Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat Synthèse des résultas d'essais selon EN 12976, Annexe au certificat Solar	**Registration No.** Registernummer Num. d'enregistremen	**011-7S216 A**
	Date / Datum / Date	26.08.2009

Company / Firma / Société	AWB		**Country**/Land/Pays		Netherlands
Street / Straße / Rue	DA		**Website**		
Postal Code, Place / PLZ, Ort / Code postal, Place	5700	Helmond	**E-mail**		marc.imann@vaillant.de
			Tel.	+49	2 191 182 043

System classification / G / F	
Flow principle / G / F	Forced / G / F
Direct / indirect / G / F	Direct / G / F
Press. principle / G / F	Closed / G / F
Drain back/down / G / F	Drain back / G / F
Storage location / G / F	Indoor / G / F
Storage position / G / F	Vertical / G / F
Int. back-up / G / F	None / G / F
If other: / G / F	English / Deutsch / Francais
EN12976 type / G / F	Solar only / G / F

Collector(s) / Kollektor(en) / Capteur(s)

Company / Hersteller / Manufactuer	AWB
Keymark reg, no. (optional)	

Model Bezeichnung Modéle	**Per module** / G / F: **Aperture area (A_a)** Aperturfläche (A_a) Superficie d'entrée (A_a)	**Gross length** Länge (Außenmaß) Longueur Hors tout	**Gross width** Breite (Außenmaß) Largeur hors Tout	**No. modules** G F		
	m²	m	m	min	-	max
SR2.02	2.01	1.16	1.93	1	-	2

Storage(s) / Akkumulator(en) / F

Company / Hersteller / Manufactuer	AWB

Model Bezeichnung Modéle	**Total volume** G F	**Gross diameter/width** Diam. / Breite (Außenmaß) Diam. / Largeur hors Tout	**Höhe (Außenmaß)** Höhe (Außenmaß) epaisseur hors tout	**Back-up heated volume** G F	**El. back-up power** G F
	litres	mm	mm	litres	kW
Helio Set 150	150	600	1082	0	0

Controller / G / F		**Fluid** / G / F		
Company/Hersteller/Manufacteu	AWB	**Company**/Hersteller/Manufacteu	Propylen Glycol	
Model / Bezeichnung / Modéle	AWB	**Model** / Bezeichnung / Modéle	TYFO GLS	
Functions G F	collector loop	**Freezing point** G F	-28	°C

System family overview / G / F

Collector G F	**No. collectors** / G / F **Storage** / G / F Helio Set 150	Helio Set 150		
SR2.02 (1 Kollektor)	1			
SR2.02 (2 Kollektor)		1		

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	TZS, ITW University of Stuttgart
Website	www.tzs.uni-stuttgart.de
Test report id. number / Prüberichtsnummer / F	06SYS41 + 06SYS43
Date of test report / Datum G / date F	21.05.2007 + 25.11.2008

Comments of test lab / Kommentare des Laboratoriums / Commentaires du laboratoire

TZS Stuttgart
Pfaffenwaldring 6
70550 Stuttgart

Version 0.5, 04-02-2008

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	Date / Datum / Date	26.08.2009

Company / Firma / Société	AWB		**Country**/Land/Pays	Netherlands	
Street / Straße / Rue	DA		**Website**		
Postal Code, Place / PLZ, Ort / Code postal, Place		Helmond	**E-mail**		marc.imann@vaillant.de
			Tel. / Fax	+49	2 191 182 043

System family overview / G / F

Collector type G F	**Number of collectors** / G / F **Storage type** / G / F																																			
	Helio Set 150						Helio Set 150																															
SR2.02	1																																			
Helio Set 150 (2 Kollektor)							1																													

Name of system konfiguration / G / F						
Collector type G F	SR2.02	**No. collectors** G F	1	**Storage type** G F	Helio Set 150

Calculated annual results / G / F

Location G F	**Daily draw-off litres/day** / G / F /											
	110 l/d	140 l/d	170 l/d	110 l/d	140 l/d	170 l/d	110 l/d	140 l/d	170 l/d	110 l/d	140 l/d	170 l/d
	Q_d MJ/a			Q_L MJ/a			f_{sol} %			Q_{par} MJ/a		
Stockholm, SE	6 150	7 827	9 491	2 977	3 374	3 595	48.4	43.1	37.9	468	468	468
Würzburg, DE	5 897	7 442	9 112	3 153	3 595	3 911	53.5	48.3	42.9	468	468	468
Davos, CH	6 654	8 483	10 278	4 541	5 140	5 456	68.2	60.6	53.1	468	468	468
Athens, GR	4 572	5 834	7 063	3 154	3 721	4 163	69.0	63.8	58.9	468	468	468

Perf. indicators G F		
	Q_d	**Heat demand** / G / F
	Q_L	**System output** / G / F
	f_{sol}	**Q_L/Q_d; solar fraction** / G / F
	Q_{par}	**Elec. for pumps/controllers** / G / F

Ref. conditions G F		Stockholm	Würzburg DE	Davos CH	Athens GR
	G	1 113	1 230	1 684	1 359
	Ta	6.9	9.0	3.2	18.2
	Tc	8.5	10.0	5.4	17.8
	ΔTc	2.1 - 14.9	7.0 - 13.0	4.6 - 6.2	10.4 - 25.2

G	kWh/m²	**Annual irradiation South, 45°** / G / F
Ta	°C	**Annual mean air temp.** / G / F
Tc	°C	**Annual mean cold water temp.** / G / F
ΔTc	°C	**Seasonal variation of Tc** / G / F
Th	45°C	**Desired (mix. valve) temp.** / G F

Max. operating press. - collector side G F	300	kPa	**Max. operating press. - tank side** G F	800	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	TZS, ITW University of Stuttgart
Website	www.tzs.uni-stuttgart.de
Test report id. number / Prüberichtsnummer / F	06SYS41
Date of test report / G / F	21.05.2007 + 25.11.2008
Test method / G / F	ISO 9459-5 (DST)

Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire

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Pfaffenwaldring 6
70550 Stuttgart

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	Date / Datum / Date	26.08.2009

Company / Firma / Société	AWB		**Country**/Land/Pays	Netherlands
Street / Straße / Rue	DA		**Website**	
Postal Code, Place / PLZ, Ort / Code postal, Place		Helmond	**E-mail**	marc.imann@vaillant.de
			Tel. / Fax	+49 2 191 182 043

System family overview / G / F

Collector type G F	**Number of collectors** / G / F **Storage type** / G / F																																			
	Helio Set 150						Helio Set 150																															
Helio Set 150 (1 Kollektor)	1																																			
SR2.02							1																													

Name of system konfiguration / G / F						
Collector type G F	SR2.02	**No. collectors** G F	2	**Storage type** G F	Helio Set 150

Calculated annual results / G / F

Location G F	**Daily draw-off litres/day** / G / F /											
	110 l/d	140 l/d	170 l/d	110 l/d	140 l/d	170 l/d	110 l/d	140 l/d	170 l/d	110 l/d	140 l/d	170 l/d
	Q_d MJ/a			Q_L MJ/a			f_{sol} %			Q_{par} MJ/a		
Stockholm, SE	6 150	7 827	9 491	4 100	4 888	5 487	66.7	62.5	57.8	446	446	446
Würzburg, DE	5 897	7 442	9 112	4 131	4 919	5 708	70.1	66.1	62.6	446	446	446
Davos, CH	6 654	8 483	10 278	6 118	7 411	8 483	91.9	87.4	82.5	446	446	446
Athens, GR	4 572	5 834	7 063	4 005	4 888	5 613	87.6	83.8	79.5	446	446	446

Perf. indicators G F		
	Q_d	**Heat demand** / G / F
	Q_L	**System output** / G / F
	f_{sol}	**Q_L/Q_d; solar fraction** / G / F
	Q_{par}	**Elec. for pumps/controllers** / G / F

Ref. conditions G F		Stockholm	Würzburg DE	Davos CH	Athens GR
	G	1 113	1 230	1 684	1 359
	Ta	6.9	9.0	3.2	18.2
	Tc	8.5	10.0	5.4	17.8
	ΔTc	2.1 - 14.9	7.0 - 13.0	4.6 - 6.2	10.4 - 25.2

G	kWh/m²	**Annual irradiation South, 45°** / G / F
Ta	°C	**Annual mean air temp.** / G / F
Tc	°C	**Annual mean cold water temp.** / G / F
ΔTc	°C	**Seasonal variation of Tc** / G / F
Th	45°C	**Desired (mix. valve) temp.** / G F

Max. operating press. - collector side G F	300	kPa	**Max. operating press. - tank side** G F	800	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	TZS, ITW University of Stuttgart
Website	www.tzs.uni-stuttgart.de
Test report id. number / Prüberichtsnummer / F	06SYS43
Date of test report / G / F	25.11.2008
Test method / G / F	ISO 9459-5 (DST)

Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire

TZS Stuttgart
Pfaffenwaldring 6
70550 Stuttgart

Version 0.5, 04-02-2008