



SunMaxx 30 Evacuated Tube Collector

ITEM: Solar collector unit for heating water or glycol/water for exterior installation on roof or ground

TYPE: Evacuated glass tube type collectors in a unitary, multiple-tube assembly frame

PROCESS: Internal heat pipe containing phase change fluid absorbs solar radiant heat and conducts it up to a condenser element where heat is transferred indirectly through dry sockets to an insulated, manifolded header pipe containing separate system heat transfer fluid.

SUPPORT FRAME:

- Frame or rack material is extruded aluminum with stainless steel hardware and fittings,
- Frame angle is fixed at a site-selected angle, on site.
- Frame type: Singular interconnected frame for a 4 collector unit rack, or, modular frames that are predesigned to be interconnected to adjacent frames to form a 4 collector unit rack.

EVACUATED TUBES:

- Number of tubes: 30 tubes per collector unit
- Length of a typical tube: approximately 6.5 feet
- Aperture area: 30.03 ft² per 30-tube unit
- Glass Material: Double layer of Borosilicate Glass with evacuated space between
- Stagnation Temperature: Approximately 420 Degrees F without insulation degradation, tube cracking or hazing, phase change fluid breakdown,

or condensing element warpage.

- Absorption efficiency: 92%
- Low E and absorptive coatings: Al-N, SS and Cu applied by metal deposition or metallic sputtering processes. Exact materials may vary or may be a proprietary blend.

HEAT PIPE: Aluminum or copper with copper or nickel plated copper condenser bulb with no mechanical or moving parts. Phase change fluid is water and/or proprietary chemicals.

UNIT: Weight: 255 lbs+/- per 30 tube unit

INSTALLATION

WARRANTY

10 years for any failure of tubes, frame and/or manifold under normal usage conditions (exception taken for abuse, neglect, and accidental or willful damage) on systems installed per manufacturer's recommendations with technical assistance by manufacturer's representative. 10 year warranty with installation by a certified installer.

CERTIFICATION

Solar Rating and Certification Corporation (SRCC)
Certified: OG100

Suggested Specifications:

Evacuated tube collectors use a vacuum space within each tube's borosilicate glass shell to offer unsurpassed efficiency and heat loss protection in any climate. In the event of a tube breaking, it can be removed and the entire system will continue to function, ensuring a heating source that will not fail.

There are four unique heat pipe evacuated tube models allowing SunMaxx solar collectors to be sized for any solar heating application, including residential, commercial, municipal, agricultural and industrial systems. SunMaxx solar collectors are independently tested and certified by the world's leading solar energy authorities to ensure that each product is a global leader in reliability, heat output, and return on investment.

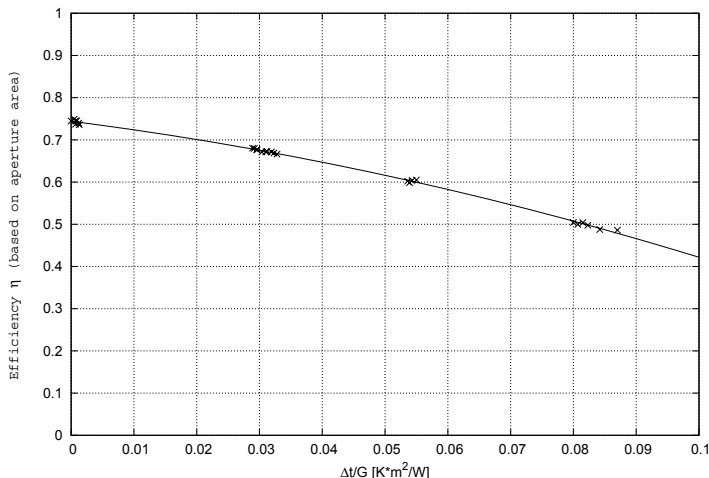
Collectors are SRCC certified, Solar Keymark certified, and come with a 10 year warranty if installed by a certified installer. They come with multiple mounting and installation options suitable for flat and pitched roofs.

SunMaxx 30 Collector Specifications

Model	SunMaxx-30
# of Tubes	30
Dimensions (inches)	101 x 79
Weight (lbs)	252
Net Aperture Area (ft ²)	30.04
Storage Tank Size (G)	70+
Nominal Flow Rate (G/min)	0.84

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Efficiency curve with measurement points based on aperture area .936 msq



Results:

The calculated parameters are based on following areas:
aperture area of 0.936 m²: absorber area of 0.808 m²:

$$\eta_{0a} = 0.734$$

$$\eta_{0A} = 0.850$$

$$a_{1a} = 1.529 \text{ W/m}^2\text{K}$$

$$a_{1A} = 1.771 \text{ W/m}^2\text{K}$$

$$a_{2a} = 0.0166 \text{ W/m}^2\text{K}^2$$

$$a_{2A} = 0.0192 \text{ W/m}^2\text{K}^2$$

Series Specifications

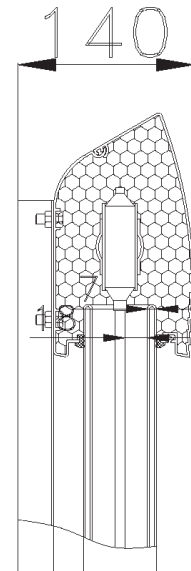
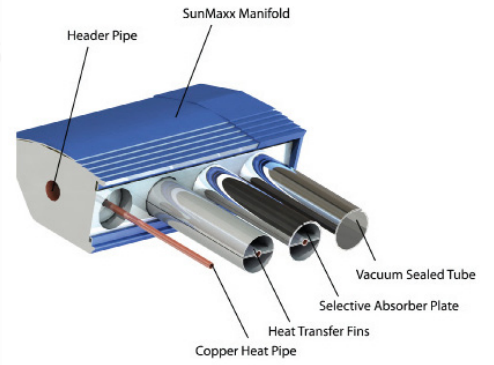
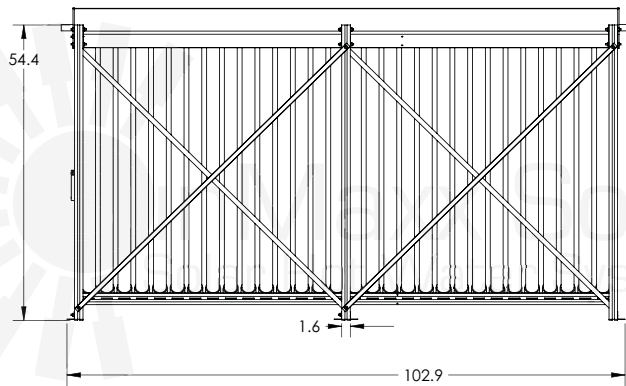
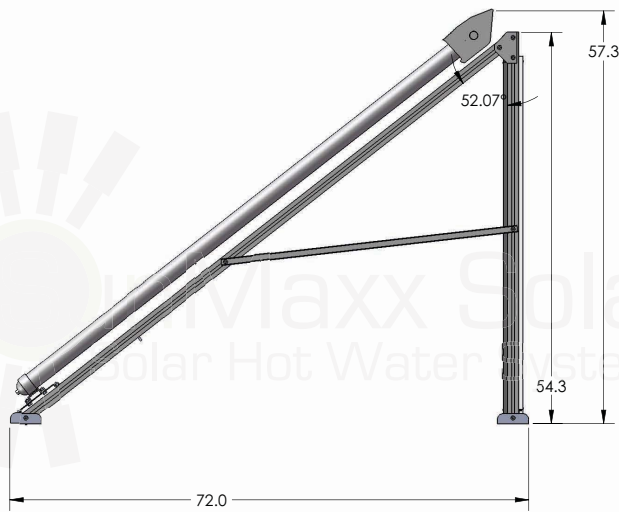
Tube Length	70"
Outer Tube Diameter	2.2"
Inner Tube Diameter	2.1"
Tube Thickness	0.1"
Tube Material	Borosilicate Glass
Tube Coating	Al - N/Al
Thermal Expansion	3.3×10^{-6}
Absorption Efficiency	> 92%
Emittance	< 8%
Vacuum	$P < 5 \times 10^{-3} \text{ Pa}$
Heat Loss	< 0.7 W/m ² C
Maximum Strength	1.0 MPa
Stagnation Temperature	> 428 °F
Flow Rate	0.028 GPM/tube
Fittings	1" NPT

Certifications:

The SunMaxx Evacuated Tube Heat Pipe Solar Collectors were SRCC Certification at the FSEC Institute in Florida. While SRCC Certification is not mandatory to sell, purchase or install a Solar Hot Water System, the Certification does bring several significant benefits to SunMaxx Solar Hot Water customers across the United States. These collectors are also Keymark Certified, an important certification in Europe.

SOLAR RATING & CERTIFICATION CORPORATION					
AWARD OF COLLECTOR CERTIFICATION					
The solar collector listed below has been evaluated by the Solar Rating and Certification Corporation (SRCC) in accordance with SRCC Document GCO-100, Operating Guidelines and Minimum Standards for Certifying Solar Collectors, and has been certified by the SRCC as specified in SRCC Standard 100-94, Test Methods and Minimum Standards for Certifying Solar Collectors. Certification and thermal performance ratings are based on the successful durability and performance testing of a sample unit where said tests have been conducted by an independent laboratory accredited by the SRCC.					
Collector Certification Number: 100-2006011D					
Date Certified: February 2, 2009	Report Number: 06-08-0540		Expiration Date: August 30, 2019		
Test Laboratory: Bodycote	Report Date: August 30, 2007				
Product: Tubular	Certified Model: 30 EVT		Model Tested: 20EVT		
Supplier: Silicon Solar Inc. 2917 State Highway 7 Hambridge, NY 13733 USA (800) 746-5508					
Description: Aluminum frame, Glass Vacuum Tube glazing, Aluminum absorber with Sputtered aluminum nitride coating, Vacuum side insulation and Polyurethane and glass wool back insulation. Water was the fluid for performance tests. Gross Area: 5.19 m ² (55.87 ft ²). Aperture Area: 4.43 m ² (47.68 ft ²).					
GLAZED COLLECTOR THERMAL PERFORMANCE RATING					
Megajoules Per Panel Per Day			Thousands of Btu Per Panel Per Day		
Category (T-Ta)	CLEAR	MILDLY CLOUDY	Category (T-Ta)	CLEAR	MILDLY CLOUDY
A (-5 °C)	23 MJ/m ² -d	17 MJ/m ² -d	A (-9 °F)	47	35
B (5 °C)	48	36	B (41 °F)	45	34
C (20 °C)	45	32	C (68 °F)	43	31
D (50 °C)	37	25	D (122 °F)	35	24
E (80 °C)	24	16	E (176 °F)	22	15
A: Free Heating (Warm Climate) B: Full Heating (Cool Climate) C: Water Heating (Warm Climate) D: Water Heating (Cool Climate) E: Air Conditioning					
Efficiency Equation (Based on Gross Area and (P) = T-Ta)			Y Intercept Slope		
S I Units: $\eta = 0.731 - 0.8252 (P/T) - 0.0078 (P/T)^2$			0.376 -1.32 W/m ² °C		
I P Units: $\eta = 0.371 - 0.4544 (P/T) - 0.0007 (P/T)^2$			0.376 -0.233 Btu/hr ft ² °F		
Incident Angle Modifier (NOTE: S) = 1/cos θ - 1					
K _{ext} = 1.0 +1.2177 (S) -0.7479 (S) ²			K _{ext} = 1.0 +0.44 (S) (Linear Fit)		
This award of certification is subject to all terms and conditions of the Program Agreement and the documents incorporated therein by reference. It must be renewed annually. Any change in collector design, materials, specifications, parts, or construction must be reported to SRCC for evaluation of continued certification.					
Technical Director			February 2, 2009		





System Overview:

Silicon Solar Inc
15 Catherwood Rd
Ithaca, NY 14850
1-800-653-8540

Approval Stamps

Architectural Stamps and Remarks

Contractor Stamp and Remarks

Contractor Note - Sign Below



Silicon Solar Inc
Innovative Solar Solutions™

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