



<b>Summary of</b>	<b>EN12976-2</b>	<b>SOLAR SYSTEM test results</b>	<b>Licence Number</b>	<b>ICIM-CLS-000155-00</b>						
<b>Annex to Solar KEYMARK Certificate</b>			<b>Issued</b>	2018-08-03						
<b>Company</b>	ATI DI MARIANI SRL		<b>Country</b>	Italy						
<b>Brand (optional)</b>	--		<b>Website</b>	<a href="http://www.atimariani.it">www.atimariani.it</a>						
<b>Street</b>	Via E.Mattei, 461; Z.ind.4 Torre del Moro		<b>E-mail</b>	<a href="mailto:marco.mariani@atimariani.it">marco.mariani@atimariani.it</a>						
<b>Postal Code</b>	IT-47522	Cesane (FC)	<b>Tel. / Fax</b>	+39	0547 609711/ 609724					
<b>System classification</b>										
<b>Application(s)</b>	Hot water									
<b>Solar loop, circulation principle</b>	Thermosyphon									
<b>Direct solar loop / heat exchanger</b>	Direct									
<b>Open, vented or closed solar loop</b>	Closed									
<b>Drain back/down</b>	Always filled (no drain)									
<b>Store location</b>	Outdoor									
<b>Store orientation (of main axis)</b>	Horizontal									
<b>Type of auxiliary heating (internal back-up heat)</b>	Electric									
<b>If other auxiliary/internal back-up heating, please specify:</b>	Optional									
<b>Solar+supplementary OR Solar-only / Solar pre-heat</b>	Solar only / Solar preheat									
<b>Collector(s)</b>			<b>Heat store(s)</b>							
<b>Company</b>	ATI DI MARIANI SRL		<b>Company</b>	ATI DI MARIANI SRL						
<i>Keymark lic.no. if available</i>	--		<i>Keymark lic.no. if available</i>	--						
<b>Collector name</b>	<b>Per module</b>			<b>Store name</b>	<b>Total nominal volume</b>	<b>Gross height</b>	<b>Gross width</b>	<b>Gross depth</b>	<b>Auxiliary heated volume</b>	<b>Electrical aux. heating power</b>
	<b>Gross Area (Ag)</b>	<b>Gross length</b>	<b>Gross width</b>							
DISCOSOL DS01	1,20	1095	1095	DISCOSOL DS01	200	649	1095	1095	--	--
<b>Solar loop controller</b>			<b>Solar loop fluid</b>							
<i>Keymark lic.no. if available</i>	--		<b>Recommended/required</b>	No recommend./requirements						
<b>Company</b>	--		<b>Company</b>	--						
<b>Name</b>	--		<b>Name</b>	--						
<b>Solar loop pump - power range</b>	-- W	to	-- W	<b>Freezing point</b>	-- °C					
<b>System family overview</b>										
<b>Collector name</b>	<b>Number of collectors in each configuration for each store</b>									
	<b>Store name</b>									
	DISCOSOL DS01									
DISCOSOL DS01	1									
<b>Testing Laboratory</b>			Institut für Solartechnik SPF, CH-8640 Rapperswil							
<b>Website</b>			<a href="http://www.spf.ch">www.spf.ch</a>							
<b>Test report id. number</b>			S242COLL; S242EN							
<b>Date of test report</b>			2018-08-28							
<b>Comments of test lab</b>										
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<b>Brand (optional)</b>	--		<b>Website</b>	www.atimariani.it
<b>Street</b>	Via E.Mattei, 461; Z.ind.4 Torre del Moro		<b>E-mail</b>	marco.mariani@atimariani.it
<b>Postal Code</b>	IT-47522	Cesane (FC)	<b>Tel. / Fax</b>	+39 0547 609711/ 609724

**Parameters for systems extrapolation (Annex D)**

<b>Collector of measured system</b>			<b>Storage tank of measured system</b>	
$A_{ref} [m^2]$	--		<b>Volume [l]</b>	--
$\eta_0$	--		$A_{hx} [m^2]$	--
$a_1 [W/Km^2]$	--		<b>Piping</b>	
$a_2 [W/Km^2]$	--			
<b>IAM (50°)</b>	--		$U_{loop,p}$	--

**System parameters**

Name of System Configuration	Tested/Extrapolation	$A_c^* [m^2]$	$u_c^* [W/Km^2]$	$U_s [W/K]$	$C_s [MJ/K]$	$S_c [-]$	$D_L [-]$	$f_{aux} [-]$
DISCOSOL DS01	▼	0,62	15,24	4,30	0,723	0,79	0,52	--
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<b>Date of test report</b>	2018-08-28
<b>Test method</b>	ISO 9459-5 (DST)
<b>Comments of test lab</b>	--
	 INSTITUT FÜR SOLARTECHNIK 

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

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**System family overview**

Collector name	For each storage and collector size, give number of collectors												
	DISCOSOL DS01												
DISCOSOL DS01	1												

<b>Name of system configuration</b>	DISCOSOL DS01		
<b>Collector name</b>	DISCOSOL DS01	<b>No. Collectors</b>	1
		<b>Storage name</b>	DISCOSOL DS01

**Calculated annual results for "solar-only / preheat system"**

Location	Qd,sh MJ/y	Daily drawoff 140 l				Daily drawoff 170 l				Daily drawoff 200 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
		MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	--	7821	1963	0	25	9492	2098	0	22	11164	2222	0	20
WürzburgDE	--	7506	2109	0	28	9114	2288	0	25	10691	2416	0	23
Davos CH	--	8483	2672	0	32	10281	2868	0	28	12110	3015	0	25
Athens GR	--	5834	2970	0	51	7064	3221	0	46	8326	3422	0	41

**Perf. indicators for the table above**

Qd,sh	MJ/y	Not relevant for solar domestic hot water system
Qd	MJ/y	Annual heat demand for domestic hot water
QL	MJ/y	Annual heat energy delivered by the solar system
Qpar	MJ/y	Annual parasitic energy: (electricity for pumps/controllers)
$f_{sol}=Q_L/Q_d$	-	Solar fraction

<b>Ref. conditions</b>	G	Stockholm SE	Würzburg DE	Davos CH	Athens GR
		1.157	1.230	1.684	1.736
	T <sub>a,ave</sub>	7,5	9,0	3,2	18,5
	T <sub>c,ave</sub>	8,5	10,0	5,4	17,8
	± ΔT <sub>c</sub>	6,4	3,0	0,8	7,4

G	kWh/m <sup>2</sup>	Annual irradiation South, 45°
T <sub>a,ave</sub>	°C	Annual average outdoor air temperature
T <sub>c,ave</sub>	°C	Annual average mains cold water temp.
ΔT <sub>c</sub>	K	Seasonal variation of T <sub>c</sub>
Th	45 °C	Desired hot water temperature (mixing valve temperature).

<b>Max. operating press. - collector side</b>	600	kPa	<b>Max. operating press. - tank side</b>	600	kPa
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