AENOR

Keymark Certificate
Solar thermal energy

078/000252

AENOR certifies that the organization

SYSTOVI

registered office	14 AVENUE SYRMA 44470 CARQUEFOU *(Francia)*
supplies	Air heating solar collectors
in compliance with	Specific CEN KEYMARK Scheme Rules for Solar Thermal Products Version 28.00 – December 2015
Trade Mark Technical characteristics	R- SUN V54 Specified in Annex to the Certificate
Production site	14 AVENUE SYRMA 44470 CARQUEFOU *(Francia)*
Certification scheme	In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP 078.01. The tests have been performed according to the EN ISO 9806:2013 standard. The specific requirements for certifying solar air collectors are established in annex L of these Specific Rules.
First issued on Last issued on Validity date	2016-02-11 2021-02-11 2026-02-11

Rafael GARCÍA MEIRO
Chief Executive Officer

Original Electronic Certificate

AENOR INTERNACIONAL S.A.U.
Génova, 6. 28004 Madrid. España
Tel. 91 432 60 00.- www.aenor.com

Product certification body accredited by ENAC, number 1/C-PR271

AENOR

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	**Licence Number**	**078/000252**
	Issued	2021-02-11

Company holding the	SYSTOVI	**Country**	FRANCE
Brand (optional)	--	**Website**	www.systovi.com/
Street, street number	14 AVENUE SYRMA	**E-mail**	M.BENABDELKARIM@systovi.com
Postal Code / City, province	44470 CARQUEFOU	**Tel/Fax**	+33 02 40 92 44 20

Collector Type (flat plate glazed/un-glazed; evacuate tubular)	Flat plate collector (air heating)- glazed
Thermal / photo voltaic hybid collector? (PVT collector)	No
Integration in the roof possible ? (manufacturers declaration)	Yes

	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (AG)	Power output per collector module G = 1000 W/m²			
						Tm - Ta [K] =	7,9	9,1	11,2
Collector name	m²	mm	mm	mm	**m²**	ṁ [kg/h] =	345,6	237,6	180
R- SUN V54	1,36	1.500	987	40	**1,48**	Power output [W] =	818	739	652

Performance test method	Glazed air heating collector - steady state - indoor								
Mass flow rate depending performance parameters related to aperture area	η(345,6 kg/h)		η(237,6 kg/h)		η(180 kg/h)				
Units	--		--		--				
Test results - *Flow rate and fluid see note 1*	0,552		0,499		0,441				

Bi-directional incidence angle modifiers?	No	Kθ *values are obligatory for 50°.*								
Incidence angle modifiers Kθ(θ)	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Kθ(θ)					0,96				0,00
Incidence angle modifier not bi-directional - leave fields blank										

Stagnation temperature - *Weather conditions see note 2*	T_{stg}	138 °C
Effective thermal capacity	$c_{eff} = C/A_g$	1,11 kJ/(m²K)
Max. intende operation temperature - *see note 3*	$T_{max,op}$	70 °C
Max. operation pressure - *see note 3*	$p_{max,op}$	0,06 kPa

Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m² aperture area

Flow rate	kg/(s m²)	0,000	0,047	0,053	0,060	0,067	0,075			
Pressure drop, ΔP	Pa	0	47	65	86	109	143			

Optional weather data	Location		Link	

Testing Laboratory	Fundación CENER-CIEMAT, LEST
Website	www.cener.com
Test report id. number	30.2200.0-1-1 R Anexo 5 30.2764.0-1-1 Anexo 6
Date of test report	16/12/2014 16/12/2015

During the test G_{DIF}/G_{TOT} was always between	0,15	and	0,16

Comments of testing laboratory:

1 The tests have been carried out according to EN ISO 9806:2013

2 For open to ambient solar air heaters, sucking in ambient air, it is just possible to determine the instantaneous efficiency at certainmass flow rates and ambient temperature.

Note 1	**Flow rate**		kg/(s m²)	**Fluid**	Air
Note 2	**Irradiance, G = 1000 W/m²; Ambient temperature , T_a=30 °C**				
Note 3	**Given by manufacturer**				

CENER

Datasheet version: 4.06, 2014-01-15