Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate

Certificate No.	**011-7S1893 F**
Date of issue	24.06.2014

Company	SEG Solar Energy GmbH	**Country**		Österreich
Brand (optional)		**Website**		www.solarenergy.at
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Collector Type (flat plate / evacuate tubular / un-glazed)	Flat plate collector
Integration in the roof possible ?	Yes

Collector name	Aperture area (Aa) [m²]	Gross length [mm]	Gross width [mm]	Gross height [mm]	Gross area (Ag) [m²]	Power output per collector unit G = 1000 W/m² Tm-Ta : 0 K [W]	10 K [W]	30 K [W]	50 K [W]	70 K [W]
RKEQ2500N ALPIN EASY*	2.34	1168	2148	83	2.51	1877	1785	1584	1361	1116
RKEQ2501 ALPIN EASY*	2.34	1168	2148	83	2.51	1877	1785	1584	1361	1116
RKE2500N ALPIN EASY	2.34	2 148	1 168	83	2.51	1877	1785	1584	1361	1116
RKE2501 ALPIN EASY	2.34	2 148	1 168	83	2.51	1877	1785	1584	1361	1116

Collector efficiency parameters related to aperture area (Aa) Type of fluid and flow rate see note 1	η_{0a}	0.802	-
	a_{1a}	3.806	W/(m²K)
	a_{2a}	0.012	W/(m²K²)
Stagnation temperature - Weather conditions see note 2	t_{stg}	158	°C
Effective thermal capacity	$c_{eff} = C/A_a$	9.57	kJ/(m²K)
Max. operation pressure - see note 3	p_{max}	1000	kPa

Incidence angle modifiers $K_\theta(\theta)$	G_{DIF}/G_{TOT} min	G_{DIF}/G_{TOT} max	θ_T / θ_L	50°	*10°*	*20°*	*30°*	*40°*	*60°*	*70°*
	-	-	$K_\theta(\theta_T)$	0.95	1.00	0.99	0.99	0.97	0.91	0.82
	-	-	$K_\theta(\theta_L)$	0.95	1.00	0.99	0.99	0.97	0.91	0.82

G_{DIF}/G_{TOT}: min&max - while measuring — ***Optional values***

Testing Laboratory	TZS, ITW University of Stuttgart
Website	www.tzs.uni-stuttgart.de
Test report id. number	12COL1139OEM02, 12COL1140OEM02, 12COL1140QOEM02
Date of test report	05.06.2014
Perf. test method	EN 12975-2 6.1.4 (outdoor)

Comments of testing laboratory :

* dimensions according to manufacturer

Note 1	**Fluid**	Water	**Flow rate**	0.020	kg/s per m²
Note 2	**Irradiance, Gs=1000 W/m²** **Ambient temperature , Ta=30 °C**				
Note 3	**Given by manufacturer**				

TZS Forschungs- und Testzentrum für Solaranlagen
Institut für Thermodynamik und Wärmetechnik
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Pfaffenwaldring 6, 70550 Stuttgart (Vaihingen)

VERSION 3.6, 2012.01.13

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S1893 F
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Annual collector output kWh

Collector name	Location and collector temperature (Tm)											
	Athens			Davos			Stockholm			Würzburg		
	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
RKEQ2500N ALPIN EASY*	3006	2148	1415	2451	1692	1062	1680	1104	673	1828	1194	717
RKEQ2501 ALPIN EASY*	3006	2148	1415	2451	1692	1062	1680	1104	673	1828	1194	717
RKE2500N ALPIN EASY	3006	2148	1415	2451	1692	1062	1680	1104	673	1828	1194	717
RKE2501 ALPIN EASY	3006	2148	1415	2451	1692	1062	1680	1104	673	1828	1194	717

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations

Location	Latitude °	Gtot kWh/m²	Ta °C	Collector orientation or tracking mode
Athens	38	1 765	18.5	South, 25°
Davos	47	1 714	3.2	South, 30°
Stockholm	59	1 166	7.5	South, 45°
Würzburg	50	1 244	9.0	South, 35°

Gtot	Annual total irradiation on collector plane	kWh/m²
Ta	Mean annual ambient air temperature	°C
Tm	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

Calculation of the annual collector performance is done by the official Solar Keymark spreadsheet tool. Hour by hour the collector output is calculated according to the efficiency parameters from the Keymark test using constant collector operating temperature (Tm). Detailed description with all equations used is available from the Solar Keymark web site (direct link: http://www.estif.org/solarkeymark/annexb1.php)

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Datasheet version:
VERSION 3.6, 2012.01.13
Calculation program version:
3.07, October 2011 (SP)