




Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate					Licence Number		011-7S1373 A			
					Issued		2012.05.10			
Company holding licence		HELIONAL			Country		Greece			
Street		Oreokastro Industrial Park,P.O.Box 89			Website		www.helional.com			
Postal Code		57013	Thessaloniki		E-mail		info@helional.com			
					Tel. / Fax		+30 2310 783 -691/-498			
System classification / Systemeigenschaften / Caractéristiques du système										
Flow principle					Thermosyphon					
Direct/indirect					Indirect					
Press. principle					Closed					
Drain back/down					Always filled (no drain)					
Storage location					Outdoor					
Storage position					Horizontal					
Internal back-up					None					
If other internal back-up, please specify:										
EN12976 type					Solar only					
Collector(s)					Storage(s)					
Company		HELIONAL			Company		HELIONAL			
<i>Keymark reg, no (if available)</i>		84/01. 19/2			<i>Keymark reg, no. (if available)</i>					
Model	Per module/			Number of modules	Model	Total volume	Gross diameter/width	Gross length	Back-up heated volume	El. back-up power
	Aperture area (Aa)	Gross length	Gross width							
	m ²	m	m	min - max						
FPS 1.5	1.78	1.992	0.992	2 - 2	HFPS 150/3	150	550	1260	0	--
				-	HFPS 200/3	200	590	1420	0	--
				-						
				-						
				-						
				-						
Controller					Fluid					
Company		n/a			Company		HOLTCHIM			
Model		n/a			Model		Propyleneglycol			
							n/a °C			
System family overview										
Collector name	Number of collectors									
	Storage									
	HFPS 150/3			HFPS 200/3						
FPS 1.5	2			2						
Testing Laboratory					Institut für Solartechnik SPF, CH-8640 Rapperswil					
Website					www.solarenergy.ch					
Test report id. number					S141EN					
Date of test report					31.08.2010					
Comments of test lab										

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5% to ± 15%

Version 2.1, 2012-02-08



Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate				Certification No.		011-751373 A	
				Issued		10.05.2012	
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Street		Oreokastro Industrial Park,P.O.Box 89		Website		www.helional.com	
Postal Code		57013	Thessaloniki	E-mail		info@helional.com	
				Tel. / Fax		+30 2310 783 -691/-498	

System family overview

Collector name	For each storage and collector size, give number of collectors											
	HFPS 150/3			HFPS 200/3								
FPS 1.5	2			2								

Name of system configuration				HFPS 150/3			
Collector name	FPS 1.5	No. Collectors	2	Storage name	HFPS 150/3		

Calculated annual results

Location	Daily draw-off (litres/day)																	
	50			80			110			50			80			110		
	l/d			l/d			l/d			l/d			l/d			l/d		
	Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y								
Stockholm, SE	1'708	2'173	2'637	926	1'071	1'187	54.2	49.3	45.0	0	0	0						
Würzburg, DE	1'638	2'085	2'532	945	1'118	1'263	57.7	53.6	49.9	0	0	0						
Davos, CH	1'848	2'356	2'856	1'392	1'624	1'799	75.3	68.9	63.0	0	0	0						
Athens, GR	1'270	1'621	1'962	1'118	1'356	1'558	88.0	83.7	79.4	0	0	0						

Perf. indicators for the table above

Q _d	kWh/y	Heat demand
Q _L	kWh/y	Back-up heating needed
Q _{par}	kWh/y	Electricity for pumps/controllers

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1'157	1'230	1'684	1'718
	T _a	7.5	9.0	3.2	18.5
	T _c	8.5	10.0	5.4	17.8
	± ΔT _c	6.4	3.0	0.8	7.4

G	kWh/m ²	Annual irradiation South, 45°
T _a	°C	Annual mean air temperature
T _c	°C	Annual mean cold water temp.
ΔT _c	°C	Seasonal variation of T _c
T _h	45 °C	Desired hot water temperature (mixing valve temperature).

Max. operating press. - collector side	300	kPa	Max. operating press. - tank side	1'000	kPa
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Testing Laboratory	Institut für Solartechnik SPF, CH-8640 Rapperswil
Website	www.solarenergy.ch
Test report id. number	S141EN
Date of test report	2010.08.31
Test method	ISO 9459-5 (DST)

Comments of test lab
HFPS 150/3 was tested as the "medium" subtype and the subtype having the highest ratio of collector aperture area to store volume.





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System family overview

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	HFPS 150/3			HFPS 200/3								
FPS 1.5	2			2								

Name of system configuration	HFPS 150/3				
Collector name	FPS 1.5	No. Collectors	2	Storage name	HFPS 200/3

Calculated annual results

Location	Daily draw-off (litres/day)											
	110	140	170	110	140	170	110	140	170	110	140	170
	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d
	Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y		
Stockholm, SE	1'244	1'708	2'173	627	745	828	50.4	43.6	38.1	0	0	0
Würzburg, DE	1'191	1'638	2'085	648	775	884	54.4	47.3	42.4	0	0	0
Davos, CH	1'349	1'848	2'356	953	1'093	1'225	70.6	59.1	52.0	0	0	0
Athens, GR	929	1'270	1'621	797	976	1'154	85.8	76.8	71.2	0	0	0

Perf. indicators for the table above


Q _d	kWh/y	Heat demand
Q _L	kWh/y	Back-up heating needed
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Website	www.solarenergy.ch
Test report id. number	S141EN
Date of test report	2010.08.31
Test method	ISO 9459-5 (DST)

Comments of test lab	
The SPF test number for the system subtype HFPS 200/3 is S139 ST1. The annual performance for the system subtype was calculated according to the Specific CEN Keymark Scheme Rules for system families.	

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Version 2.1, 2012-02-08