




Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate		Licence Number 011-7S2520 F								
		Issued 2015-05-27								
Company holding the	HEWALEX Sp. z.o.o.Sp. K	Country	POLAND							
Brand (optional)	--	Website	www.hewalex.pl							
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Postal Code / City, province	43-502 Czechowice-Dziedzice	Tel/Fax	32 214 17 10 / 50 04							
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 (A _a) m ²	Gross length mm	Gross width mm	Gross height mm	Gross area (A _G) m ²	Power output per collector module G = 1000 W/m ² T _m -T _a				
						0 K W	10 K W	30 K W	50 K W	70 K W
KS 2100 T AC	1,84	2.019	1.019	89	2,06	1.351	1.285	1.134	959	758
KS 2600 T AC	2,37	2.020	1.293	89	2,61	1.740	1.655	1.461	1.235	977
Performance test method	Glazed liquid heating collector - steady state - indoor									
Performance parameters related to aperture	η ₀	a1	a2							
Units	-	W/(m ² K)	W/(m ² K ²)							
Test results - Flow rate and fluid see note 1	0,734	3,409	0,017							
Bi-directional incidence angle	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)					0,94				0,00
Incidence angle modifier not bi-directional - leave fields blank										
Stagnation temperature - Weather conditions see note 2						T _{stg}	204,2 °C			
Effective thermal capacity						ceff = C/Ag	4,453 kJ/(m ² K)			
Max. intended operation temperature - see note 3						T _{max,op}	250 °C			
Max. operation pressure - see note 3						p _{max,op}	1000 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)	0,000	0,013	0,030	0,047	0,062	0,078			
Pressure drop, ΔP	Pa	0	165	441	786	1158	1639			
Optional weather data	Location					Link				
Testing Laboratory	Fundación CENER-CIEMAT, LEST									
Website	www.cener.com									
Test report id. number	30.2617.0-1-1 30.2617.0-2-1 30.2617.0-3-1 30.2617.0					Date of test report	2015/05/15			
During the test GDIF/GTOT was always between	0,17	and	0,18							
Comments of testing laboratory: The collectors models KS 2100 T AC and KS 2600 T AC were tested according to ISO 9806:2013. According to SKM rules the results of the collector model KS 2600 T AC are representative for the whole T AC family.										
Note 1	Flow rate	0,022 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									
						 <p>Datasheet version: 4.06, 2014-01-15</p>				
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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2520 F
	Issued	27/05/2015

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			
KS 2100 T AC	2.155	1.524	962	1.632	1.104	657	1.205	773	446	1.309	836	474			
KS 2600 T AC	2.776	1.963	1.238	2.102	1.422	846	1.552	996	574	1.686	1.077	610			

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>.