



Annex to Solar Keymark Certificate					Licence Number		011-7S2846 F							
					Date issued		2025-03-27							
					Issued by		TÜV Rheinland Solar GmbH							
Licence holder		Gasokol GmbH			Country		Austria							
Brand (optional)					Web		www.gasokol.at							
Street, Number		Solarpark 1			E-mail		office@gasokol.at							
Postcode, City		A-4351 Saxen			Tel		+43 7269 76600-0							
Collector Type					Flat plate collector									
Collector name					Power output per collector									
					Gb = 850 W/m ² , Gd = 150 W/m ² & u = 1.3 m/s $\vartheta_m - \vartheta_a$									
					0 K	10 K	30 K	50 K	70 K	120 K				
					m ²	mm	mm	mm	mm	mm	mm			
gevoSol 23					2.25	2 100	1 070	105	1 595	1 522	1 357	1 166	950	300
Power output per m ² gross area					709	676	603	518	422	133				
Performance parameters test method		Quasi dynamic												
Performance parameters (related to A _G)		$\eta_{0, b}$	a1	a2	a3	a4	a5	a6	a7	a8	Kd			
Units		-	W/(m ² K)	W/(m ² K ²)	J/(m ³ K)	-	J/(m ² K)	s/m	W/(m ² K ⁴)	W/(m ² K ⁴)	-			
Test results		0.716	3.12	0.014	0.000	0.00	6 600	0.000	0.00	0.0E+00	0.94			
Incidence angle modifier test method		Quasi dynamic - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K _{GT, coll}	1.00	0.99	0.98	0.96	0.93	0.88	0.77	0.39	0.00			
Longitudinal		K _{GL, coll}	1.00	0.99	0.98	0.96	0.93	0.88	0.77	0.39	0.00			
Heat transfer medium for testing		Water												
Flow rate for testing (per gross area, A _G)		dm/dt	0.043	kg/(sm ²)										
Maximum temperature difference during thermal performance test		($\vartheta_m - \vartheta_a$) _{max}	90	K										
Standard stagnation temperature (G = 1000 W/m ² ; $\vartheta_a = 30$ °C)		ϑ_{stg}	200	°C										
Maximum operating temperature		$\vartheta_{max, op}$	200	°C										
Maximum operating pressure		p _{max, op}	1000	kPa										
Testing laboratory		TÜV Rheinland Energy GmbH (TÜV Rheinland Solar GmbH)					www.tuv.com/solar							
Test report(s)		21242669.01 21242669.02 21242669.03					Dated		06.07.2018 06.07.2018 06.07.2018					
Comments of testing laboratory		Ver. 6.2 (13.01.2022)												
		 Genau. Richtig.  TÜV Rheinland Solar GmbH Am Grauen 1 51105 Köln												
DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de														

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Supplementary Information						Issued		2025-03-27					
Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m													
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
gevoSol 23		2 561	1 854	1 219	1 961	1 365	856	1 442	954	578	1 571	1 035	616
Gross Thermal Yield per m ² gross area		1 138	824	542	871	607	380	641	424	257	698	460	274
Annual efficiency, η_a		64%	47%	31%	53%	37%	23%	55%	36%	22%	56%	37%	22%
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m ²			1630 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. 6.2 (13.01.2022). A detailed description of the calculations is available at http://www.estif.org/solarkeymarknew/													
Additional Information													
Collector heat transfer medium								Water-Glycole					
The collector is deemed to be suitable for roof integration								Yes					
The collector was tested successfully under the following conditions:													
Climate class (A+, A, B or C)								A		--			
G (W/m ²) >		1000		ϑ_a (°C) >		20		H _x (MJ/m ²) >		600			
Maximum tested positive load								5400		Pa			
Maximum tested negative load								1000		Pa			
Hail resistance using ice balls (diameter)								35		mm			
Additional collector attribute(s)													
Using external power source(s) for normal operation						No		Active or passive measure(s) for self-protection				No	
Co-generating thermal and electrical power						No		Façade collector(s)				Yes	
Energy Labelling Information						Additional Informative Technical Data							
Reference Area, A _{sol} (m ²)						Hydraulic Designation Code				Aperture Area, A _a (m ²)			
gevoSol 23						2.25				9-VH-12S-A:7.3,1930-C:20.8,2010			2.01
Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}						Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}							
Collector efficiency (η_{col})						56%		Zero-loss efficiency (η_0)		0.71		--	
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 9806:2017.						First-order coefficient (a ₁)		3.12		W/(m ² K)			
						Second-order coefficient (a ₂)		0.014		W/(m ² K ²)			
						Incidence angle modifier IAM (50°)		0.92		--			
						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.							
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