

Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		011-7S2753 R							
					Date issued		2017-04-12							
					Issued by		Din Certco							
Licence holder		Fonderie SIME S.p.A.			Country		Italy							
Brand (optional)		SV 2.2 S			Web		www.sime.it							
Street, Number		Via Garbo, 27			E-mail		erika_modena@sime.it							
Postcode, City		37045 Legnago			Tel/Fax		0039 0442 631111							
Collector Type					Evacuated tubular collector									
Collector name					Power output per collector G _b = 850 W/m ² ; G _d = 150 W/m ² ∅ _m - ∅ _a									
					0 K	10 K	30 K	50 K	70 K	70 K				
					m ²	mm	mm	mm	W	W	W	W	W	W
SV 2.2 S					2,20	1.975	1.115	120	1.266	1.250	1.208	1.152	1.081	1.081
Power output per m² gross area					575	568	549	523	491	491				
Performance parameters test method				Steady state - outdoor										
Performance parameters (related to A_G)				η _{0,hem}	a ₁	a ₂								
Units				-	W/(m ² K)	W/(m ² K ²)								
Test results				0,575	0,64	0,008								
Incidence angle modifier test method				Steady state - outdoor										
Bi-directional incidence angle modifiers				Yes										
Incidence angle modifier				Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°	
Transversal				K _{θT, coll}	1,00	1,02	1,06	1,05	1,12	1,16	1,13	0,64	0,00	
Longitudinal				K _{θL, coll}	1,00	1,00	0,99	0,96	0,92	0,83	0,69	0,44	0,00	
Heat transfer medium for testing				Water										
Flow rate for testing (per gross area, A_G)				dm/dt	0,020	kg/(sm ²)								
Maximum temperature difference for thermal performance calculations				(∅ _m -∅ _a) _{max}	70	K								
Standard stagnation temperature (G = 1000 W/m²; ∅_a = 30 °C)				∅ _{stg}	316	°C								
Effective thermal capacity, incl. fluid (per gross area, A_G)				C/m ²	12,6	kJ/(Km ²)								
Maximum operating temperature				∅ _{max, op}	95	°C								
Maximum operating pressure				p _{max, op}	1000	kPa								
Testing laboratory				TestLab Solar Thermal Systems, Fraunhofer ISE				http://www.collectortest.com						
Test report(s)				ktb-2012-04-k-a				Dated		10.04.2017				
Comments of testing laboratory				According to Scenocalc v5.01 the power output per collector unit of a steady state performance test does not consider the fraction of the diffuse irradiance, but it is calculated based on η _{0,hem} for a global hemispherical irradiance of 1000 W/m ² .										
				Datasheet version: 5.01 / 2016-03-01 TestLab Solar Thermal Systems Heidenhofstraße 2 D-79110 Freiburg										
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S2753 R
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Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on EN ISO 9806:2013 test results													
Standard Locations		Athens			Davos			Stockholm			Würzburg		
Collector name	ϑ_m	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
SV 2.2 S		2.239	2.039	1.779	1.950	1.722	1.461	1.407	1.222	1.017	1.509	1.315	1.096
Annual output per m ² gross area		1.017	926	808	885	782	663	639	555	462	685	597	498
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m ²			1714 kWh/m ²			1166 kWh/m ²			1244 kWh/m ²		
Mean annual ambient air temperature		18,5°C			3,2°C			7,5°C			9,0°C		
Collector orientation or tracking mode		South, 25°			South, 30°			South, 45°			South, 35°		
The collector is operated at constant temperature ϑ_m (mean of in- and outlet temperatures). The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool Scenocalc Ver. 5.01 (March 2016). A detailed description of the calculations is available at www.solarkeymark.org/scenocalc													

Additional Information		
Collector heat transfer medium	Water-Glycole	
Hybrid Thermal and Photo Voltaic collector	No	
The collector is deemed to be suitable for roof integration	No	
The collector was tested successfully according to EN ISO 9806:2013 under the following conditions:		
Climate class (A, B or C)	EN 12975-2	--
Maximum tested positive load	see comment	Pa
Maximum tested negative load	see comment	Pa
Hail resistance using ice balls (diameter)	see comment	mm

Energy Labelling Information			
	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}	
SV 2.2 S	2,20	Collector efficiency (η_{col})	54 %
		Remark: Collector efficiency (η_{col}) is defined in CDR (EU) No 811/2013 as collector efficiency of the solar collector at a temperature difference between the solar collector and the surrounding air of 40 K and a global solar irradiance of 1000 W/m ² , expressed in % and rounded to the nearest integer. Deviating from the regulation η_{col} is based on reference area (A_{sol}) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2013.	
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
		Zero-loss efficiency (η_0)	0,575 --
		First-order coefficient (a_1)	0,64 W/(m ² K)
		Second-order coefficient (a_2)	0,008 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	1,01 --
		Remark: The data given in this section are related to collector reference area (A_{sol}) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806. Consistent data sets for either aperture or gross area can be used in calculations like in the regulation 811 and 812 and simulation programs.	