

Precisely Right.

<b>Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate</b>						<b>Licence Number</b>		<b>011-7S2104 F</b>				
						<b>Issued</b>		<b>2015-03-27</b>				
Company holding the licence			varmeco GmbH Co. KG			Country		Austria				
Brand (optional)						Website		www.varmeco.de				
Street, street number			Johann-Georg-Weinhart-Str. 1			E-mail		andreas.wimmer@varmeco.de				
Postal Code / City, province			87600 Kaufbeuren		Tel/Fax		+49 (0) 8341-9022-0					
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)						No						
						<b>Power output per collector module</b>						
						G = 1000 W/m <sup>2</sup>						
						T <sub>m</sub> -T <sub>a</sub>						
						0 K	10 K	30 K	50 K	70 K		
Collector name			Aperture area (A <sub>a</sub> )	Gross length	Gross width	Gross height	Gross area (A <sub>G</sub> )	W	W	W	W	W
			m <sup>2</sup>	mm	mm	mm	m <sup>2</sup>	W	W	W	W	W
VARIOcollect A 2x2 *			3,66	1.997	2.021	135	4,04	2.860	2.725	2.426	2.089	1.713
VARIOcollect A 8x3 *			22,38	2.994	7.971	138	23,87	17.503	16.675	14.845	12.782	10.487
Performance test method			Glazed liquid heating collector - steady state - indoor									
Performance parameters related to aperture area			η <sub>0</sub>	a <sub>1</sub>	a <sub>2</sub>							
Units			-	W/(m <sup>2</sup> K)	W/(m <sup>2</sup> K <sup>2</sup> )							
Test results - Flow rate and fluid see note 1			0,782	3,568	0,013							
Bi-directional incidence angle modifiers?			No <i>K<sub>θ</sub> values are obligatory for 50°.</i>									
Incidence angle modifiers K <sub>θ</sub> (θ)			Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
			K <sub>θ</sub> (θ)					0,98				0,00
Incidence angle modifier not bi-directional - leave fields blank												
Stagnation temperature - Weather conditions see note 2						T <sub>stg</sub>	189	°C				
Effective thermal capacity						ceff = C/Ag	6,51	kJ/(m <sup>2</sup> K)				
Max. intended operation temperature - see note 3						T <sub>max,op</sub>	-	°C				
Max. operation pressure - see note 3						p <sub>max,op</sub>	1000	kPa				
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m <sup>2</sup> aperture area												
Flow rate	kg/(s m <sup>2</sup> )											
Pressure drop, ΔP	Pa											
Optional weather data	Location											Link
Testing Laboratory			AIT Austrian Institute of Technology GmbH									
Website			www.ait.ac.at									
Test report id. number			2.04.00780.1.0-2-LT(1) / 2.04.00780.1.0-2-QT(1)				Date of test report		07.02.2013			
During the test GDIF/GTOT was always between			0,1	and	0,2							
Comments of testing laboratory:												
* This collector type is being offered in customer-specific dimensions. / Dieser Kollektortyp wird in kundenspezifischen Baugrößen angeboten.												
Note 1	Flow rate	0,020	kg/(s m <sup>2</sup> )	Fluid	Water							
Note 2	Irradiance, G = 1000 W/m <sup>2</sup> ; Ambient temperature, T <sub>a</sub> =30 °C											
Note 3	Given by manufacturer											
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