

CERTIFICATE OF CONFORMITY

Certificate No SKM 10043.1

DQS Hellas grants the present certificate to the enterprise:

SONNE AKTION LTD 39 Chalkidikis, 14451 Metamorfosi

for the product:

Flat plate Solar Collector type: Phaethon SA170, Phaethon SA200, Phaethon SA240, Phaethon SA240 HOR

which is produced in conformity with the normative document:

EN 12975-1:2011 ISO 9806:2013

at the following location:

68 Km N.R. Athens - Lamia 32009 Schimatari Viotias



The present certificate is granted in accordance with:

- the DQS Hellas General Rules for the Certification of Products,
- the Specific Rule for Certification EKIIII.001 «Specific Rule for Certification of Solar Collectors, and Thermal Solar Heating Systems for Domestic Hot Water»,

and is ruled by the terms of the relevant contract between DQS Hellas and the enterprise.

 Date of issue:
 2024-09-10

 Date of valid:
 2027-09-10

Harante

Panagiotis Giannoutsos Director of Certification

wy www.

Dr. Emmanuel Deliyannakis Managing Director



Products Certification Cert. No 735 Accredited Body: 2, Kalavriton Street, 14564 Kifissia - Athens, Greece

ГКПП-08-15/12/2014





CERTIFICATION LICENCE TO USE KEYMARK

Certificate No SKM 10043.1

DQS Hellas grants the present certificate to the enterprise:

SONNE AKTION LTD 39 Chalkidikis, 14451 Metamorfosi

for the product:

Flat plate Solar Collector type: Phaethon SA170, Phaethon SA200, Phaethon SA240, Phaethon SA240 HOR

which is produced in conformity with the normative document:

EN 12975-1:2011 ISO 9806:2013

at the following location:

68 Km N.R. Athens - Lamia 32009 Schimatari Viotias



The present certificate is granted in accordance with:

- the DQS Hellas General Rules for the Certification of Products,
- the Specific Rule for Certification EKIII.001 «Specific Rule for

Certification of Solar Collectors, and Thermal Solar Heating Systems for Domestic Hot Water»,

• the Specific CEN Keymark Scheme Rules for Solar Thermal Products,

and is ruled by the terms of the relevant contract between DQS Hellas and the enterprise.

Date of issue:2024-09-10Date of valid:2027-09-10

Martin Ce

Panagiotis Giannoutsos Director of Product Certification

w/www.

Dr. Emmanuel Deliyannakis Managing Director

Notified Body: 2, Kalavriton Street, 14564 Kifisia - Athens, Greece

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Annex to Solar Keymark Certificate - Summary of EN ISO 9806-2013 Test Results							e Numb	er	SKM 10043/1							
							Date issued			2018-08-30						
3000.2013 TEST RESULTS						Issued	by		DQS Hellas							
Licence holder	SONNE ACTION LTD						Country Greece									
Brand (optional)	Phaethon						www.sonne.gr									
Street, Number	68 Km N.R. Athens - Lamia					E-mail	il info@sonne.gr									
Postcode, City	32009 Schimatari Viotias						30 2351037257									
Collector Type						Elat plat	o collocto	r dozod	<							
						i lac plac	e conecce	n, glazeu								
								Power output per collector								
	ᆂᄵᆝᇍᅄᄫ						Gb = 1	850 W/m²	²; Gd = 150 W/m²							
		ros rea	ros	ros ridt	ros eigl	0.14	101/		- ба	70.1/	45.14					
		<u> </u>	<u>6</u>	53	<u> </u>			30 K	50 K	70 K	46 K					
Deathon 5417	0	1 CF		mm	mm	1 205	VV	VV	VV	VV C20	VV PEO					
Phaethon SA200		2.00	1,560	1,040	65 05	1,205	1,142	996	006	752	1.041					
Phaethon \$4240		2.00	1 005	1,000	85	1,400	1,504	1,207	1 1 9 0	808	1,041					
Phaethon SA240		2.35	1,335	1,200	85	1 745	1,054	1 442	1 1 1 9 0	898	1 244					
		2.00	1,200	1,000	05	1,745	1,004	1,442	1,100	000	1,244					
									<u> </u>							
									<u> </u>							
				1			1									
		([
										3						
							05 S 10 10 1									
Power output per m ² gross area						730	692	603	498	376	520					
Performance paran	neters test method		Steady s	tate - out	door											
Performance parameters (related to AG)		η0,hem	a1	a2												
Units			3 	W/(m²K)	W/(m²K²)											
Test results			0.730	3.590	0.021											
Incidence angle mo	difier test method		Steady s	tate - out	door											
Bi-directional incide	ence angle modifiers	No														
Incidence angle mo	difier	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°					
Transversal		K _{θ⊤.coll}					0.84				0.00					
Longitudinal		Κ _{θL.coll}					0.84				0.00					
Heat transfer medi	um for testing						Water									
Flow rate for testin		dm/dt 0.020 kg/(s			kg/(sm²	2)										
Maximum tempera		$(\vartheta_m - \vartheta_a)_{max}$ 46 K			К											
Standard stagnatio		ປ _{stg} 182			°C											
Effective thermal ca		C/m ² 7.97 kJ/(kJ/(Km²)											
Maximum operatin		ϑ _{max_op} 100 ℃			°C											
Maximum operatin		P _{max,op} 1000 kPa														
Testing laboratory	www.solar.d			emokritos.gr												
Test report(s)	4228 DE1		Dated		25/7/2018											
4229 DE1 4230 DO1								20/7/2018								
C	4230 DQ1	30/7/2018														
Comments of testin	ng laboratory						Data	isheet ve	rsion: 5.0	1, 2016-0)3-01					
							N.C.S.R "D E M O K R I T O S" SOLAR ENERGY LABORATORY Head: Dr Vacsilis Belessions Tel: +210 6504359 - Fax: +210 6564599 153 10 Ag. Paraskevi - Attiki - Greech									
Central Offices: K	alavriton 4, 145 64 ki	isia, Athe	ens, Tel: 4	301 6233	493-4 , Fa	ax: +301 6	5233495.	http://w	ww.dash	ellas.gr.	e-mail:					

ioannisalexiou@dqshellas.gr

Annex to Solar Keymark Certifica		Licence Number					SKM 10043/1							
Supplementary Information	Issued					2018-08-30								
Annual collector output in kWh/co	llector	at moa	n fluic	tomne	raturo	ւ Գ հ։	sed on		206.20	13 tost	roculto			
Standard Locations		Davos	0 _m , be		ockhol	m		lürzhu	3 //a					
Collector name	Atnens				50°C	75°C	25°C							
Phaethon SA170	1.747	1.169	681	1.303	837	453	957	586	314	1.038	625	328		
Phaethon SA200	2,118	1,417	825	1,580	1,015	549	1,160	710	381	1,258	757	397		
Phaethon SA240	2,531	1,694	986	1,888	1,213	656	1,387	849	455	1,503	905	474		
Phaethon SA240 HOR	2,531	1,694	986	1,888	1,213	656	1,387	849	455	1,503	905	474		
Appual output par m ² gross area	1.050	700	412	700	507	275	F90	255	100	620	270	100		
Fixed or tracking collector	1,059	709	413 Fix	790 (ed (slor	507 e = latit	275 tude - 1	580 5°∙ roun	ded to i	190 nearest	629 5°)	379	199		
Annual irradiation on collector plane	al irradiation on collector plane 1765 kWh/m ²				L4 kWh	/m ²	116	6 kWh	n/m^2 1244 kW/h/m ²					
Mean annual ambient air temperature	18.5°C			3.2°C			7.5°C			9.0°C				
Collector orientation or tracking mode	ector orientation or tracking mode South, 25° South, 30° South								5° South, 35°					
The collector is operated at constant ter	mperati	ure	(mean o	of in- an	d outlet	tempe	ratures).	The ca	lculatio	n of the	annual			
collector performance is performed with	h the of	ficial Sol	lar Keyı	mark spi	eadshe	et tool	Scenoca	lc Ver. 5	5.01 (M	arch 201	.6). A de	etailed		
description of the calculations is availab	le at w	ww.solar	rkeyma	rk.org/s	cenocal	С								
		Ado	ditiona	al Infoi	matio	n								
Collector heat transfer medium										Water-	Glycole			
Hybrid Thermal and Photo Voltaic collect	ctor									N	0			
The collector is deemed to be suitable for	or roof	integrati	ion							N	0			
The collector was tested successfully ac	cording	to EN IS	50 9806	:2013 u	nder th	e tollow	ving cond	ditions:		•				
Climate class (A, B or C)									2/	A 100	-) 2		
Maximum tested positive load						24	2400 Pa		a Pa					
Hail resistance using steel ball (maximu						2		r	n					
		Enorm	(Labo	lling Ir	forma	tion								
<u> </u>	Deferrer	chergy) / EL I \ NI	- 011/2	012 0	- f				
Phaethon SA170	Referen	1 GE	A _{sol} (m)	Data re	e quirea	ency (n	(EU) N	0 811/2	2013 - K	eterenc	e Area	A _{sol}		
Phaethon \$4200	1.65					Remark: Collector efficiency (n) is defined in CDR (FU)								
Phaethon SA200		2.00		= 811/2013 as collector efficiency of the solar collector at (
Phaethon SA240	240 2.39				temperature difference between the solar collector and the									
Phaethon SA240 HOR		2.39		surrou	nding ai	r of 40	olar irr	olar irradiance of 1000						
				W/m², expressed in % and rounded to						o the nearest integer.				
				Deviating from the regulation η_{col} is based on reference an								а		
				(A sol) which is aperture area for values according to EN 12								75-2 or		
	gross area					rea for ISO 9806:2013.								
				Data required for CDR (EU) No 812/2013 - Reference						e Area	A _{sol}			
				Zero-lo	ss effici	ency (η	0)		0.7	730	-	-		
				First-or	der coe	fficient	(a ₁)		3.	59	W/(I	m²K)		
				Second	-order (coefficie	a_2	(EO9)	0.0	021	W/(r	n⁴K⁴)		
				Remar	ce angi	e moun	er IAIVI	(50) section	U. n are re	84 lated to	collecto	nr		
				reference area (A_{col}) which is aperture area for values acco							eonceu s accor	dina		
				to EN 12975-2 or gross area for ISO 9806 Consistent date						t data s	ets for			
either aperture of						<i>e</i> or gross area can be used in calculations like in the								
				regulation 811 and 812 and simulation programs.						-				
				regulat	1011 011				in progr	unins.				