

Number KIP-088937/01 Replaces -  
Issued 22/07/2015 Expiry date 21/07/2020  
Report number 140400056/a Contract number KIP TH 710  
Page 1 of 1

## Product Certificate Solar Thermal Products

Kiwa Cermet Italia hereby declares that the **solar thermal system/collector**, type

**EASRA024  
EASRA026  
EASRA028  
EASRA030  
EASRA032  
EASRA034  
EASRA036  
EASRA038**

supplied by **SIC Divione Elettronica S.r.l.u.**  
**Via Gran Bretagna – Zona Industriale – 73100 Lecce (LE), Italy**

Is entitled to use the Solar Keymark label.

The compliance is based on examination to:  
EN 12975-2:2006 and the  
Specific Keymark Scheme Rules for Solar Thermal Products V24.00

A description of the test results is given in the appendix to this certificate.

This certificate is issued in accordance with the Kiwa Cermet Italia regulations for Product Certification. Publication of the certificate is allowed.

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Chief Operating Officer  
Giampiero Belcredi



**034**

Certificate

**Kiwa Cermet Italia S.p.A.**

Società con socio unico, soggetta all'attività di direzione e coordinamento di Kiwa Italia Holding Srl

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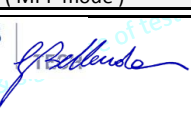
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SGQ N° 007A SSI N° 006G  
SGA N° 010D FSM N° 004I  
PRD N° 069B

<b>Summary of EN 12975 Test Results,</b> <b>annex to Solar KEYMARK Certificate</b>						<b>Licence Number</b>		<b>KIP-088937/01</b>																	
						<b>Issued</b>		<b>2015-07-22</b>																	
<b>Company holding the</b>		<b>SIC Divione Elettronica S.r.l.u.</b>				<b>Country</b>		<b>Italy</b>																	
<b>Brand (optional)</b>						<b>Website</b>		<b>www.sic-divisione-elettronica.it</b>																	
<b>Street, street number</b>		<b>Via Gran Bretagna - Zona Industriale</b>				<b>E-mail</b>		<b>info@sic-divisione-elettronica.it</b>																	
<b>Postal Code / City, province</b>		<b>73100 Lecce (LE)</b>				<b>Tel/Fax</b>		<b>39 832365945</b>																	
<b>Collector Type (flat plate glazed/un-glazed; evacuate tubular)</b>						<b>Flat plate collector - un-glazed</b>																			
Thermal / photo voltaic hybrid collector? (PVT collector)						Yes																			
Integration in the roof possible ? (manufacturers declaration)						Yes																			
						<b>Power output per collector module</b>																			
						G = 1000 W/m <sup>2</sup> ; Tm-Ta = 2 K																			
						Wind velocity																			
						<1 m/s		1.5 m/s		3 m/s															
<b>Collector name</b>						m <sup>2</sup>		mm		mm		mm		mm		m <sup>2</sup>		W		W		W			
EASRA024						0,60		1.947		323		43		0,63		238		241		252					
EASRA026						0,65		2.104		323		43		0,68		257		261		273					
EASRA028						0,70		2.261		323		43		0,73		281		285		299					
EASRA030						0,75		2.417		323		43		0,78		297		302		316					
EASRA032						0,80		2.574		323		43		0,83		317		322		337					
EASRA034						0,85		2.731		323		43		0,88		337		342		358					
EASRA036						0,90		2.887		323		43		0,93		356		362		379					
EASRA038						0,95		3.044		323		43		0,98		376		382		400					
<b>Performance test method</b>						<b>Glazed liquid heating collector - steady state - outdoor</b>																			
<b>Performance parameters related to aperture</b>						η0		b1		b2		bu													
<b>Units</b>						-		s/m		W/(m <sup>2</sup> K)		J/(m <sup>3</sup> K)													
<b>Test results - Flow rate and fluid see note 1</b>						0,385		11,893		0,742		0,0296													
<b>Bi-directional incidence angle</b>						Yes		<i>Kθ values are obligatory for 50°.</i>																	
<b>Incidence angle modifiers Kθ(θT) transversal direction</b>						Angle		10°		20°		30°		40°		50°		60°		70°		80°		90°	
						Kθ(θT)		1,00		1,00		1,00		0,99		0,95		0,85		0,72		0,50		0,00	
<b>Incidence angle modifiers Kθ(θL) longitudinal direction</b>						Angle		10°		20°		30°		40°		50°		60°		70°		80°		90°	
						Kθ(θL)		1,00		1,00		1,00		0,99		0,95		0,85		0,72		0,50		0,00	
<b>Stagnation temperature - Weather conditions see note 2</b>						Tstg		95,8		°C															
<b>Effective thermal capacity</b>						ceff = C/Ag		30,7		kJ/(m <sup>2</sup> K)															
<b>Max. intende operation temperature - see note 3</b>						Tmax,op		85		°C															
<b>Max. operation pressure - see note 3</b>						pmax,op		120		kPa															
<b>Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m<sup>2</sup> aperture area</b>																									
<b>Flow rate</b>						kg/(s m <sup>2</sup> )																			
<b>Pressure drop, ΔP</b>						Pa																			
<b>Optional weather data</b>						Location				Link															
<b>Testing Laboratory</b>						<b>EUROFINS – Product Testing Italy S.r.l.</b>																			
<b>Website</b>						<b>www.eurofins.com</b>																			
<b>Test report id. number</b>						<b>EPT.15.NRG.0065/52470;</b>				<b>EPT.15.NRG.0066/52470</b>				<b>Date of test report</b>		<b>2015/03/20</b>									
During the test GDIF/GTOT was always between						0,1		and		0,2															
<b>Comments of testing laboratory:</b>																									
Thermal performance parameters are given for the PV-module working with max. electrical power output ('MPP mode')																									
<b>Note 1</b>						<b>Flow rate</b>		0,020 kg/(s m <sup>2</sup> )		<b>Fluid</b>		Water		 											
<b>Note 2</b>						<b>Irradiance, G = 1000 W/m<sup>2</sup>; Ambient temperature, Ta=30 °C</b>																			
<b>Note 3</b>						<b>Given by manufacturer</b>																			
												Datasheet version: 4.05, 2013-11-07													
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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	KIP-088937/01
	Issued	22/07/2015

Annual collector output kWh/module														
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		
EASRA024	290	0		55			80			93				
EASRA026	315	0		59			86			101				
EASRA028	344	0		65			94			110				
EASRA030	363	0		68			100			117				
EASRA032	387	0		73			106			124				
EASRA034	411	0		77			113			132				
EASRA036	436	1		82			119			140				
EASRA038	460	1		87			126			148				

Collector mounting: Fixed or tracking Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations				
Location	Latitude °	Gtot kWh/m <sup>2</sup>	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/m <sup>2</sup>
Ta	Mean annual ambient air temperature	°C
Tm	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 (Tm). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.