



Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S2113 F
	Date of issue	26-02-2013

Company	Viessmann Poland Sp. z.o.o	Country	Poland
Brand (optional)	Viessmann	Website	www.viessmann.pl
Street, number	ul. Karkonoska 65	E-mail	GorD@viessmann.pl
Postal Code	53-015	Tel.	+48 713607-100
City	Wroclaw	Fax	+48 713607-245

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 DIS20	1.865	1988	1006	85	2.000	1535	1459	1294	1109	904

Collector efficiency parameters related to aperture area (Aa) Type of fluid and flow rate see note 1	η_{0a}	0.823	-
	a_{1a}	3.922	W/(m²K)
	a_{2a}	0.013	W/(m²K²)

Stagnation temperature - Weather conditions see note 2	t_{stg}	207	°C
---	-----------	-----	----

Effective thermal capacity	$C_{eff} = C/Aa$	6.95	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								
	G_{DIF}/G_{TOT} : min&max - while measuring	0.11	0.37	$K_{\theta}(\theta_T)$	0.95	1.00	0.99	0.99	0.97	0.91
			$K_{\theta}(\theta_L)$	0.95	1.00	0.99	0.99	0.97	0.91	0.82
	<i>Optional values</i>									

Testing Laboratory	TÜV Energie und Umwelt GmbH
Website	www.eco-tuv.de
Test report id. number	21220443_EN_P_DIS20 ; 21220443_EN
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 2	Ambient temperature, $T_a=30$ °C				
Note 3	Given by manufacturer				



Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S2113 F
	Issued	26-02-2013

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 DIS20	2 470	1 762	1 155	2 013	1 383	859	1 382	902	546	1 502	976	581	

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>)

DIN CERTCO • Alboinstraße 56 • 12103 Berlin Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de	Datasheet version:
	VERSION 3.5, 2012.01.13
	Calculation program version: 3.07, October 2011 (SP)