


Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number		011-7S2335 F																	
						Issued		2015-10-19																	
Company holding the		Ygnis AG Heizkessel und Wassererwärmer				Country		Swiss																	
Brand (optional)		Solerio				Website		www.ygnis.com																	
Street, street number		Wolhauserstrasse 31 /33				E-mail		info@ygnis.com																	
Postal Code / City, province		6017 Ruswil				Tel		41 (0)41 496 91 20																	
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)						Yes																			
						Power output per collector module																			
						G = 1000 W/m ²																			
						T _m -T _a																			
						0 K		10 K		30 K		50 K		70 K											
Collector name						m ²		mm		mm		mm		m ²											
						mm		mm		mm		W		W											
Solerio F4-H (Al/Cu)						2.52		2 373		1 200		85		2.85											
Solerio F4-Q (Al/Cu)						2.52		1 200		2 373		85		2.85											
Solerio F5-H (Al/Cu)						2.22		2 100		1 200		85		2.52											
Solerio F5-Q (Al/Cu)						2.22		1 200		2 100		85		2.52											
Solerio F6-H (Al/Cu)						1.83		1 746		1 200		85		2.10											
Solerio F6-Q (Al/Cu)						1.83		1 200		1 746		85		2.10											
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						0.795		4.204		0.016															
Bi-directional incidence angle						Yes		<i>K_θ values are obligatory for 50°.</i>																	
Incidence angle modifiers K_θ(θ_T) transversal direction						Angle		10°		20°		30°		40°		50°		60°		70°		80°		90°	
						K _θ (θ _T)		1.00		0.99		0.97		0.95		0.90		0.82		0.67		0.00			
Incidence angle modifiers K_θ(θ_L) longitudinal direction						Angle		10°		20°		30°		40°		50°		60°		70°		80°		90°	
						K _θ (θ _L)		1.00		0.99		0.97		0.95		0.90		0.83		0.67		0.00			
Stagnation temperature - Weather conditions see note 2								T _{stg}		183		°C													
Effective thermal capacity								c _{eff} = C/Ag		7.14		kJ/(m ² K)													
Max. intended operation temperature - see note 3								T _{max,op}				°C													
Max. operation pressure - see note 3								p _{max,op}		600		kPa													
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m² aperture area																									
Flow rate		kg/(s m ²)																							
Pressure drop, ΔP		Pa																							
Optional weather data		Location				Link																			
Testing Laboratory						TÜV Energie und Umwelt GmbH																			
Website						http://www.tuv.com/st																			
Test report id. number						21230553_Ygnis_P0, 21230553_Ygnis_P1 21230553_Ygnis_R0		Date of test report		2015.10.01															
During the test GDIF/GTOT was always between						0.16		and		0.89															
Comments of testing laboratory:																									
Note 1		Flow rate		0.021 kg/(s m ²)		Fluid		Water						 Genau. Richtig. TÜV Rheinland Energie und Umwelt GmbH Am Grauen Stein 51105 Köln											
Note 2		Irradiance, G = 1000 W/m²; Ambient temperature, T_a=30 °C																							
Note 3		Given by manufacturer																							
												Datasheet version: 4.05, 2013-11-07													
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																									

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2335 F
	Issued	19.10.2015

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	
Solerio F4-H (Al/Cu)	3 074	2 075	1 248	2 277	1 483	846	1 684	1 037	576	1 831	1 113	607	
Solerio F4-Q (Al/Cu)	3 074	2 075	1 248	2 277	1 483	846	1 684	1 037	576	1 831	1 113	607	
Solerio F5-H (Al/Cu)	2 708	1 828	1 099	2 006	1 306	745	1 483	914	507	1 613	980	534	
Solerio F5-Q (Al/Cu)	2 708	1 828	1 099	2 006	1 306	745	1 483	914	507	1 613	980	534	
Solerio F6-H (Al/Cu)	2 232	1 507	906	1 653	1 077	614	1 223	753	418	1 330	808	440	
Solerio F6-Q (Al/Cu)	2 232	1 507	906	1 653	1 077	614	1 223	753	418	1 330	808	440	

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

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	ScenoCalc version: Ver. 4.05 (Nov, 2013)