Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	OEM 9965/6/2
	Date of issue	20/1/2017

Company	FONDERIE SIME SpA	**Country**		Italy
Brand (optional)		**Website**		http://www.sime.it/
Street, number	27, Via Garbo	**E-mail**		info@sime.it
Postal Code	37045	**Tel.**	+43	0442 631111
City	Legnano (VR)	**Fax**	+43	

Collector Type (flat plate / evacuate tubular / un-glazed)	Flat plate collector
Integration in the roof possible ?	Yes

Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (AG)	Power output per collector unit G = 1000 W/m² Tm-Ta : 0 K	10 K	30 K	50 K	70 K
	[m²]	[mm]	[mm]	[mm]	[m²]	[W]	[W]	[W]	[W]	[W]
SIMEPLANO 132	1,40	1.530	1.030	80	1,58	1.024	970	848	708	552
SIMEPLANO 182	1,88	2.030	1.030	80	2,09	1.375	1.301	1.138	951	741
SIMEPLANO 230	2,37	2.030	1.285	80	2,60	1.733	1.641	1.434	1.199	934

Collector efficiency parameters related to aperture area (Aa) Note 1	η_{0a}	0,73	-
	a_{1a}	3,75	W/(m²K)
	a_{2a}	0,015	W/(m²K²)
Stagnation temperature - Note 2	t_{stg}	152	°C
Effective thermal capacity	c_{eff} = C/Aa	7,71	kJ/(m²K)
Max. operation pressure - 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°*
			$K_\theta(\theta_T)$	0,85	*1,00*	*0,99*	*1,00*	*0,97*	*0,73*	*0,81*
	0,11	0,11	$K_\theta(\theta_L)$	0,85	*1,00*	*0,99*	*1,00*	*0,97*	*0,73*	*0,81*
G_{DIF}/G_{TOT}: min&max - while measuring					***Optional values***					

Testing Laboratory	Demokritos
Website	www.solar.demokritos.gr
Test report id. number	4077DE7, 4079DE8, 4085DQ8
Date of test report	13/11/2013
Perf. test method	EN 12975-2 6.1.4 (outdoor/außen/extérieur)

Comments of testing laboratory :

Note 1	**Test conditions**	**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**					

Stamp of test lab

VERSION 3.4, 30-11-2011

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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	OEM 9965/6/2
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Annual collector output kWh / Jährliche Kollektor Leistung kWh / Energie annuelle produite par le capteur

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	25°C	50°C	75°C
SIMEPLANO 132	1.518	1.027	626	1.203	788	457	830	517	296	900	553	308			
SIMEPLANO 182	2.038	1.379	840	1.615	1.058	613	1.115	695	397	1.209	742	414			
SIMEPLANO 230	2.560	1.739	1.060	2.036	1.333	773	1.406	876	501	1.524	936	522			

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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VERSION 3.4, 30-11-2011
Calculation program version:
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