FLORIDA SOLAR ENERGY CENTER®

SUMMARY INFORMATION SHEET

April 2010
FSEC # 00396N

MANUFACTURER

Collector Model
AE-24

Alternate Energy Technologies, LLC
1057 N. Ellis Rd. Unit 4
Jacksonville, Florida 32254

This solar collector was evaluated by the Florida Solar Energy Center (FSEC) in accordance with prescribed methods and was found to meet the minimum standards established by FSEC. This evaluation was based on solar collector tests performed at Bodycote Materials Testing Canada Inc., Mississauga, Ontario, Canada. The purpose of the tests is to verify initial performance conditions and quality of construction only. The resulting certification is not a guarantee of long term performance or durability.

DESCRIPTION

Gross Length	2.466	meters	8.09	feet
Gross Width	0.893	meters	2.93	feet
Gross Depth	0.079	meters	0.26	feet
Gross Area	2.206	square meters	23.75	square feet
Transparent Frontal Area	2.039	square meters	21.95	square feet
Volumetric Capacity	2.8	liters	0.7	gallons
Weight (empty)	38.6	kilograms	85.0	pounds
Recommended Flow Rate	39	ml/s	0.6	gpm
Test Pressure	552	kPa	80	psig
Number of Cover Plates		One		
Flow Pattern		Parallel	Forced Circulation	
Number of Tubes		Seven		

MATERIALS

Enclosure	Aluminum frame, aluminum back
Glazing	Tempered low iron glass, 0.30 cm thick
Absorber	Copper tubes welded to copper fins
Absorber Coating	Selective coating
Insulation	Foil faced polyisocyanurate, 3.2 cm thick

THERMAL PERFORMANCE

Tested per ASHRAE 93-1986

Incident Angle Modifier $K\tau\alpha = 1.0 - 0.19\ ([1/\cos\theta] - 1)$

Efficiency Equations

SI Units °C / Watt/m²

$\eta = 70.7 - 491\ (T_i-T_a)/I$

$\eta = 69.1 - 339\ (T_i-T_a)/I - 1574\ [(T_i-T_a)/I]^2$

English Units °F / Btu/hr·ft²

$\eta = 70.7 - 86\ (T_i-T_a)/I$

$\eta = 69.1 - 59\ (T_i-T_a)/I - 48\ [(T_i-T_a)/I]^2$

RATING

This collector has been rated for energy output on measured performance and an assumed standard day. Total solar energy available for the standard day is 5045 Watt-hour/m^2 (1600 Btu/ft^2) distributed over a 10 hour period.

Output energy rating for this collector based on the second-order efficiency curve are:

Collector Temperature		ENERGY OUTPUT			
Low	35 °C (95 °F)	25,900	Kilojoules/day	24,600	Btu/day
Intermediate	50 °C (122 °F)	21,300	Kilojoules/day	20,200	Btu/day
High	100 °C (212 °F)	7,100	Kilojoules/day	6,800	Btu/day

Reference 00081N