


Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number		011-7S439 F			
						Issued		2015-04-08			
Company holding the		ST-Energy bvba				Country		Belgien			
Brand (optional)						Website		www.ST-energy.be			
Street, street number		Koeltorenlaan 12				E-mail		Bruno.Hermans@ST-Energy.be			
Postal Code / City, province		3550	Heusden-Zolder			Tel/Fax		+32 495 25 14 15 / -			
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					
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	
ST V1400*	1.38	1 776	910	107	1.62	1 025	979	868	736	582	
ST H1400*	1.38	910	1 776	107	1.62	1 025	979	868	736	582	
ST S2800	2.68	1 767	1 740	107	3.07	1 991	1 900	1 686	1 429	1 129	
ST V2800*	2.68	3 491	910	107	3.18	1 991	1 900	1 686	1 429	1 129	
ST H2800*	2.68	910	3 491	107	3.18	1 991	1 900	1 686	1 429	1 129	
ST H4200*	4.12	1 776	2 596	107	4.61	3 061	2 921	2 592	2 197	1 736	
ST V4200*	4.12	2 596	1 776	107	4.61	3 061	2 921	2 592	2 197	1 736	
ST V5600*	5.50	3 433	1 776	107	6.10	4 087	3 900	3 460	2 933	2 318	
ST V7000*	6.88	4 276	1 776	107	7.59	5 112	4 878	4 329	3 669	2 899	
ST V8400*	8.26	5 119	1 776	107	9.09	6 137	5 857	5 197	4 405	3 481	
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		0.743	3.194	0.020							
Bi-directional incidence angle modifiers? No		K _θ values are obligatory for 50°.									
Incidence angle modifiers K _θ (θ)		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
		K _θ (θ)	1.00	0.98	0.95	0.90	0.82	0.68	0.39	0.00	0.00
Incidence angle modifier not bi-directional - leave fields blank											
Stagnation temperature - Weather conditions see note 2						T _{stg}	181	°C			
Effective thermal capacity						c _{eff} = C/Ag	8.294	kJ/(m ² K)			
Max. intended operation temperature - see note 3						T _{max,op}	-	°C			
Max. operation pressure - see note 3						p _{max,op}	300	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		TZS, ITW University Stuttgart									
Website		http://www.itw.uni-stuttgart.de									
Test report id. number		04COL332OEM03/3				Date of test report		2015.04.08			
During the test GDIF/GTOT was always between		0	and	1							
Comments of testing laboratory:											
* dimensions according to manufacturer											
Note 1	Flow rate	0.010	kg/(s m ²)	Fluid	Water						
Note 2	Irradiance, G = 1000 W/m ² ; Ambient temperature, Ta=30 °C										
Note 3	Given by manufacturer										
						 Datasheet version: 4.06, 2014-01-15					
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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S439 F
	Issued	08.04.2015

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	
ST V1400*	1 477	1 032	640	1 126	759	445	824	530	306	890	564	318	
ST H1400*	1 477	1 032	640	1 126	759	445	824	530	306	890	564	318	
ST S2800	2 868	2 005	1 242	2 188	1 473	865	1 600	1 028	595	1 728	1 096	618	
ST V2800*	2 868	2 005	1 242	2 188	1 473	865	1 600	1 028	595	1 728	1 096	618	
ST H2800*	2 868	2 005	1 242	2 188	1 473	865	1 600	1 028	595	1 728	1 096	618	
ST H4200*	4 408	3 082	1 910	3 363	2 265	1 329	2 460	1 581	915	2 656	1 685	950	
ST V4200*	4 408	3 082	1 910	3 363	2 265	1 329	2 460	1 581	915	2 656	1 685	950	
ST V5600*	5 885	4 114	2 550	4 489	3 023	1 775	3 284	2 111	1 221	3 546	2 249	1 268	
ST V7000*	7 362	5 146	3 190	5 616	3 782	2 220	4 108	2 640	1 527	4 436	2 813	1 586	
ST V8400*	8 838	6 178	3 829	6 742	4 540	2 665	4 931	3 170	1 834	5 325	3 377	1 904	

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. 4.06 (Jan, 2014)