TÜVRheinland®
DIN CERTCO

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	**Licence number**	**011-7S2068 R**
	Date of issue	2012-Dec-13

Company holding the licence	Viessmann Werke GmbH&Co. KG	**Country**		Germany
Brand (optional)		**Website**		www.viessmann.com
Street, number	Viessmann Str. 1	**E-mail**		BecM@viessmann.com
Postal Code	35107	**Tel.**	+33	387906401
City	Allendorf	**Fax**	+49	64524269

Collector Type (flat plate / evacuate tubular / un-glazed)	Evacuated tubular 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 [W]	10 K [W]	30 K [W]	50 K [W]	70 K [W]
Vitosol 300-T CD3V-30	3.25	2 010	2 150	165	4.31	2 366	2 347	2 262	2 173	1 978
Vitosol 300-T CD3V-20	2.17	2 010	1 451	165	2.92	1 580	1 542	1 468	1 394	1 321

Collector efficiency parameters related to aperture area (Aa) Type of fluid and flow rate see note 1	η_{0a}	0.73	-
	a_{1a}	1.71	W/(m²K)
	a_{2a}	0	W/(m²K²)
Stagnation temperature - Weather conditions see note 2	tstg	201	°C
Effective thermal capacity	c	19.342	kJ/(m²K)
Max. operation pressure - see note 3	pmax	600	kPa

Incidence angle modifiers $K_\theta(\theta)$	G_{DIF}/G_{TOT} min	G_{DIF}/G_{TOT} max	θ_T / θ_L	50°	*10°*	*20°*	*30°*	*40°*	*60°*	*70°*
	0.08	0.99	$K_\theta(\theta_T)$	0.98	*1.00*	*1.02*	*1.03*	*1.04*	*0.89*	*0.74*
			$K_\theta(\theta_L)$	0.97	*1.00*	*1.00*	*0.99*	*0.98*	*0.94*	*0.88*
G_{DIF}/G_{TOT}: min&max - while measuring					***Optional values***					

Testing Laboratory	TUV Rheinland (Shanghai) Co., Ltd.
Website	www.tuv.com
Test report id. number	153186893_EN_P_Vitosol 300-T CD3V-
Date of test report	11-Dec-2012
Perf. test method	EN 12975-2 6.3 (outdoor)

Comments of testing laboratory :

Keine

none

aucune

Note 1	**Fluid**	Water	**Flow rate**	0.021	kg/s per m²
Note 2	**Irradiance, Gs=1000 W/m²; Ambient temperature , Ta=30 °C**				
Note 3	**Given by manufacturer**				

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VERSION 3.7, 2012.03.22

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence number	011-7S2068 R
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Annual collector output kWh

Collector name	Location and collector temperature (Tm)														
	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 300-T CD3V-30	4 015	3 594	3 200	3 672	3 282	2 917	2 482	2 149	1 860	2 664	2 307	1 996			
Vitosol 300-T CD3V-20	2 713	2 350	2 029	2 417	2 097	2 098	1 639	1 367	1 147	1 778	484	1 241			

Collector mounting: Fixed or tracking	No tracking; Slope = latitude - 15° (rounded to nearest 5°)

Overview of locations

Location	Latitude °	Gtot kWh/m²	Ta °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°

Gtot	Annual total irradiation on collector plane	kWh/m²
Ta	Mean annual ambient air temperature	°C
Tm	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 (Tm). 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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Datasheet version:
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Calculation program version:
3.07, October 2011 (SP)