



Certificate number	17021 Rev.1	Replaces	17021 Rev.0
Issued	08/04/2022	First edition	10/02/2017
Report number	PKC0001762	Expiry date	14/12/2026
Page	1 of 1	Contract number	PKC0003652

Product Certificate Solar Thermal Products

License holder: **Pleion S.p.A.**
Via Venezia 11 – 37053 Cerea (VR), Italy

Production site(s): Pleion S.p.A.
Via Venezia 11 – 37053 Cerea (VR), Italy

Product Solar thermal system

Model(s): EGO 110; EGO 150; EGO 180; EGO 220; EGO 260

Kiwa Cermet Italia hereby declares that the product can be considered complying to the testing requirements and is entitled to use the Solar Keymark Label, based upon the following aspects:

Laboratory testing of the solar thermal products, which are performed by an accredited laboratory in accordance to ISO/IEC 17025 -see annex-, using the following standards:

- EN 12976-2:2006
Thermal solar systems and components - Factory made systems - Part 2: Test methods

Specific CEN Keymark Scheme Rules for Solar Thermal Products SKN_N0444R5.

Periodic Inspection of the Factory site(s) performed by Kiwa Cermet Italia.

A description of the test results is given in the annex to this certificate.

This certificate is issued in accordance with the Kiwa Cermet Italia regulations.

Publication of the certificate is allowed.

The validity of this certificate is subject to the positive result of periodic surveillance visits.

The validity of this certificate can be verified on request at the following e-mail address: energy@kiwacermet.it.

Any total or partial reproduction of this document in any form, without Kiwa Cermet Italia express authorization, is prohibited.

Kiwa Cermet Italia S.p.A.

Società con socio unico, soggetta all'attività di direzione e coordinamento di Kiwa Italia Holding Srl

Via Cadriano, 23

40057 Granarolo dell'Emilia (BO)

Tel +39.051.459.3.111

Fax +39.051.763.382

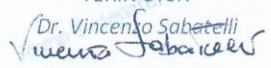
E-mail: info@kiwacermet.it

www.kiwa.it

Chief Operating Officer
Giampiero Belcredi



Summary of	EN12976-2	SOLAR SYSTEM test results	Licence Number	17021 Rev.1						
Annex to Solar KEYMARK Certificate			Issued	2022-04-08						
Company	Pleion S.p.A.		Country	Italy						
Brand (optional)			Website	www.pleion.it						
Street	Via Venezia 11		E-mail	info@pleion.it						
Postal Code	37053	Cerea (VR)	Tel. / Fax	+39 0442320295						
System classification										
Application(s)		Hot water								
Solar loop, circulation principle		Thermosyphon								
Direct solar loop / heat exchanger		Direct								
Open, vented or closed solar loop		Closed								
Drain back/down		Always filled (no drain)								
Store location		Int. collector-store								
Store orientation (of main axis)		Horizontal								
Type of auxiliary heating (internal back-up heat)		None								
If other auxiliary/internal back-up heating, please specify:										
Solar+supplementary OR Solar-only / Solar pre-heat		Solar only / Solar preheat								
Collector(s)		Heat store(s)								
Company		Company								
Pleion S.p.A.		Pleion S.p.A.								
Keymark lic.no. if available		Keymark lic.no. if available								
Collector name	Per module			Store name	Total nominal volume	Gross height	Gross width	Gross depth	Auxiliary heated volume	Electrical aux. heating power
	Gross Area (Ag)	Gross length	Gross width							
	m ²	mm	mm							
EGO 110	1.52	2136	711	EGO 110	105	1870				
EGO 150	1.93	2136	906	EGO 150	140	1870				
EGO 180	2.35	2136	1101	EGO 180	175	1870				
EGO 220	2.77	2136	1296	EGO 220	210	1870				
EGO 260	3.18	2136	1491	EGO 260	245	1870				
Solar loop controller		Solar loop fluid								
Keymark lic.no. if available		Recommended/required								
Company Name		Company Name								
Solar loop pump - power range		Freezing point								
W to W		°C								
System family overview										
Collector name	Number of collectors in each configuration for each store									
	Store name									
	EGO 110	EGO 150	EGO 180	EGO 220	EGO 260					
EGO 110	1									
EGO 150		1								
EGO 180			1							
EGO 220				1						
EGO 260					1					
Testing Laboratory		ENEA - Centro Ricerche Trisaia								
Website		www.trisaia.enea.it								
Test report id. number		RP.2016.SYS.191.1								
Date of test report		2016-12-15								
Comments of test lab		Additional test reports: RP.2016.SYS.191a.1 issued by ENEA - Centro Ricerche Trisaia on 21/12/2016. Aperture area of collectors: EGO 110: 1.09 m²; EGO 150: 1.48 m²; EGO 180: 1.86 m²; EGO 220: 2.25 m²; EGO 260: 2.64 m².								
		ENEA TERIN-STSN Dr. Vincenzo Sabatelli <i>Vincenzo Sabatelli</i>								

Summary of		EN12976-2		test results		Certification No.		17021 Rev.1					
Annex to Solar KEYMARK Certificate						Issued		2022-04-08					
Company		Pleion S.p.A.				Country		Italy					
Brand (optional)						Website		www.pleion.it					
Street		Via Venezia 11				E-mail		info@pleion.it					
Postal Code		37053		Cerea (VR)		Tel. / Fax		+39 0442320295					
System family overview													
For each storage and collector size, give number of collectors													
Collector name	EGO 110	EGO 150	EGO 180	EGO 220	EGO 260								
EGO 110	1												
EGO 150		1											
EGO 180			1										
EGO 220				1									
EGO 260					1								
Name of system configuration						EGO 110							
Collector name	EGO 110	No. Collectors	1		Storage name	EGO 110							
Calculated annual results for "solar-only / preheat system"													
Location	Qd,sh	Daily drawoff				Daily drawoff				Daily drawoff			
		80	I	110	I	140	I						
	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	MJ/y	%
Stockholm SE		4461	1829		0.41	6134	2104		0.34	7808	2186		0.28
Würzburg DE		4278	2013		0.47	5882	2365		0.40	7487	2459		0.33
Davos CH		4840	2663		0.55	6655	3011		0.45	8471	3121		0.37
Athens GR		3325	2466		0.74	4571	3043		0.67	5818	3362		0.58
Optional OP													
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											
Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR	Optional OP							
	G	1,157	1,230	1,684	1,736								
	T _{a,ave}	7.5	9.0	3.2	18.5								
	T _{c,ave}	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,ave}	°C	Annual average outdoor air temperature											
T _{c,ave}	°C	Annual average mains cold water temp.											
ΔT _c	K	Seasonal variation of T _c											
T _h	45 °C	Desired hot water temperature (mixing valve temperature).											
Max. operating press. - collector side		400	kPa	Max. operating press. - tank side		400	kPa						
Testing Laboratory		ENEA - Centro Ricerche Trisaia											
Website		www.trisaia.enea.it											
Test report id. number		RP.2016.SYS.191.1											
Date of test report		2016-12-15											
Test method		ISO 9459-2 (CSTG)											
Comments of test lab													
Additional test report: RP.2016.SYS.191a.1.													
ENEA TERIN-STSN Dr. Vincenzo Sabatelli 													

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

Version 4.5, 2017-10-24

Summary of		EN12976-2		test results		Certification No.		17021 Rev.1					
Annex to Solar KEYMARK Certificate						Issued		2022-04-08					
Company		Pleion S.p.A.				Country		Italy					
Brand (optional)						Website		www.pleion.it					
Street		Via Venezia 11				E-mail		info@pleion.it					
Postal Code		37053		Cerea (VR)		Tel. / Fax		+39 0442320295					
System family overview													
For each storage and collector size, give number of collectors													
Collector name	EGO 110		EGO 150		EGO 180		EGO 220		EGO 260				
EGO 110	1												
EGO 150			1										
EGO 180					1								
EGO 220							1						
EGO 260									1				
Name of system configuration						EGO 150							
Collector name	EGO 150		No. Collectors		1		Storage name		EGO 150				
Calculated annual results for "solar-only / preheat system"													
Location	Qd,sh	Daily drawoff				Daily drawoff				Daily drawoff			
		110				140				170			
	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	MJ/y	%
Stockholm SE		6134	2529		0.41	7808	2833		0.36	9481	2947		0.31
Würzburg DE		5882	2782		0.47	7487	3168		0.42	9091	3313		0.36
Davos CH		6655	3682		0.55	8471	4064		0.48	10286	4209		0.41
Athens GR		4571	3401		0.74	5818	4007		0.69	7065	4403		0.62
Optional OP													
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											
Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR	Optional OP							
	G	1,157	1,230	1,684	1,736								
	T _{a,ave}	7.5	9.0	3.2	18.5								
	T _{c,ave}	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,ave}	°C	Annual average outdoor air temperature											
T _{c,ave}	°C	Annual average mains cold water temp.											
ΔT _c	K	Seasonal variation of T _c											
Th	45 °C	Desired hot water temperature (mixing valve temperature).											
Max. operating press. - collector side		400	kPa	Max. operating press. - tank side		400	kPa						
Testing Laboratory		ENEA - Centro Ricerche Trisaia											
Website		www.trisaia.enea.it											
Test report id. number		RP.2016.SYS.191.1											
Date of test report		2016-12-15											
Test method		ISO 9459-2 (CSTG)											
Comments of test lab													
Additional test report: RP.2016.SYS.191a.1.													
ENEA TERIN-STSN Dr. Vincenzo Sabatelli Vincenzo Sabatelli													

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

Version 4.5, 2017-10-24

Kiwa Cermet Italia S.p.A. • Via Cadriano, 23
• 40057 Granarolo dell'Emilia (BO) • Italy

Tel: +39 0514593111 • Fax: +39 051763382 • E-Mail: info@kiwacermet.it • www.kiwa.com

Summary of	EN12976-2	test results	Certification No.	17021 Rev.1									
Annex to Solar KEYMARK Certificate			Issued	2022-04-08									
Company	Pleion S.p.A.		Country	Italy									
Brand (optional)			Website	www.pleion.it									
Street	Via Venezia 11		E-mail	info@pleion.it									
Postal Code	37053	Cerea (VR)	Tel. / Fax	+39 0442320295									
System family overview													
For each storage and collector size, give number of collectors													
Collector name	EGO 110	EGO 150	EGO 180	EGO 220									
EGO 110	1												
EGO 150		1											
EGO 180			1										
EGO 220				1									
EGO 260				1									
Name of system configuration			EGO 180										
Collector name	EGO 180	No. Collectors	1	Storage name									
Calculated annual results for "solar-only / preheat system"													
Location	Qd,sh	Daily drawoff 140 l				Daily drawoff 170 l				Daily drawoff 200 l			
	Qd,hw	Q _L	Q _{par}	f _{sol}	Qd,hw	Q _L	Q _{par}	f _{sol}	Qd,hw	Q _L	Q _{par}	f _{sol}	
	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	
Stockholm SE	7808	3227		0.41	9481	3521		0.37	11154	3676		0.33	
Würzburg DE	7487	3549		0.47	9091	3926		0.43	10695	4131		0.39	
Davos CH	8471	4698		0.55	10286	5056		0.49	12101	5253		0.43	
Athens GR	5818	4334		0.74	7065	4931		0.70	8312	5386		0.65	
Optional OP													
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											
Q _L	MJ/y	Annual heat energy delivered by the solar system											
Q _{par}	MJ/y	Annual parasitic energy: (electricity for pumps/controllers)											
f _{sol} =Q _L /Q _d	-	Solar fraction											
Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR	Optional OP							
	G	1,157	1,230	1,684	1,736								
	T _{a,ave}	7.5	9.0	3.2	18.5								
	T _{c,ave}	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,ave}	°C	Annual average outdoor air temperature											
T _{c,ave}	°C	Annual average mains cold water temp.											
ΔT _c	K	Seasonal variation of T _c											
T _h	45 °C	Desired hot water temperature (mixing valve temperature).											
Max. operating press. - collector side		400	kPa	Max. operating press. - tank side		400	kPa						
Testing Laboratory		ENEA - Centro Ricerche Trisaia											
Website		www.trisaia.enea.it											
Test report id. number		RP.2016.SYS.191.1											
Date of test report		2016-12-15											
Test method		ISO 9459-2 (CSTG)											
Comments of test lab													
Additional test report: RP.2016.SYS.191a.1.													
ENEA TERIN-STSN Dr. Vincenzo Sabetelli Vincenzo Sabetelli													

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

Version 4.5, 2017-10-24

Summary of		EN12976-2		test results		Certification No.		17021 Rev.1											
Annex to Solar KEYMARK Certificate						Issued		2022-04-08											
Company		Pleion S.p.A.				Country		Italy											
Brand (optional)						Website		www.pleion.it											
Street		Via Venezia 11				E-mail		info@pleion.it											
Postal Code		37053		Cerea (VR)		Tel. / Fax		+39 0442320295											
System family overview																			
For each storage and collector size, give number of collectors																			
Collector name	EGO 110		EGO 150		EGO 180		EGO 220		EGO 260										
EGO 110	1																		
EGO 150			1																
EGO 180					1														
EGO 220							1												
EGO 260									1										
Name of system configuration						EGO 220													
Collector name	EGO 220		No. Collectors		1		Storage name		EGO 220										
Calculated annual results for "solar-only / preheat system"																			
Location	Qd,sh	Daily drawoff				170	I	Daily drawoff				200	I	Daily drawoff				250	I
	MJ/y	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol		
Stockholm SE		9481	3930		0.41	11154	4252		0.38	13942	4484		0.32						
Würzburg DE		9091	4321		0.48	10695	4727		0.44	13369	5037		0.38						
Davos CH		10286	5734		0.56	12101	6120		0.51	15126	6405		0.42						
Athens GR		7065	5268		0.75	8312	5892		0.71	10390	6621		0.64						
Optional OP																			
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																	
Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR	Optional OP													
	G	1,157	1,230	1,684	1,736														
	T _{a,ave}	7.5	9.0	3.2	18.5														
	T _{c,ave}	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,ave}	°C	Annual average outdoor air temperature																	
T _{c,ave}	°C	Annual average mains cold water temp.																	
ΔT _c	K	Seasonal variation of T _c																	
Th	45 °C	Desired hot water temperature (mixing valve temperature).																	
Max. operating press. - collector side		400	kPa	Max. operating press. - tank side		400	kPa												
Testing Laboratory		ENEA - Centro Ricerche Trisaia																	
Website		www.trisaia.enea.it																	
Test report id. number		RP.2016.SYS.191.1																	
Date of test report		2016-12-15																	
Test method		ISO 9459-2 (CSTG)																	
Comments of test lab																			
Additional test report: RP.2016.SYS.191a.1.																			
																			

Summary of		EN12976-2		test results		Certification No.		17021 Rev.1					
Annex to Solar KEYMARK Certificate						Issued		2022-04-08					
Company		Pleion S.p.A.				Country		Italy					
Brand (optional)						Website		www.pleion.it					
Street		Via Venezia 11				E-mail		info@pleion.it					
Postal Code		37053		Cerea (VR)		Tel. / Fax		+39 0442320295					
System family overview													
For each storage and collector size, give number of collectors													
Collector name	EGO 110		EGO 150		EGO 180		EGO 220		EGO 260				
EGO 110	1												
EGO 150			1										
EGO 180					1								
EGO 220							1						
EGO 260									1				
Name of system configuration						EGO 260							
Collector name	EGO 260		No. Collectors		1		Storage name		EGO 260				
Calculated annual results for "solar-only / preheat system"													
Location	Qd,sh MJ/y	Daily drawoff 200 l				Daily drawoff 250 l				Daily drawoff 300 l			
		Qd,hw MJ/y	QL MJ/y	Qpar MJ/y	fsol %	Qd,hw MJ/y	QL MJ/y	Qpar MJ/y	fsol %	Qd,hw MJ/y	QL MJ/y	Qpar MJ/y	fsol %
Stockholm SE		11154	4642		0.42	13942	5097		0.37	16730	5283		0.32
Würzburg DE		10695	5101		0.48	13369	5693		0.43	16043	5932		0.37
Davos CH		12101	6760		0.56	15126	7318		0.48	18151	7544		0.42
Athens GR		8312	6215		0.75	10390	7178		0.69	12468	7845		0.63
Optional OP													
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											
Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR	Optional OP							
	G	1,157	1,230	1,684	1,736								
	T _{a,ave}	7.5	9.0	3.2	18.5								
	T _{c,ave}	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,ave}	°C	Annual average outdoor air temperature											
T _{c,ave}	°C	Annual average mains cold water temp.											
ΔT _c	K	Seasonal variation of T _c											
Th	45 °C	Desired hot water temperature (mixing valve temperature).											
Max. operating press. - collector side		400	kPa	Max. operating press. - tank side		400	kPa						
Testing Laboratory		ENEA - Centro Ricerche Trisaia											
Website		www.trisaia.enea.it											
Test report id. number		RP.2016.SYS.191.1											
Date of test report		2016-12-15											
Test method		ISO 9459-2 (CSTG)											
Comments of test lab													
Additional test report: RP.2016.SYS.191a.1.													
ENEA TERIN-STSN <i>Dr. Vincenzo Sabatelli</i> <i>Vincenzo Sabatelli</i>													

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

Version 4.5, 2017-10-24