

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number		011-7S2519 F							
						Issued		2015-05-28							
Company holding the						Country		POLAND							
Brand (optional)						Website		www.galmet.com.pl							
Street, street number						E-mail		galmet@galmet.com.pl							
Postal Code / City, province		48-100 Głubczyce		Tel/Fax		48 77 403 45 00 / 99									
Collector Type (flat plate glazed/un-glazed; evacuate tubular)						Flat plate collector - glazed									
Thermal / photo voltaic hybrid collector? (PVT collector)						No									
Integration in the roof possible ? (manufacturers declaration)						No									
Collector name	Aperture area (Aa) m ²	Gross length mm	Gross width mm	Gross height mm	Gross area (AG) m ²	Power output per collector module									
						G = 1000 W/m ²									
						Tm-Ta									
						0 K	10 K	30 K	50 K	70 K					
						W	W	W	W	W					
KSG 21 GT	1,94	2.033	1.033	83	2,10	1.607	1.530	1.359	1.165	948					
KSG 27 GT	2,57	2.033	1.354	83	2,75	2.074	1.975	1.752	1.495	1.205					
Performance test method						Glazed liquid heating collector - steady state - indoor									
Performance parameters related to aperture						η ₀	a ₁	a ₂							
Units						-	W/(m ² K)	W/(m ² K ²)							
Test results - Flow rate and fluid see note 1						0,807	3,695	0,016							
Bi-directional incidence angle						No									
Incidence angle modifiers K _θ (θ)						K _θ values are obligatory for 50°.									
Incidence angle modifiers K _θ (θ)						Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Incidence angle modifier not bi-directional - leave fields blank						K _θ (θ)					0,87			0,00	
Stagnation temperature - Weather conditions see note 2						T _{stg}	182	°C							
Effective thermal capacity						c _{eff} = C/Ag	11,33	kJ/(m ² K)							
Max. intended operation temperature - see note 3						T _{max,op}	208	°C							
Max. operation pressure - see note 3						p _{max,op}	900	kPa							
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m ² aperture area															
Flow rate	kg/(s m ²)														
Pressure drop, ΔP	Pa														
Optional weather data		Location		Link											
Testing Laboratory						AIT Austrian Institute of Technology GmbH									
Website						www.ait.ac.at									
Test report id. number						2.04.01251.1.0-1-LT & -QT, 2.04.01251.1.0-2-LT		Date of test report		2015.05.22					
During the test GDIF/GTOT was always between						0,1	and	0,2							
Comments of testing laboratory:															
Note 1	Flow rate	0,020	kg/(s m ²)	Fluid	Water										
Note 2	Irradiance, G = 1000 W/m ² ; Ambient temperature, T _a =30 °C														
Note 3	Given by manufacturer														
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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2519 F
	Issued	28.05.2015

Annual collector output kWh/module												
Collector name	Location and collector temperature (T _m)											
	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
KSG 21 GT	2.340	1.645	1.047	1.780	1.213	742	1.302	845	501	1.412	903	526
KSG 27 GT	3.108	2.184	1.390	2.363	1.611	985	1.729	1.122	665	1.875	1.199	698

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

Overview of locations				
Location	Latitude °	G _{tot} kWh/m ²	T _a °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°

G _{tot}	Annual total irradiation on collector plane	kWh/m ²
T _a	Mean annual ambient air temperature	°C
T _m	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool ScenoCalc. The collector output is calculated hour by hour according to the efficiency parameters from the Keymark test using constant collector operating temperature (T_m). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.