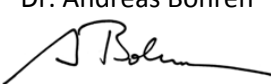


Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number		011-7S2478 F				
						Issued		2015-02-05				
Company holding the		Agena Energies SA				Country		Switzerland				
Brand (optional)		-				Website		www.agna-energies.ch				
Street, street number		Chemin du Grand Pré 1C				E-mail		agna@agna-energies.ch				
Postal Code / City, province		CH-1510		Moudon		Tel/Fax		+41 21 905 -26 56/-43 88				
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/m²						
						Tm-Ta						
						0 K	10 K	30 K	50 K	70 K		
Collector name						W	W	W	W	W		
						m²	mm	mm	mm	m²		
AZUR 8+ AC 2.2V						1.957	1'897	1'166	100	2.212		
AZUR 8+ AC 2.3H						1.952	970	2'347	100	2.277		
AZUR 8+ AC 2.8V						2.468	2'368	1'169	100	2.768		
AZUR 8+ AC 2.8H						2.463	1'189	2'347	100	2.791		
Performance test method						Glazed liquid heating collector - steady state - outdoor						
Performance parameters related to aperture						η₀	a₁	a₂				
Units						-	W/(m²K)	W/(m²K²)				
Test results - Flow rate and fluid see note 1						0.846	4.11	0.0088				
Bi-directional incidence angle						Yes						
						Kθ values are obligatory for 50°.						
Incidence angle modifiers Kθ(θT) transversal direction						Angle	10°	20°	30°	40°		
						Kθ(θT)	1.00	1.00	0.99	0.97		
Incidence angle modifiers Kθ(θL) longitudinal direction						Angle	10°	20°	30°	40°		
						Kθ(θL)	1.00	1.00	0.99	0.97		
Stagnation temperature - Weather conditions see note 2						T_{stg}		195 °C				
Effective thermal capacity						C_{eff} = C/A_g		6.54 kJ/(m²K)				
Max. intended operation temperature - see note 3						T_{max,op}		130 °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 m²)	0.006	0.012	0.018	0.024	0.030	0.036	0.042	0.047	0.053	0.059
Pressure drop, ΔP		Pa	6587	18966	37137	61100	90855	126401	167740	214871	267793	326508
Optional weather data		Location					Link					
Testing Laboratory		SPF, CH-8640 Rapperswil										
Website		www.solarenergy.ch										
Test report id. number		C1663LPEN, C1664LPEN, C1664QPEN, C1665QPEN				Date of test reports		05.02.2015				
During the test G_{DIF}/G_{TOT} was always between			0.11	and	0.19							
Comments of testing laboratory:												
-												
Note 1		Flow rate	0.024 kg/(s m²)	Fluid	Water-Glycole							
Note 2		Irradiance, G = 1000 W/m²; Ambient temperature, Ta=30 °C										
Note 3		Given by manufacturer										
						Dr. Andreas Bohren						
												
						Datasheet version: 4.06, 2014-01-15						
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	011-7S2478 F
	Issued	05.02.2015

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	
AZUR 8+ AC 2.2V	2'616	1'860	1'239	1'984	1'385	903	1'456	959	598	1'583	1'033	635	
AZUR 8+ AC 2.3H	2'609	1'856	1'236	1'979	1'382	901	1'453	956	597	1'579	1'030	633	
AZUR 8+ AC 2.8V	3'299	2'346	1'563	2'502	1'747	1'139	1'836	1'209	755	1'996	1'302	801	
AZUR 8+ AC 2.8H	3'292	2'341	1'559	2'497	1'744	1'137	1'833	1'206	753	1'992	1'300	799	

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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	4.06, 2014-01-15
	ScenoCalc version:
	Ver. 4.06 (Jan, 2014)