


<p style="text-align: center;">SOLAR COLLECTOR CERTIFICATION AND RATING</p> <div style="text-align: center;">  <p>SRCC CERTIFICATION</p> </div> <p style="text-align: center;">SRCC OG-100</p>	<p style="text-align: center;"><u>CERTIFIED SOLAR COLLECTOR</u></p> <p>SUPPLIER: Alternate Energy Technologies 1057 N. Ellis Road Jacksonville, FL 32254</p> <p>MODEL: Morning Star MSC-26 COLLECTOR TYPE: Glazed Flat-Plate CERTIFICATION #: 100-2002-002C</p>
---	---

COLLECTOR THERMAL PERFORMANCE RATING							
Megajoules Per Panel Per Day				Thousands of Btu Per Panel Per Day			
CATEGORY (Ti-Ta)	CLEAR DAY 23 MJ/m²·d	MILDLY CLOUDY 17 MJ/m²·d	CLOUDY DAY 11 MJ/m²·d	CATEGORY (Ti-Ta)	CLEAR DAY 2000 Btu/ft²·d	MILDLY CLOUDY 1500 Btu/ft²·d	CLOUDY DAY 1000 Btu/ft²·d
A (-5°C)	36	27	18	A (-9°F)	34	26	17
B (5°C)	33	24	15	B (9°F)	31	23	14
C (20°C)	27	19	10	C (36°F)	26	18	10
D (50°C)	16	9	2	D (90°F)	16	8	2
E (80°C)	6	1		E (144°F)	6	1	

A-Pool Heating (Warm Climate) B-Pool Heating (Cool Climate) C-Water Heating (Warm Climate) D-Water Heating (Cool Climate) E-Air Conditioning

Original Certification Date: November 22, 2002

COLLECTOR SPECIFICATIONS

Gross Area:	2.416 m ²	26.01 ft ²	Net Aperture Area:	2.171 m ²	23.37 ft ²
Dry Weight:	46.3 kg	102 lb	Fluid Capacity:	4.2 l	1.1 gal
Test Pressure:	1103 kPa	160 psig	Max. Oper. Temp.:	176.7 °C	350 °F

COLLECTOR MATERIALS

Frame:	Anodized Aluminum
Cover (Outer):	Low Iron Tempered Glass
Cover (Inner):	None
Absorber Material:	Tube - Copper / Plate - Copper Fin
Absorber Coating:	Selective Coating
Insulation (Side):	Polyisocyanurate
Insulation (Back):	Polyisocyanurate

PRESSURE DROP

Flow		Δ P	
ml/s	gpm	Pa	in H₂O

TECHNICAL INFORMATION

Efficiency Equation [NOTE: (P) = Ti-Ta]				Y Intercept	Slope
S I Units:	$\eta = 0.691 - 3.3960 (P)/I - 0.0019 (P)^2/I$		0.706	-4.9099	W/m ² ·°C
I P Units:	$\eta = 0.691 - 0.5985 (P)/I - 0.0002 (P)^2/I$		0.706	-0.865	Btu/hr·ft ² ·°F

Incident Angle Modifier [(S) = 1/cos θ - 1, 0° ≤ θ ≤ 60°]	Model Tested:	AE-21
$K_{arr} = 1.0 - 0.1939 (S) - 0.0055 (S)^2$	Test Fluid:	Water
$K_{arr} = 1.0 - 0.20 (S)$ (Linear Fit)	Test Flow Rate:	39 ml/s 0.62 gpm

REMARKS:

October, 2004

Certification must be renewed annually. For current status contact:

SOLAR RATING & CERTIFICATION CORPORATION

c/o FSEC ♦ 1679 Clearlake Road ♦ Cocoa, FL 32922 ♦ (321) 638-1537 ♦ Fax (321) 638-1010