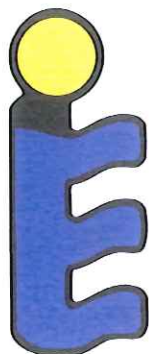


Keymark Certificate

Solar thermal energy



078/000227

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-VOLT
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

AENOR Asociación Española de Normalización y Certificación

Avelino BRITO
Chief Executive Officer

AENOR

Asociación Española de
Normalización y Certificación

Génova, 6. 28004 Madrid. España
Tel. 902 102 201 – www.aenor.es



Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number		078/000227				
						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)- unglazed						
Thermal / photo voltaic hybrid collector? (PVT collector)						Yes						
Integration in the roof possible ? (manufacturers declaration)						Yes						
						Power output per collector module						
						G = 1000 W/m ² ; u = 1m/s						
Collector name						T _m - T _a [K] =		8,3		9	9,9	
						ṁ [kg/h] =		280,8		244,8	187,2	
R-Volt						Aperture area (A _a)		3,12		1.700	1.974	
						Gross length		40		3,36		
						Gross width						
						Gross height						
						Gross area (A _g)						
						Power output [W] =		1.524		1.440	1.225	
Performance test method						Glazed air heating collector - steady state - indoor						
Performance parameters (gross area)						η _{0,hem}		b1		b2	bu	
Units						-		W/(m ² K)		Ws/(m ³ K)	s/m	
Test results						187,2(kg/h)		0,358		--	--	0,0405
						244,8 kg/h		0,419		--	--	0,0469
						280,8 kg/h		0,443		--	--	0,0470
Bi-directional incidence angle						No		Kθ values are obligatory for 50°.				
Incidence angle modifiers Kθ(θ)						Angle		10°		20°	30°	40°
						Kθ(θ)						0,96
Incidence angle modifier not bi-directional - leave fields blank												
Stagnation temperature - Weather conditions see note 2						T _{ste}		75,3		°C		
Effective thermal capacity						C _{eff} = C/A _e		2,55		kJ/(m ² K)		
Max. intende operation temperature - see note 3						T _{max,op}		70		°C		
Max. operation pressure - see note 3						p _{max,op}		0,15		kPa		
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m ² gross area												
Flow rate		kg/(s m ²)		0,000	0,045	0,050	0,058	0,062				
Pressure drop, ΔP		Pa		0	105	142	215	248				
Optional weather data						Location		Link				
Testing Laboratory						Fundación CENER-CIEMAT, LEST						
Website						www.cener.com						
Test report id. number						30.2200.0-3-1		30.2200.0-4-1		Date of test report		
										2014/12/16		
During the test G _{DIF} /G _{TOT} was always between						0,14		and	0,15			
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 certain mass 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												
3 Thermal performance parameters are given for the PV-module working with max. electrical power output ('MPP mode')												
Note 1		Flow rate		--		Fluid		Air				
Note 2		Irradiance, G = 1000 W/m ² ; Ambient temperature, T _a =30 °C										
Note 3		Given by manufacturer										
Datasheet version: 4.06, 2014-01-15												
AENOR - Génova, 6. - 28004 - Madrid, España - Tel. 902 102 201 - www.aenor.es												
Product certification body accredited by ENAC, number 01/C-PR002.078												