Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S1638 F
	Date of issue	06.03.2014

Company	CMG SOLARI SRL	**Country**		Italien
Brand (optional)		**Website**		www.cmgsolari.it
Street, number	C. da Vore n°1 - Zona Ind. Le	**E-mail**		info@cmgsolari.it
Postal Code	73040	**Tel.**	+39	833 581 428
City	Melissano(LE)	**Fax**	+39	833 581 428

Collector Type (flat plate / evacuate tubular / un-glazed)	Flat plate collector
Integration in the roof possible ?	No

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]
EVO 2500	2.31	2 008	1 258	85	2.53	1 765	1 672	1 474	1 262	1 035
EVO 2500 Orizzontale*	2.33	1 257	2 006	85	2.52	1 780	1 686	1 487	1 273	1 044
EVO 2000*	1.83	2 006	1 007	85	2.02	1 398	1 324	1 168	1 000	820

Collector efficiency parameters related to aperture area (Aa) Type of fluid and flow rate see note 1	η_{0a}	0.764	-
	a_{1a}	3.953	W/(m²K)
	a_{2a}	0.008	W/(m²K²)
Stagnation temperature - Weather conditions see note 2	t_{stg}	199	°C
Effective thermal capacity	$c_{eff} = C/A_a$	12.88	kJ/(m²K)
Max. operation pressure - see note 3	p_{max}	1600	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°*
			$K_\theta(\theta_T)$	0.92	1.00	0.99	0.98	0.96	0.86	0.73
	-	-	$K_\theta(\theta_L)$	0.92	1.00	0.99	0.98	0.96	0.86	0.73
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	10COL933/2OEM03/1, 10COL934/2OEM03/1, 10COL934Q/2OEM03/1
Date of test report	06.03.2014
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
Universität Stuttgart
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.	011-7S1638 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
EVO 2500	2 765	1 929	1 253	2 224	1 508	945	1 528	984	598	1 661	1 059	633
EVO 2500 Orizzontale*	2 789	1 946	1 264	2 243	1 521	953	1 541	993	603	1 675	1 068	638
EVO 2000 *	2 190	1 528	993	1 762	1 195	749	1 210	780	474	1 316	839	501

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)