



Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S2114 F
	Date of issue	26-02-2013

Company	Viessmann Poland Sp. z.o.o	Country	Poland
Brand (optional)	Viessmann	Website	www.viessmann.pl
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Collector Type (flat plate / evacuate tubular / un-glazed) Flat plate collector

Integration in the roof possible ? No

Collector name	Aperture area (Aa) [m²]	Gross length [mm]	Gross width [mm]	Gross height [mm]	Gross area (Ag) [m²]	Power output per collector unit G = 1000 W/m² Tm-Ta :				
						0 K	10 K	30 K	50 K	70 K
						[W]	[W]	[W]	[W]	[W]
Vitosol DIS20A	1.865	1988	1006	85	2.000	1514	1441	1276	1087	874

Collector efficiency parameters related to aperture area (Aa) Type of fluid and flow rate see note 1	η_{0a}	0.812	-
	a_{1a}	3.788	W/(m²K)
	a_{2a}	0.016	W/(m²K²)

Stagnation temperature - Weather conditions see note 2 t_{stg} = 206 °C

Effective thermal capacity $C_{eff} = C/Aa$ = 7.19 kJ/(m²K)

Max. operation pressure - see note 3 p_{max} = 600 kPa

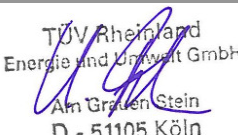
Incidence angle modifiers $K_{\theta}(\theta)$	G_{DIF}/G_{TOT}		θ_T / θ_L	50°	10°	20°	30°	40°	60°	70°
	min	max								
		0.11	0.37	$K_{\theta}(\theta_L)$	0.95	1.00	0.99	0.99	0.97	0.91

G_{DIF}/G_{TOT} : min&max - while measuring

Optional values

Testing Laboratory	TÜV Energie und Umwelt GmbH
Website	www.eco-tuv.de
Test report id. number	21220443_EN_P_DIS20A ; 21220443_EF
Date of test report	26.02.2013 (all)
Perf. test method	EN 12975-2 6.1.5 (indoor)

Comments of testing laboratory :

Note 1	Fluid	Water	Flow rate	0.021 kg/s per m²	 <p>TÜV Rheinland Energie und Umwelt GmbH Am Grauen Stein D - 51105 Köln</p>
Note 2	Irradiance, $G_s=1000$ W/m²				
Note 3	Ambient temperature, $T_a=30$ °C				



Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S2114 F
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Annual collector output kWh														
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		
Vitosol DIS20A	2 437	1 736	1 120	1 987	1 354	820	1 366	886	524	1 484	959	558		

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

Calculation of the annual collector performance is done by the official Solar Keymark spreadsheet tool. Hour by hour the collector output is calculated according to the efficiency parameters from the Keymark test using constant collector operating temperature (T_m). Detailed description with all equations used is available from the Solar Keymark web site (direct link:<http://www.estif.org/solarkeymark/annexb1.php>)

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