Keymark Certificate
Solar thermal energy

078/000225

AENOR, Spanish Association for Standardization and Certification, certifies that the organization

SYSTOVI

registered office	5, RUE DU CHÈNE LASSÉ - CP 1008 44806 SAINT-HERBLAIN (France)
supplies	Air heating solar collectors
in compliance with	Specific CEN Keymark Scheme Rules for Solar Thermal Products Version 24.00 – November 2014
Trade Mark	R-SUN
Technical characteristics	Specified in Annexs to the Certificate
Production site	5, RUE DU CHÈNE LASSÉ - CP 1008 44806 SAINT-HERBLAIN (France)
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 78.01. The tests have been done according to the standard EN ISO 9806:2013. The specific requirements for certifying solar air collectors are established in Annex L of these Specific Rules.

This certificate supersedes 078/000225, dated 2014-12-26

First issued on	2014-12-26
Modified on	2015-01-22
Validity date	2019-12-26

Avelino BRITO
Chief Executive Officer

AENOR Asociación Española de Normalización y Certificación

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	078/000225
	Issued	2015-01-22

Company holding the	SYSTOVI	**Country**	FRANCE
Brand (optional)	--	**Website**	www.systovi.com/
Street, street number	5. Rue du Chene Lassé CP 1008	**E-mail**	M.BENABDELKARIM@systovi.com
Postal Code / City, province	44806 SAINT HERBLAIN	**Tel/Fax**	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

Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (Ag)	Power output per collector module G = 1000 W/m² #¡REF!			
						Tm - Ta [K] =	9	9,7	11,7
	m²	mm	mm	mm	m²	ṁ [kg/h] =	270	241,2	172,8
R- SUN	2,84	1.700	1.974	40	3,36	Power output [W] =	1.654	1.588	1.392

Performance test method	Glazed liquid heating collector - steady state - indoor			
Mass flow rate depending performance parameters related to aperture area	η(270 kg/h)	η(241,2 kg/h)	η(172,8 kg/h)	
Units	--	--	--	
Test results - *Flow rate and fluid see note 1*	0,493	0,473	0,415	

Bi-directional incidence angle	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	$c_{eff} = C/A_g$	2,32 kJ/(m²K)
Max. intende operation temperature - *see note 3*	$T_{max,op}$	70 °C
Max. operation pressure - *see note 3*	$p_{max,op}$	0,1 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	0,042	0,053	0,063	0,066	0,075				
Pressure drop, ΔP	Pa	0	54	63	86	98	124				

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 30,2200,0-2-1 R Anexo 6	**Date of test report**	2014/12/16	

During the test G_{DIF}/G_{TOT} was always between	0,12	and	0,13

Comments of testing laboratory:

1 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.

2 Efficiency test has been performed in two collectors connected in parallel in an open loop, except for pressure drop test

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

Datasheet version: 4.06, 2014-01-15