONENTS

SET-16

EXPANSION TANKS

are used to absorb the increased volume of heat transfer fluids when the fluid is heated and to keep the system pressure below setting on relief valves.

- 4.8 to 9.2 GAL fluid capacities available
- Solar glycol, Potable water, and Non-potable closed loop tank types available

UPS15-58FC LC

CIRCULATOR PUMPS

are used in a solar system to circulate heat transfer fluid throughout the system allowing Solar heat to be transfered and or collected.

- Cast iron, bronze and DC pump options
- 115 V
- 0.083 - 0.250 HP ranges

519601

PUMP CONNECTIONS

are used to transition pump connection to a variety of standard piping connections.

50613
24124
40643

VALVES

have various uses that complete the operations and design of a solar system.

- Mixing, pressure relief, ball, and drain valve options
- Brass or Lead-free brass

T-174

GAUGES

are used to monitor system pressures and temperatures.

- Pressure gages and dial thermometers

SOLAR STRUT & REX RACK

SOLAR STRUT

MTG-FF-BA

MTG-RTL-5897-BA

SOLAR STRUT

SunEarth's versatile Solar Strut mounting hardware is the contractor's clean-line choice for mounting either SunEarth flat plate collectors or PV modules.

- Solar Strut comes in a variety of standard lengths up to 27 FT. Available as mill finished or clear or bronze anodized.
- The profile is available in either 1 5/8 IN x 1 5/8 IN x 1/8 IN, or 2 1/2 IN x 1 5/8 IN x 1/8 IN

Collector or PV module mounting clips are attached to the Solar Strut with our exclusive stainless steel sliding nut and bolt assembly. Solar Strut and the stainless steel attachment assembly are engineered for use in the world's most corrosive environments.

SOLAR STRUT **ORDER GUIDE**

MODEL #	**10070- (SIZE)-(LENGTH)-(FINISH)**
SIZE	**250**:2.500 IN, **158**:1.625 IN
LENGTH	**###**: Length in inches
FINISH	**MF**: Mill, **CA**: Clear Anodize, **BA**: Bronze Anodize
SAMPLE	10070-250-264-MF 264 IN Length of 2.500 inch Solar Strut in Mill Finish

REXRACK

SunEarth RexRack sets the structural standard for residential and commercial liquid flat plate collector mounting hardware. RexRack is engineered to meet exacting contractor racking requirements for strength, simplicity, versatility, durability and cost. Constructed of corrosion resistant 6063-T6 anodized aluminum, RexRack is the right choice for challenging high wind and snow load conditions or everyday new or retrofit construction projects.

RexRack provides solar professionals with an incredibly strong, versatile and modular residential and commercial racking solution. RexRack incorporates telescoping front and rear legs to accommodate uneven roof surfaces and to provide a range of slope adjustment for the array.

- RexRack is constructed from corrosion resistant anodized 6063-T6 structural aluminum.
- All fasteners are stainless steel.
- RexRack is the clear racking choice in areas that are prone to high wind loads.

RexRack is differentiated from traditional mounting systems by eliminating lateral runners on the roof surface. RexRack runners are fabricated from 6063-T6 aluminum and are located directly under the solar collectors. By relocating the runners to the backside of the collectors, a reinforced lattice is created between the two strut runners and the collectors that are clamped to them. The array itself becomes a single unified rigid body, much like unibody construction in newer automobiles. When the array itself is rigid, the rear legs need only carry the vertical load of the array, eliminating the cross bracing required for lateral loads in conventional racking systems.

MOUNTING HARDWARE **INSTALLATION**

FASTENERS & ROOFING SPECIALTIES

All SunEarth liquid flat plate collectors are designed to be attached to our engineered RexRack and SolarStrut mounting hardware with an extruded aluminum clip and a stainless steel sliding nut and bolt assembly. SunEarth has developed or sourced a number of innovative fastening and specialty roofing products to ensure that our collectors and mounting hardware are correctly anchored and water-proofed in accordance with best roofing practices.

Our fastening products include 18/8 stainless steel lag bolts, hanger bolts and threaded rod in various diameters and lengths. Roofing specialties include 4 IN and 8 IN standoff mounts in either 304 stainless steel or black painted mild steel. IAPMO listed Master Flash soft aluminum flashings are available in pipe diameters between ¼ IN and 4 IN. Master Flash sleeves are made of EPDM or Silicone, and are compounded specifically for maximum resistance to ozone and ultraviolet degradation.

HARDWARE **SPECIFICATIONS**

MTG-LSR-XX-BA

MTG-EC-FK

MTG-U-TK

LANDSCAPE RACKS

- 42.00 - 52.00 IN Lengths available
- Black adonized aluminum finish
- Kits for a variety of collectors: 3 FT, 4 FT, and Copperheart

FLUSH MOUNT KITS

- Black adonized, mill and coppper finishes available
- Includes C-SSN, and feet
- Dimensions: 1-5/8 IN x 4 IN

UNIVERSAL TILT KITS

- 18.00 - 72.00 IN Lengths available
- Black adonized aluminum finish

MOUNTING HARDWARE **ROOF ATTACHMENTS**

QUICK MOUNT **SPECIFICATIONS**

INTEGRAL FLASHING

- 100% code-compliant, waterproof mounts. Meets UBC & IBC structural and flashing requirements.
- Rugged engineering to withstand high winds and heavy snow loads.
- Fast, easy installation that saves rooftop labor time.
- Non-corrosive aluminum and stainless steel construction.

COMPOSITION MOUNTS

- 12 x 12 IN
- Fits within a standard 5 to 5.5 IN course.
- If the exposure is greater than 5.75 IN, use the Shake Mount as an alternative.
- No shingle cutting or distrotion caused by trying to force a fit.

SHAKE MOUNTS

- 18 x18 IN
- Installs on East Coast style shake roofs: 7.5 IN exposure over skip sheeting.
- Installs on West Coast style shake roofs: 10 IN exposure over solid sheeting.
- Flashing slides quickly into place without modification.

CURVED TILE MOUNTS

- 18 x18 IN
- Aluminum flashing shapes easily to blend with surrounding tiles and is safer and less expensive than lead.
- Lasts three times longer than galvanized metals.
- Meet or exceed all industry standards for durability and waterproofing.

QUICK MOUNT

COMPOSITION MOUNTS

QMSC A 12

QMSC B 12

SYSTEMS **OVERVIEW**

SUNEARTH **SYSTEMS**

SunEarth provides its customers with a number of engineered residential solar water heating systems that have been certified or listed with various accredited third-party agencies. SunEarth designed solar water heating systems and components have been certified, approved and/or listed with the Solar Rating and Certification Corporation (SRCC), the Florida Solar Energy Center (FSEC), the International Association of Plumbing and Mechanical Officials (IAPMO), and the joint U.S. Environmental Protection Agency EPA/U.S. Department of Energy (DOE) Energy Star program.

These independent third-party certifications and approvals are recognized and referenced by federal and state governments for tax credit purposes, by various public and municipal utility companies for energy efficiency and renewable rebate programs, and by plumbing and mechanical code officials and field inspectors in most jurisdictions.

SYSTEMS **COMPONENTS**

DIFFERENTIAL CONTROLLER
p. 10-12

Includes an LCD that provides a variety of real time information about system operations.

SOLAR TANK
p. 13

Solar tanks are available in both 80 gallon and 120 gallon sizes.

DRAINBACK TANK
p. 14

Seamless copper tubing make the drainback tanks nearly impervious to corrosion.

PUMP GROUP
p. 15

A simple, labor saving, economical solution for plumbing closed-loop glycol systems.

HEAT EXCHANGER
p. 16-17

Both Flat Plate heat exchangers and Tube-in-Shell heat exchangers are available.

EXPANSION TANK
p.18

For closed loop glycol systems. Provides a cushioned space allowing changes in the fluid volume with temperature.

CERTIFICATION **BREAKDOWN**

FSEC

Rate and certify

- Individual solar collectors
- Complete solar water heating systems

FSEC Certification required for all

- Standard 102-10 (Collectors)
- Standard 104-10 (Systems) installed in the state of Florida

SRCC

Rate and certify

- Individual solar collectors
- Complete solar water heating systems

Nationally recognized independent third-party certification agency that promulgates standards and operating guidelines of

- Standard OG-100 collectors
- Standard OG-300 systems

SRCC Standard OG-300 provides independent assessment of

- System reliability
- Performance

SRCC PROCESS

Systems that receive the rating of SRCC Standard OG-300

- Must meet the federal Department of Housing and Urban Development (HUD) minimum property standards
- Must pass a rigorous review performed by the SRCC staff and design review team

Once the system has met or exceeded these quality assurance checks it undergoes a full performance analysis to estimate the actual solar contribution of the system towards an average hot water load.

This contribution, defined by the Solar Energy Factor (SEF), is listed by the SRCC for the different variants of each system type.

The entire system of components submitted by SunEarth to the SRCC and FSEC for rating and certification is essentially a prescriptive specification. SunEarth specifies the design and acceptable materials and methods in accordance with SRCC and FSEC requirements. After the review process detailed above, the specified design, materials and methods receive SRCC and/or FSEC system certification.

Although SunEarth is responsible for the design of various residential solar water heating systems, and we hold the SRCC and/or FSEC certifications for these systems, our distributor and contractor partners are typically the entities responsible for local product fulfillment and installation services. Our channel partners source materials from the approved system components and install them in accordance with the design and methods outlined in our certified SRCC and FSEC manuals. SunEarth provides a number of branded products including panels, mounting hardware, tanks, pump groups, and controls, but does not build or sell complete “turn-key” certified systems. Assembling the components and installing the systems as specified is the essential value added by our professional channel partners.

SYSTEMS **SOLARAY**

BEST FOR

Locations that experience freeze conditions.

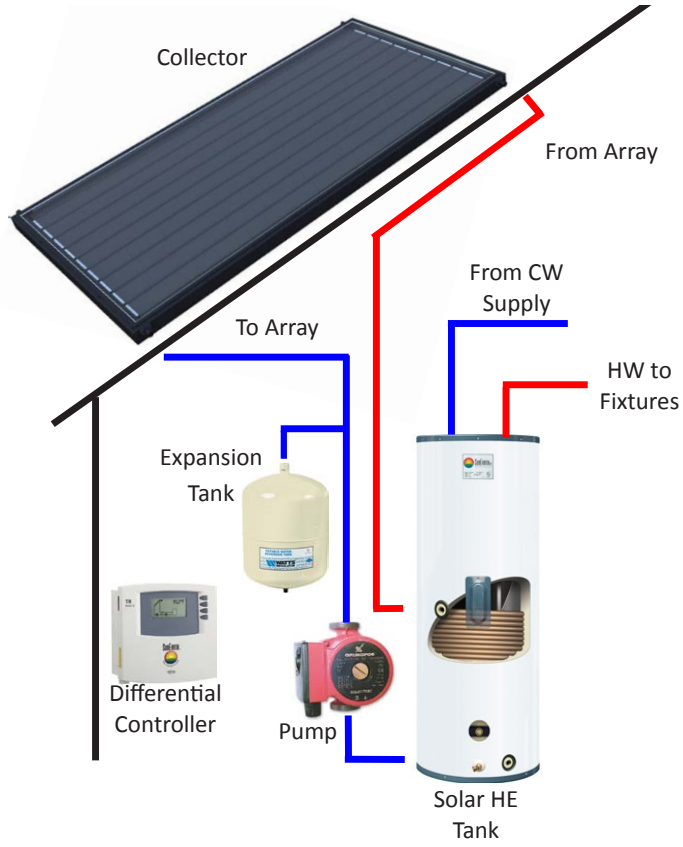
KEY FEATURES

- Forced circulation, pressurized closed loop system.
- Mains AC or PV powered DC pumping options.
- Propylene Glycol heat transfer fluid.
- SRCC rated freeze tolerance limit (FTL): -60°F.

CERTIFIED **GLYCOL SYSTEM**

SolaRay is a forced-circulation, closed-loop system, designed primarily for climates that experience annual and persistent hard-freeze conditions. The specified heat transfer fluid is a non-toxic, high temperature rated propylene glycol. The Solaray System solar storage tank incorporates an integral double-wall, vented, heat exchanger that eliminates the possibility of cross contamination between the propylene glycol and potable water. The versatile SolaRay solar storage tank meets or exceeds all major U.S. building and plumbing code requirements.

SolaRay AC systems use standard mains AC powered circulator pumps and differential controls. SolaRay PV systems use DC pumps powered and controlled directly from a 10 - 20 W PV module.



CERTIFIED **DRAINBACK SYSTEM**

Cascade Drainback is SunEarth's OG-300 certified drainback system. These systems usually employ water as the heat transfer fluid. Water is very stable, low cost and non-toxic with excellent heat transfer properties. Freeze protection is achieved by automatic gravity draining of the collectors and exposed piping into a storage reservoir.

In areas experiencing very hard freezes, Cascade Drainback systems may use a Propylene Glycol heat transfer fluid for additional freeze protection.

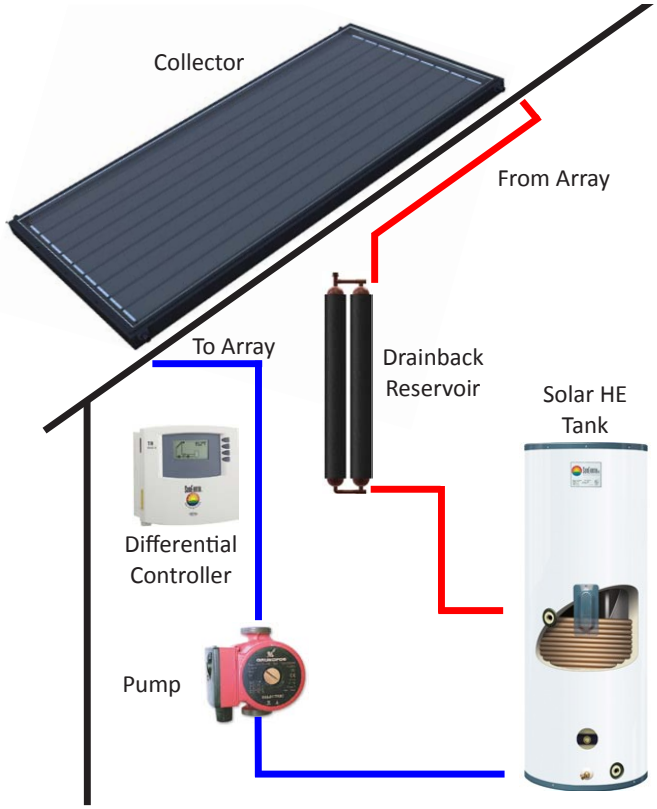
The heat exchange fluid in the collector array and solar loop piping drains back by gravity into the system's storage reservoir whenever the pump stops circulating. This happens whenever the collector cools down to the temperature of the tank or lower, such as at night; or when the maximum set temperature of the solar tank. Air replaces the heat exchange fluid in the collector array and solar loop piping when the pump is off. No fluid is left exposed in the collector or piping to freeze or overheat.

BEST FOR

Locations that experience freezing winter conditions and high summer temperatures with low summer loads.

KEY FEATURES

- Forced circulation, atmospheric pressure closed loop system.
- Incorporates the Empire Series collectors, SunEarth HE tanks and stainless steel, glass lined steel or SunEarth's CopperStor drainback storage reservoirs.
- SRCC rated freeze tolerance limit (FTL): -50°F.



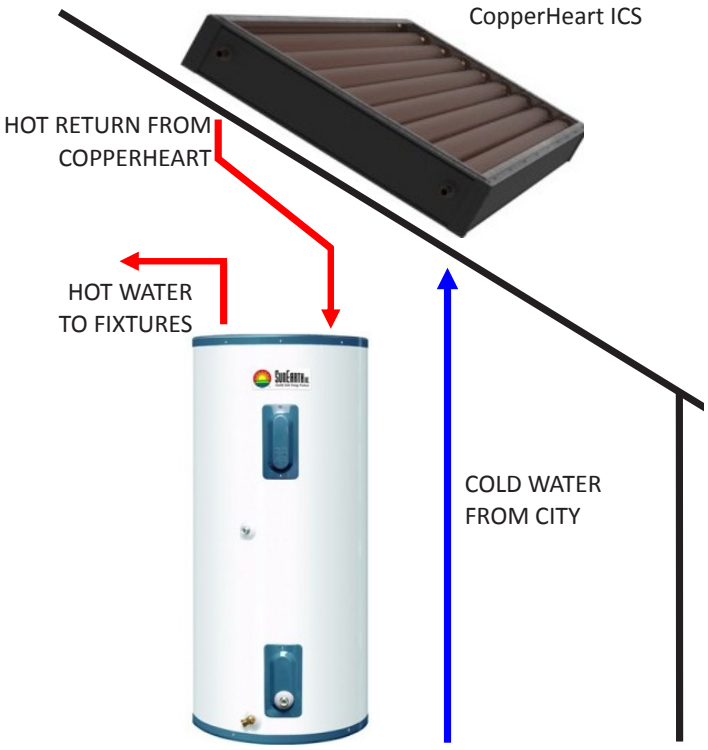
SYSTEMS **COPPERHEART**

BEST FOR

- In non-freeze climates the CopperHeart may be used as the primary water heater.

KEY FEATURES

- Combines thermal collection and storage in a single unit.
- Simple, durable and inexpensive domestic water heating system.
- SRCC Rated Freeze Tolerance: 20°F for 18 hours.
- Direct pressurized passive system.

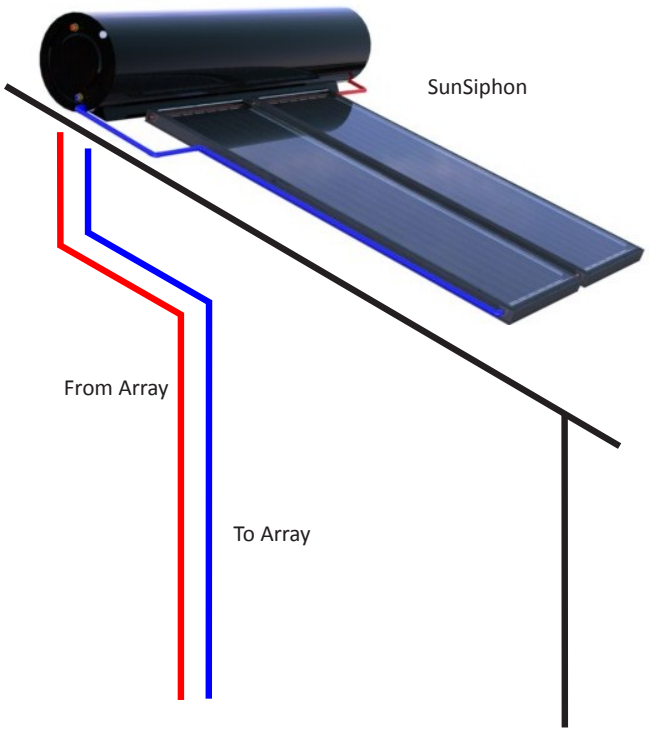


CERTIFIED ICS SYSTEM

The CopperHeart integral collector storage system, or ICS, combines thermal collection and storage in a single unit. The CopperHeart is engineered to meet the international demand for a simple, durable and inexpensive domestic water heating system. The retrofit CopperHeart installation typically serves as a solar preheater to the existing electric or gas water heater. For new construction the backup heater of choice is most often a compatible tankless gas water heater. Limited freeze protection and overheat protection is achieved due to the large thermal mass of the system. For durability, reliability and simplicity of installation and operation the CopperHeart ICS has no peers.

If properly installed and maintained the CopperHeart ICS can safely be deployed in areas that experience occasional mild freeze conditons. SRCC Rated Freeze Tolerance: 20°F for 18 hours.

SYSTEMS **SUNSIPHON**



CERTIFIED THERMOSIPHON SYSTEM

Since 1992, SunEarth has teamed with Edward's Solar Hot Water, a world leader in the manufacture of stainless steel storage tanks and boilers, to market a packaged thermosiphon system under the brand name 'SunSiphon' in North America and the Pacific Basin. The SunEarth/Edward's collaboration offers the world's finest thermosiphon storage tank and rugged, high performance SunEarth flat plate solar collectors. SunSiphon systems are available both with and without integral heat exchangers for mild freeze and non freeze climates respectively. Thermosiphon systems have no moving parts and use no parasitic energy in their normal operation. The simplicity and long-term reliability of the SunSiphon thermosiphon system remains its principal selling feature.

If properly installed and maintained the SunSiphon glycol heat exchange system can safely be deployed in areas that experience annual mild freeze conditons. SRCC Rated Freeze Tolerance: 15°F for 18 hours. A thermosiphon unit is a completely passive design that relies on buoyancy effects to circulate fluid through the collectors as opposed to the pumps and controllers found in active systems.

When sunlight strikes the collectors in the SunSiphon system it heats the non-toxic antifreeze within them, which then rises due to buoyancy into the integral heat exchanger inside the storage tank. Here the antifreeze transfers heat into the tank, becomes cooler, and sinks to the bottom of the collectors to repeat the process.

During periods of no sun, the cool fluid in the base of the collectors is not heated, does not rise, and thereby stops circulation of the antifreeze. In this manner, thermosiphon units achieve the operational characteristics of active systems but without the pumps and controls.

BEST FOR

Mild climates and locations without space for indoor tank.

KEY FEATURES

- Passive system does not require pump or controls.
- Available as direct (open loop) and indirect (closed loop) systems.
- Backup electric element included in tank.

FOR MORE INFORMATION PLEASE VISIT WWW.SUNEARTHINC.COM

SYSTEMS **SUNSOURCE**

BEST FOR

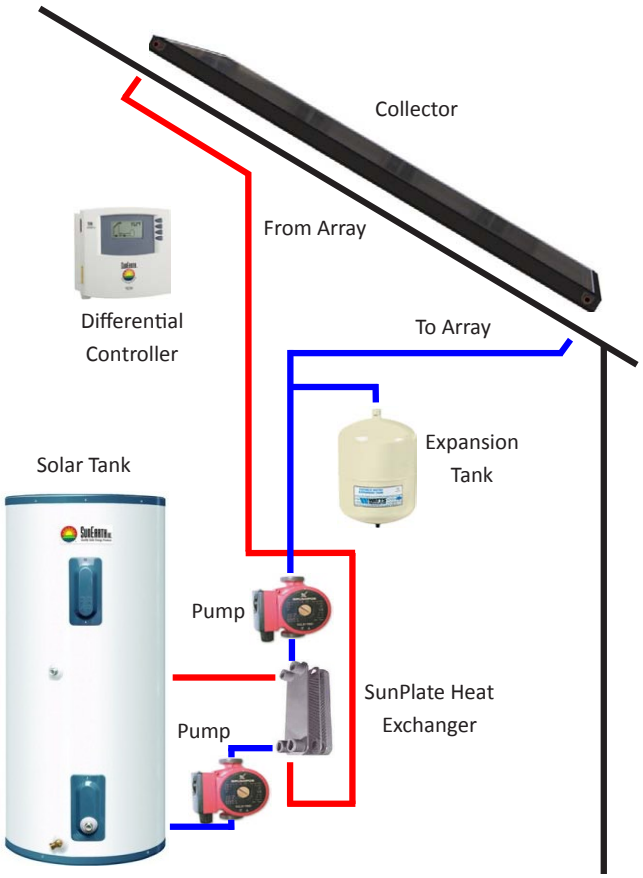
- Retrofit systems utilizing existing storage tanks or water heaters.

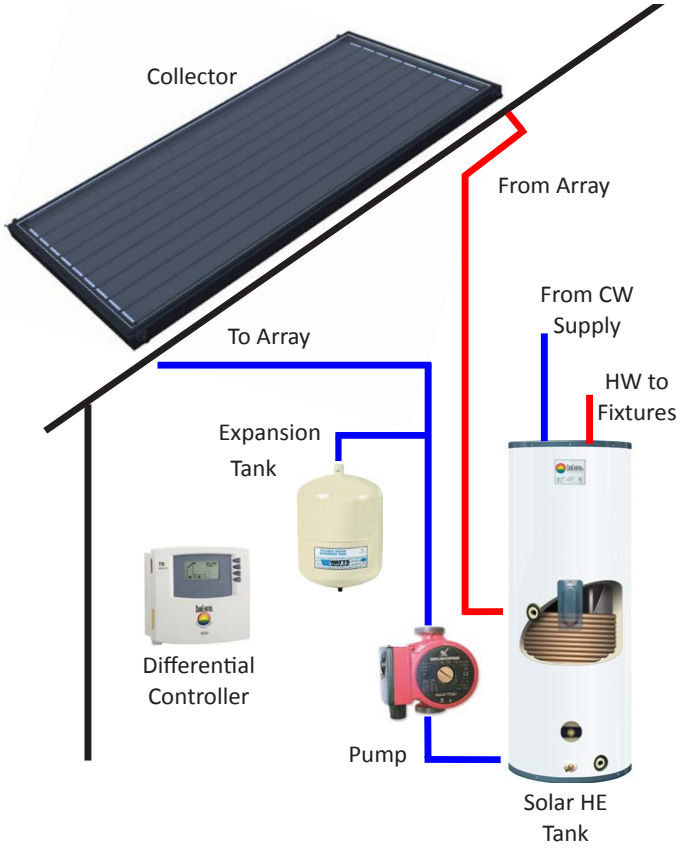
KEY FEATURES

- Pressurized closed loop system with pumped circulation on both collector and potable loop.
- Gives professional contractor flexibility to choose system components that may provide individual customers with better overall system value.
- SRCC Rated Freeze Tolerance: – 30°F.

GLYCOL SYSTEM WITH EXTERNAL HEAT EXCHANGER

SunSource provides a simple variation on our popular Solaray AC forced-circulation glycol system. Rather than using a solar tank with an integral heat exchanger, the SunSource matches a basic solar water heater and a high performance SunEarth SunTherm or SunPlate external heat exchanger. Propylene glycol remains the heat exchange fluid. This simple variation gives the professional solar contractor flexibility to choose system components that may provide individual customers with better performance or overall system value.





CERTIFIED DIRECT **(OPEN LOOP) SYSTEM**

SunSaver is SunEarth's only OG-300 certified system that is specifically designed for climates that never experience freeze conditions. Potable water under city pressure efficiently circulates directly through the solar collectors and into the solar tank. Because the system does not utilize heat exchangers, drainback tanks, or other components required in climates experiencing freeze conditions, the SunSaver is extremely economical and highly efficient solar water heating system. This system is not suitable for any locations within the continental United States.

BEST FOR

- Specifically designed for climates that never experience freeze conditions.

KEY FEATURES

- Direct forced circulation system.
- Simple system does not require heat exchanger in tank resulting in high efficiency and low cost.
- Ideal system for the tropical islands of the Caribbean and Pacific.
- SRCC rated freeze tolerance: 35°F.

DEALER **FINANCING PROGRAM**

SunEarth and the Electric & Gas Industries Association (EGIA), a nationwide non-profit organization dedicated to advancing energy efficiency & renewable energy solutions have partnered to deliver GEOSmart® Sustainable Financing Solutions, a comprehensive and easy-to-use home and business improvement financing program. GEOSmart was developed to ensure that SunEarth dealers have a complete, simple-to-use and affordable financing platform in place to meet the needs of their customers.

The SunEarth GEOSmart Finance clearing house of solutions was built to fit the varying needs of your home or business owner customers. With same as cash solutions and low interest unsecured and secured options GEOSmart has everything you need to close more sales.

SHORT-TERM (SAME-AS-CASH FINANCING)

Ideal for loans with available rebates, tax credits and other funds.

- 3, 6, 12 & 18 month Same-As-Cash/No Payment promotions
- Unsecured loans to $45,000
- No paperwork for contractors to complete
- Close in the home in minutes
- Credits scores to 640 considered
- Funding in 24-48 hours from completion
- Installment loan available from 1-10 years rates starting at
- Installment loan rates around 9% and work their way up base on credit

POWERSAVER LOAN PROGRAM

Ideal for customers looking to financing large energy-efficient home improvement projects through a secured financing program with below market interest rates.

- Below market interest rates
- FICO scores as low as 660 considered
- LTV up to 100% of property value
- 20 years for solar projects
- FHA/HUD backed financing
- Loans to $25,000

FRESH START FINANCING PROGRAM

A great “second look” option to supplement your current GEOSmart Financing options.

- Loan amounts to $25,000
- Interest rates as low as 9.99% APR
- FICO scores as low as 620
- Customers with bankruptcy and open collections considered
- Buys up to 25% deeper than A paper solutions
- Interest buy downs available
- No equity required up to 125% LTV
- Terms to 20 years

COMMERCIAL FINANCING

Ideal for contractors who have commercial clients in need of financing or for SunEarth contractors looking to expand/ grow their own business.

- Financing for commercial customers or your own business
- Extremely competitive rates
- Buys all credit types
- Loan amounts from $10,000 – $2,000,0000+
- Terms from 1-11 years
- 100% financing
- Flexible terms available
- Progress Payments
- All types of leases available
- Competitive PPA's available on projects over 1 million
- Track all stages of loan on financial freeway
- Create profession lease quotes on demand

For more information or to sign up please visit **www.sunearthinc.com.**

COMMERCIAL **H30 FUNDING**

H3O provides flexible capital for commercial solar thermal projects valued at $250,000 to $2.5 million.

Projects that Qualify: H3O funds solar thermal projects for:

- Residential buildings in which 100 or more people live under a shared roof such as college dormitories, large hotels, and other multi-family buildings, AND
- Commercial & industrial facilities that use large quantities of hot water such as laundromats, car washes, and certain manufacturing operations.

In order to qualify for financing, the project must be located in the United States and meet certain basic criteria. To find out if your project qualifies, submit your project and H3O will respond within three business days.

FINANCING STRUCTURES: H3O pays the upfront capital cost of commercial solar thermal projects and structures terms to guarantee monetary savings from year one. H3O customers choose between a Simple Solar Lease (SSL) and a Power Purchase Agreement (PPA).

WHAT IS AN SSL: With a simple solar lease, H3O pays for up to 100% of the installation costs and maintains the system over its life. The lease is 20 years in duration and the quarterly payment is fixed over the term of the lease. With an H3O simple solar lease the project host is guaranteed to save money from year one.

WHAT IS A PPA: With a power purchase agreement (PPA) you pay only for the power generated by the system, and the quarterly payment varies depending on the quarterly energy generation. H3O pays for the installation costs and maintains the system over its life. With a H3O power purchase agreement the project host is guaranteed to save money from year one.

WHO: H3O is an initiative of Stephen Compagni Portis, Co-founder and Chairman of the Board of Renewable Funding.

The best way to find out if your project qualifies for financing is to submit your project to H3O for review. For all other inquiries, please email **challen@h3ofund.com.**

SUNEARTH **TERMS & CONDITIONS OF SALE**

TERMS OF PAYMENT

- SunEarth does not offer credit terms. Payment is required before shipment.
- All quoted prices are FOB Fontana, CA, freight prepaid and added to invoice and are exclusive of freight, crating, insurance, and handling charges.
- Customers outside the United States must make payment by irrevocable letter of credit, bank transfer, bank draft, or cashiers check.
- Drop-ship orders to non-resellers must be paid in full before shipment and are subject to a $25 fee.

WARRANTY & PRODUCT SPECIFICATION

- Product warranty coverage is pursuant to SunEarth's written warranty statements. Please refer to the Dealer/Distributor Corner of our website at www.sunearthinc.com for a printable version of our warranty.
- Current product specifications and technical information can be found at **www.sunearthinc.com**.

CUSTOM ORDERS AND RETURN POLICY

- Custom collector and absorber plate orders require cash with order and may not be cancelled.
- Returned products require prior factory authorization and are subject to a 30% restocking charge. Returns must be shipped freight prepaid.
- Products are non-returnable after 30 days.

GOVERNING LAW; DISPUTE RESOLUTION

- You agree that all matters relating to doing business with SunEarth Inc., including all disputes, will be governed by the laws of the United States and by the laws of the State of California without regard to its conflicts of laws provisions. You agree to the personal jurisdiction by and venue in the state and federal courts in San Bernardino County, California, and waive any objection to such jurisdiction or venue. Any claim under these Terms and Conditions of Sale must be brought within one (1) year after the cause of action arises, or such claim or cause of action is barred. No recovery may be sought or received for damages other than out-of-pocket expenses, except that the prevailing party will be entitled to costs and attorneys' fees.
- In the event of any controversy or dispute between SunEarth, Inc. and you arising out of doing business with SunEarth, Inc., the parties shall attempt, promptly and in good faith, to resolve any such dispute. If we are unable to resolve any such dispute within a reasonable time (not to exceed thrity (30) days), then either party may submit such controversy or dispute to mediation. If the dispute cannot be resolved through mediation, then the parties shall be free to pursue any right or remedy available to them under applicable law.

PALLET, CRATING AND PACKAGING CHARGES

- Less than pallet lot domestic shipments incur a minimum crating charge of $125.00. Crating charges are waived for full pallet lot orders. For orders of more than one pallet, but less than two pallets, a crating charge of $75 will be applied.
- Non-standard pallets and crating will be quoted per order; SunEarth pallets are custom made for SunEarth standard collectors.
- Full pallets are defined as:
  - Flat Plate Collectors - 12 collectors
  - Absorber Plates - 38 Absorbers (1 in. Headers), 27 Absorbers (1.5 in. Headers)
  - CopperHearts - 7 collectors
  - SunSiphon Systems - 6 systems (i.e. 12 collectors and 6 tanks)
- Standard SunEarth Pallets are provided to our customers at cost. Cost is determined by pallet size. Pallets in good condition may be returned for full credit.
- Export shipments incur a pallet charge for each pallet used and a minimum export crating charge of $250 per pallet.

DAMAGED FREIGHT & SHORTAGES

- **All shipments from SunEarth, unless otherwise agreed, are FOB Fontana, CA, freight prepaid and added to invoice. Title for goods passes to the Buyer at SunEarth's dock. SunEarth bears no liability for product damaged in transit and does not accept the return of damaged product. It is the consignee's responsibility to file any claim for freight related damage with the shipper.**
- Note any discrepancies between the number of items listed on the SunEarth packing slip and the number of items delivered by the trucking or shipping company on the Bill of Lading AT **TIME OF RECEIPT**. Have the driver co-sign the Bill of Lading. Be aware that the shipper's liability for any discrepancies ends when the consignee accepts the delivery as complete by signature. Please notify SunEarth immediately of all shipping discrepancies by faxing a copy of the Bill of Lading to our customer service department.
- DO NOT sign the delivery ticket/Bill of Lading until you have thoroughly inspected all the goods and/or shipping cartons/crates for damage. If there is reason to suspect concealed damage, make a complete inspection in the presence of the driver. If any damage is found, make an accurate notation on the delivery slip/Bill of Lading with the driver present. Have the driver co-sign the delivery slip/Bill of Lading.

POSSESSION OF THE SUNEARTH, INC. LIST PRICE SCHEDULE DOES NOT CONSTITUTE AN OFFER TO SELL.
ALL PRICES AND PRODUCT SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

PROVIDING CLEAN ENERGY SOLUTIONS **SINCE 1978**

CONTACT **US**

MAILING & SHIPPING ADDRESS

8425 Almeria Avenue
Fontana, CA 92335

PHONE AND FAX

Phone: 909-434-3100
Fax: 909-434-3101

BUSINESS HOURS

Mon-Fri 8:00 a.m. ~ 4:00 p.m. PST

AMERICA'S SOLAR THERMAL LEADER
THE MOST CERTIFIED PRODUCTS IN THE USA

In addition to our unmatched experience in the U.S. market, SunEarth is rooted in a deep sense of environmental stewardship. Since our founding in 1978, a core precept of our mission has been to actively participate in the task of reducing America's dangerous dependence on polluting fossil fuels.

SunEarth, for example, has supported the Department of Energy's Zero Energy Homes research initiative from its inception. Through the right combination of energy efficiency, solar water heating and on-site renewable generation such as PV, architects can design homes and buildings that are comfortable, affordable and nearly emission free. Zero Energy Homes and Buildings are here today and SunEarth's manufacturing facility in Fontana, California is a leading example.

SunEarth's primary production facility is served by an 184kW Solar World photovoltaic array that provides all the required electrical energy for our offices, production equipment, and forklifts. The facility also features natural daylighting, T-5 lighting when necessary, waterless toilet fixtures and drought tolerant landscaping.

If your company believes in developing long-term business relationships with companies that put their money where their values are, then we hope that you will consider joining SunEarth's growing roster of OEM, distribution, and contractor partners.

FOR MORE INFORMATION PLEASE VISIT WWW.SUNEARTHINC.COM

SunEarth

SUNEARTH

SUNEARTH INC.
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Change Service Requested