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 - 7S1281 A**
	Date / Datum / Date	30.06.2011

Company / Firma / Société	Velux A/S		**Country**/Land/Pays		Denmark
Street / Straße / Rue	Aadalsvej 99		**Website**		www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**		steffen.bay@velux.com
			Tel. / **Fax**	+45	45 16 40 29

System classification / G / F	
Flow principle / G / F	Forced / G / F
Direct / **indirect** / G / F	Indirect / G / F
Press. principle / G / F	Closed / G / F
Drain back/down / G / F	No drain (always filled) / G / F
Storage location / G / F	Indoor / G / F
Storage position / G / F	Vertical / G / F
Int. back-up / G / F	Indirect G / F
If other: / G / F	English / Deutsch / Francais
EN12976 type / G / F	Solar + suppl. / G / F

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

Company / Hersteller / Manufactuer: Velux A/S

Keymark reg, no. (optional): *011 - 7S 1279 F*

Model Bezeichnung Modéle	**Per module** / G / F: **Aperture area (Aa)** Aperturfläche (Aa) Superficie d'entrée (Aa)	**Gross length** Länge (Außenmaß) Longueur Hors tout	**Gross width** Breite (Außenmaß) Largeur hors Tout	**No. modules** G F		
	m²	m	m	min	-	max
CLI U12 5000	2.158	1.829	1.374	1	-	3
CLI S08 5000	1.385	1.427	1.174	2	-	5
CLI S06 5000	1.152	1.207	1.174	2	-	6
CLI M08 5000	0.915	1.427	0.814	2	-	8
					-	

Storage(s) / Akkumulator(en) / F

Company / Hersteller / Manufactuer: Velux A/S

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
TFF 200 0201	180	540	1432	-	-
TFF 300 0201	280	600	1794	-	-
TFF 400 0201	375	700	1591	-	-

Controller / G / F		**Fluid** / G / F		
Company/Hersteller/Manufacteu	Velux A/S	**Company**/Hersteller/Manufacteu	TYFOROP CHEMIE GmbH	
Model / Bezeichnung / Modéle	SKSC2	**Model** / Bezeichnung / Modéle	Tyfocor L	
Functions G F	English Deutsch Francais	**Freezing point** G F	-50	℃

System family overview / G / F

Collector G F	**No. collectors** / G / F **Storage** / G / F TFF 200 0201	TFF 300 0201	TFF 400 0201	0	0
CLI U12 5000	1	2	3		
CLI S08 5000	2	3	4 5		
CLI S06 5000	2	3 4	5 6		
CLI M08 5000	2 3	4 5	6 7 8		

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / Datum G / date F	06.09.2011

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

Die Systeme wurden mit den zusätzlich erforderlichen und eingebauten Sicherheitskomponenten für Großbritannien geprüft / The systems were tested with the additional and necessary safety components for Great Britain

tzsb
Testzentrum Saarbrücken
Altenkesseler Str. 17
Gebäude D2
66115 Saarbrücken

Version 0.5, 04-02-2008

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	Date / Datum / Date	30.06.2011

Company / Firma / Société	Velux A/S		**Country**/Land/Pays	Denmark
Street / Straße / Rue	Aadalsvej 99		**Website**	www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						**2**						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F						2 x CLI U12 + TFF 30
Collector type G / F	CLI U12 5000	**No. collectors** G / F	2	**Storage type** G / F	TFF 300 0201	

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	170 l/d	200 l/d	250 l/d	170 l/d	200 l/d	250 l/d	170 l/d	200 l/d	250 l/d	170 l/d	200 l/d	250 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	9 492	11 164	13 970	9 240	10 848	13 403	4 762	5 834	7 789	342	342	342
Würzburg, DE	9 114	10 691	13 371	9 051	10 565	12 930	4 478	5 424	7 064	342	342	342
Davos, CH	10 281	12 110	15 137	10 281	12 078	15 043	2 775	3 784	5 834	342	342	342
Athens, GR	7 064	8 326	10 407	7 064	8 326	10 375	1 261	1 734	2 712	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

English
Deutsch
Francais

Stamp & signature of test lab

Version 0.5, 04-02-2008

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Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	**2**	3					4	5					6	7	8																					

Name of system konfiguration / G / F						2 x CLI M08 + TFF 20
Collector type G / F	CLI M08 5000	**No. collectors** G / F	2	**Storage type** G / F	TFF 200 0201	

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	80 l/d	110 l/d	140 l/d	80 l/d	110 l/d	140 l/d	80 l/d	110 l/d	140 l/d	80 l/d	110 l/d	140 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	4 478	6 150	7 821	4 447	6 055	7 537	3 305	4 491	5 708	342	342	342
Würzburg, DE	4 289	5 897	7 506	4 289	5 834	7 316	3 053	4 160	5 326	342	342	342
Davos, CH	4 857	6 654	8 483	4 857	6 055	7 537	2 466	4 491	5 708	342	342	342
Athens, GR	3 343	4 573	5 834	3 343	4 573	5 803	1 381	1 974	2 715	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

English
Deutsch
Francais

Stamp & signature of test lab

Version 0.5, 04-02-2008

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	Date / Datum / Date	30.06.2011

Company / Firma / Société	Velux A/S		**Country**/Land/Pays	Denmark
Street / Straße / Rue	Aadalsvej 99		**Website**	www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F						1 x CLI U12 + TFF 20
Collector type G F	CLI U12 5000	**No. collectors** G F	1	**Storage type** G F	TFF 200 0201	

Calculated annual results / G / F

Location G F	**Daily draw-off litres/day** / G / F /											
	80 l/d	110 l/d	140 l/d	80 l/d	110 l/d	140 l/d	80 l/d	110 l/d	140 l/d	80 l/d	110 l/d	140 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	4 478	6 150	7 821	4 447	6 086	7 537	3 040	4 188	5 323	342	342	342
Würzburg, DE	4 289	5 897	7 506	4 289	5 834	7 316	2 791	4 160	4 926	342	342	342
Davos, CH	4 857	6 654	8 483	4 857	6 654	8 420	2 053	3 154	4 447	342	342	342
Athens, GR	3 343	4 573	5 834	3 343	4 573	5 834	1 120	1 621	2 302	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

English
Deutsch
Francais

Stamp & signature of test lab

Version 0.5, 04-02-2008

Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar	**Registration No.** Registernummer Num. d'enregistremen	**011 - 7S1281 A**
	Date / Datum / Date	30.06.2011

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Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	**2**						3	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F						2 x CLI S06 + TFF 20
Collector type G F	CLI S06 5000	**No. collectors** G F	2	**Storage type** G F	TFF 200 0201	

Calculated annual results / G / F

Location G F	**Daily draw-off litres/day** / G / F /											
	80 l/d	110 l/d	140 l/d	80 l/d	110 l/d	140 l/d	80 l/d	110 l/d	140 l/d	80 l/d	110 l/d	140 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	4 478	6 150	7 821	4 447	6 086	7 537	2 936	4 056	5 166	342	342	342
Würzburg, DE	4 289	5 897	7 506	4 289	5 834	7 316	2 696	3 696	4 768	342	342	342
Davos, CH	4 857	6 654	8 483	4 857	6 654	8 452	1 895	2 933	4 226	342	342	342
Athens, GR	3 343	4 573	5 834	3 343	4 573	5 834	1 025	1 498	2 144	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

English
Deutsch
Francais

Stamp & signature of test lab

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Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	**3**					4	5					6	7	8																					

Name of system konfiguration / G / F						3 x CLI M08 + TFF 20
Collector type G F	CLI M08 5000	**No. collectors** G F	3	**Storage type** G F	TFF 200 0201	

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/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	6 150	7 821	9 492	6 068	6 433	9 114	3 712	3 642	6 042	342	342	342
Würzburg, DE	5 897	7 506	9 114	5 834	7 348	8 735	3 378	4 393	5 456	342	342	342
Davos, CH	6 654	8 483	10 281	6 654	8 452	10 186	2 428	3 564	4 920	342	342	342
Athens, GR	4 573	5 834	7 064	4 573	5 834	7 064	1 198	1 734	2 428	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
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Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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English
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			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	**2**						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F						2 x CLI S08 + TFF 20
Collector type G / F	CLI S08 5000	**No. collectors** G / F	2	**Storage type** G / F	TFF 200 0201	

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/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	6 150	7 821	9 492	6 086	7 569	9 114	3 696	4 756	6 020	342	342	342
Würzburg, DE	5 897	7 506	9 114	5 866	7 348	8 735	3 396	4 374	5 424	342	342	342
Davos, CH	6 654	8 483	10 281	6 654	8 452	10 186	4 257	4 920	5 298	342	342	342
Athens, GR	4 573	5 834	7 064	4 573	5 834	7 064	1 167	1 734	2 397	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

English
Deutsch
Francais

Stamp & signature of test lab

Version 0.5, 04-02-2008

Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar	**Registration No.** Registernummer Num. d'enregistremen	**011 - 7S1281 A**
	Date / Datum / Date	30.06.2011

Company / Firma / Société	Velux A/S		**Country**/Land/Pays		Denmark
Street / Straße / Rue	Aadalsvej 99		**Website**		www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**		steffen.bay@velux.com
			Tel. / **Fax**	+45	45 16 40 29

System family overview / G / F

Collector type G F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						**3**	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F						3 x CLI S06 + TFF 30
Collector type G F	CLI S06 5000	**No. collectors** G F	3	**Storage type** G F	TFF 300 0201	

Calculated annual results / **G** / **F**

Location G F	**Daily draw-off litres/day** / G / F /											
	140 l/d	170 l/d	200 l/d	140 l/d	170 l/d	200 l/d	140 l/d	170 l/d	200 l/d	140 l/d	170 l/d	200 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	7 821	9 492	11 164	7 695	9 240	10 817	4 595	5 613	6 780	342	342	342
Würzburg, DE	7 506	9 114	10 691	7 411	9 051	10 533	4 163	5 298	6 307	342	342	342
Davos, CH	8 483	10 281	12 110	8 452	10 281	12 078	2 838	3 942	5 172	342	342	342
Athens, GR	5 834	7 064	8 326	5 834	7 064	8 326	1 451	1 955	2 523	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

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Street / Straße / Rue	Aadalsvej 99		**Website**	www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F						4 x CLI M08 + TFF 30
Collector type G / F	CLI M08 5000	**No. collectors** G / F	4	**Storage type** G / F	TFF 300 0201	

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	140 l/d	170 l/d	200 l/d	140 l/d	170 l/d	200 l/d	140 l/d	170 l/d	200 l/d	140 l/d	170 l/d	200 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	7 821	9 492	11 164	7 695	9 240	10 817	4 447	5 424	6 591	342	342	342
Würzburg, DE	7 506	9 114	10 691	7 411	9 051	10 533	4 037	5 140	6 118	342	342	342
Davos, CH	8 483	10 281	12 110	8 452	10 281	12 078	2 617	3 690	4 857	342	342	342
Athens, GR	5 834	7 064	8 326	5 834	7 064	8 326	1 325	1 798	2 334	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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Street / Straße / Rue	Aadalsvej 99		**Website**	www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						**3**						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F						3 x CLI S08 + TFF 30
Collector type G / F	CLI S08 5000	**No. collectors** G / F	3	**Storage type** G / F	TFF 300 0201	

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	170 l/d	200 l/d	250 l/d	170 l/d	200 l/d	250 l/d	170 l/d	200 l/d	250 l/d	170 l/d	200 l/d	250 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	9 492	11 164	13 939	9 240	10 848	13 434	5 077	6 181	8 199	342	342	342
Würzburg, DE	9 114	10 691	13 371	9 051	10 565	12 930	4 825	5 771	7 442	342	342	342
Davos, CH	10 281	12 110	15 137	10 281	12 078	15 043	3 154	4 194	6 339	342	342	342
Athens, GR	7 064	8 326	10 407	7 064	8 326	10 375	1 482	1 987	2 964	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

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	Date / Datum / Date	30.06.2011

Company / Firma / Société	Velux A/S		**Country**/Land/Pays	Denmark
Street / Straße / Rue	Aadalsvej 99		**Website**	www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	**5**					6	7	8																					

Name of system konfiguration / G / F						5 x CLI M08 + TFF 30
Collector type G / F	CLI M08 5000	**No. collectors** G / F	5	**Storage type** G / F	TFF 300 0201	

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	200 l/d	250 l/d	300 l/d	200 l/d	250 l/d	300 l/d	200 l/d	250 l/d	300 l/d	200 l/d	250 l/d	300 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	11 164	13 939	16 746	10 880	13 466	15 831	5 929	7 852	9 839	342	342	342
Würzburg, DE	10 691	13 371	16 052	10 565	12 961	15 137	5 487	7 096	8 767	342	342	342
Davos, CH	12 110	15 137	18 165	12 110	15 043	17 786	3 784	5 740	7 916	342	342	342
Athens, GR	8 326	10 407	12 488	8 326	10 375	12 394	1 734	2 649	3 753	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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Street / Straße / Rue	Aadalsvej 99		**Website**	www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	**4**					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F										4 x CLI S06 + TFF 30
Collector type G / F	CLI S06 5000		**No. collectors** G / F	4			**Storage type** G / F	TFF 300 0201		

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	200 l/d	250 l/d	300 l/d	200 l/d	250 l/d	300 l/d	200 l/d	250 l/d	300 l/d	200 l/d	250 l/d	300 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	11 164	13 939	16 746	10 880	13 466	15 831	5 897	7 821	9 808	342	342	342
Würzburg, DE	10 691	13 371	16 052	10 565	12 961	15 137	5 487	7 064	8 735	342	342	342
Davos, CH	12 110	15 137	18 165	12 110	15 043	17 786	3 753	5 708	7 852	342	342	342
Athens, GR	8 326	10 407	12 488	8 326	10 060	12 394	1 734	2 302	3 721	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	5					**6**	7	8																					

Name of system konfiguration / G / F						6 x CLI M08 + TFF 40
Collector type G / F	CLI M08 5000	**No. collectors** G / F	6	**Storage type** G / F	TFF 400 0201	

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	200 l/d	250 l/d	300 l/d	200 l/d	250 l/d	300 l/d	200 l/d	250 l/d	300 l/d	200 l/d	250 l/d	300 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	11 164	13 939	16 746	11 038	13 781	16 399	5 550	7 285	9 177	342	342	342
Würzburg, DE	10 691	13 371	16 052	10 691	13 245	15 705	5 109	6 591	8 231	342	342	342
Davos, CH	12 110	15 137	18 165	12 110	15 137	18 102	2 870	4 415	6 276	342	342	342
Athens, GR	8 326	10 407	12 488	8 326	10 407	12 457	1 325	1 987	2 838	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

English
Deutsch
Francais

Stamp & signature of test lab

Version 0.5, 04-02-2008

Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar	**Registration No.** Registernummer Num. d'enregistremen	**011 - 7S1281 A**
	Date / Datum / Date	30.06.2011

Company / Firma / Société	Velux A/S		**Country**/Land/Pays	Denmark
Street / Straße / Rue	Aadalsvej 99		**Website**	www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F TFF 200 0201	TFF 300 0201	TFF 400 0201
CLI U12 5000	1	2	3
CLI S08 5000	2	3	**4** 5
CLI S06 5000	2	3 4	5 6
CLI M08 5000	2 3	4 5	6 7 8

Name of system konfiguration / G / F					4 x CLI S08 + TFF 40
Collector type G / F	CLI S08 5000	**No. collectors** G / F	4	**Storage type** G / F	TFF 400 0201

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	13 939	16 746	22 327	13 781	16 399	21 350	7 253	9 145	13 245	342	342	342
Würzburg, DE	13 371	16 052	21 413	13 245	15 705	20 152	6 591	8 199	11 574	342	342	342
Davos, CH	15 137	18 165	24 220	15 137	18 102	23 652	4 352	6 213	10 659	342	342	342
Athens, GR	10 407	12 488	16 651	10 407	12 457	16 556	1 955	2 807	5 077	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

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	Date / Datum / Date	30.06.2011

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Street / Straße / Rue	Aadalsvej 99		**Website**	www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G F	**Number of collectors** / G / F **Storage type** / G / F TFF 200 0201	TFF 300 0201	TFF 400 0201
CLI U12 5000	1	2	3
CLI S08 5000	2	3	4 5
CLI S06 5000	2	3 4	**5** 6
CLI M08 5000	2 3	4 5	6 7 8

Name of system konfiguration / G / F					5 x CLI S06 + TFF 40
Collector type G F	CLI S06 5000	**No. collectors** G F	5	**Storage type** G F	TFF 400 0201

Calculated annual results / G / F

Location G F	**Daily draw-off litres/day** / G / F /											
	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	13 939	16 746	22 327	13 781	16 399	21 350	7 127	8 956	12 993	342	342	342
Würzburg, DE	13 371	16 052	21 413	13 245	15 705	20 183	6 465	8 010	11 384	342	342	342
Davos, CH	15 137	18 165	24 220	15 137	18 102	23 684	4 131	5 960	10 312	342	342	342
Athens, GR	10 407	12 488	16 651	10 407	12 457	16 556	1 861	2 649	4 857	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

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			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F						7 x CLI M08 + TFF 40
Collector type G / F	CLI M08 5000	**No. collectors** G / F	7	**Storage type** G / F	TFF 400 0201	

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	13 939	16 746	22 327	13 781	16 399	21 381	6 749	8 515	12 394	342	342	342
Würzburg, DE	13 371	16 052	21 413	13 245	15 736	20 215	6 118	7 632	10 785	342	342	342
Davos, CH	15 137	18 165	24 220	15 137	18 133	23 747	3 595	5 267	9 335	342	342	342
Athens, GR	10 407	12 488	16 651	10 407	12 457	16 556	1 577	2 271	4 320	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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Version 0.5, 04-02-2008

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	Date / Datum / Date	30.06.2011

Company / Firma / Société	Velux A/S		**Country**/Land/Pays	Denmark
Street / Straße / Rue	Aadalsvej 99		**Website**	www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						**3**																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F						3 x CLI U12 + TFF 40
Collector type G F	CLI U12 5000	**No. collectors** G F	3	**Storage type** G F	TFF 400 0201	

Calculated annual results / G / F

Location G F	**Daily draw-off litres/day** / G / F /											
	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	13 939	16 746	22 327	13 781	16 430	21 413	6 717	8 483	12 362	342	342	342
Würzburg, DE	13 371	16 052	21 413	13 245	15 736	20 246	6 086	7 600	10 754	342	342	342
Davos, CH	15 137	18 165	24 220	15 137	18 133	23 747	3 532	5 203	9 240	342	342	342
Athens, GR	10 407	12 488	16 651	10 407	12 457	16 556	1 545	2 239	4 257	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

English
Deutsch
Francais

Stamp & signature of test lab

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	Date / Datum / Date	30.06.2011

Company / Firma / Société	Velux A/S		**Country**/Land/Pays	Denmark
Street / Straße / Rue	Aadalsvej 99		**Website**	www.velux.com
Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F						6 x CLI S06 + TFF 40
Collector type G / F	CLI S06 5000	**No. collectors** G / F	6	**Storage type** G / F	TFF 400 0201	

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	13 939	16 746	22 327	13 781	16 430	21 413	6 496	8 231	11 984	342	342	342
Würzburg, DE	13 371	16 052	21 413	13 277	15 736	20 246	5 960	7 379	10 407	342	342	342
Davos, CH	15 137	18 165	24 220	15 137	18 133	23 810	3 248	4 793	8 704	342	342	342
Athens, GR	10 407	12 488	16 651	10 407	12 457	16 556	1 388	2 050	3 942	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
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Postal Code, Place / PLZ, Ort / Code postal, Place	DK-2970	Hoersholm	**E-mail**	steffen.bay@velux.com
			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	**5**																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	8																					

Name of system konfiguration / G / F						5 x CLI S08 + TFF 40
Collector type G / F	CLI S08 5000	**No. collectors** G / F	5	**Storage type** G / F	TFF 400 0201	

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d	250 l/d	300 l/d	400 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	13 939	16 746	22 327	13 781	16 430	21 413	6 496	8 199	11 984	342	342	342
Würzburg, DE	13 371	16 052	21 413	13 277	15 736	20 246	5 929	7 348	10 407	342	342	342
Davos, CH	15 137	18 165	24 220	15 137	18 133	23 810	3 248	4 793	8 672	342	342	342
Athens, GR	10 407	12 488	16 651	10 407	12 457	16 556	1 388	2 018	3 942	342	342	342

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	4 163	4 415	6 055	6 181
	Ta	7.5	9.0	3.2	18.5
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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			Tel. / **Fax** +45	45 16 40 29

System family overview / G / F

Collector type G / F	**Number of collectors** / G / F **Storage type** / G / F																																	
	TFF 200 0201						TFF 300 0201						TFF 400 0201																							
CLI U12 5000	1						2						3																							
CLI S08 5000	2						3						4	5																						
CLI S06 5000	2						3	4					5	6																						
CLI M08 5000	2	3					4	5					6	7	**8**																					

Name of system konfiguration / G / F						8 x CLI M08 + TFF 40
Collector type G / F	CLI M08 5000	**No. collectors** G / F	8	**Storage type** G / F	TFF 400 0201	

Calculated annual results / **G** / **F**

Location G / F	**Daily draw-off litres/day** / G / F /											
	300 l/d	400 l/d	570 l/d	300 l/d	400 l/d	570 l/d	300 l/d	400 l/d	570 l/d	300 l/d	400 l/d	570 l/d
	Q_d MJ/y			Q_L MJ/y			$Q_{aux,net}$ MJ/y			Q_{par} MJ/y		
Stockholm, SE	16 746	22 327	33428*	16 430	21 444	29738*	8 010	11 700	18859*	342	342	342*
Würzburg, DE	16 052	21 413	32167*	15 736	20 278	29013*	7 159	10 155	17471*	342	342	342*
Davos, CH	18 165	24 220	36266*	18 133	23 841	34059*	4 478	8 199	17029*	342	342	342*
Athens, GR	12 488	16 651	24945*	12 457	16 588	24693*	1 861	3 690	8704*	342	342	342*

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	4 163	4 415	6 055	6 181			
	Ta	7.5	9.0	3.2	18.5			
	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	600	kPa	**Max. operating press. - tank side** G / F	1 000	kPa

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	IZES gGmbH, TZSB
Website	www.izes.de/tzsb/
Test report id. number / Prüberichtsnummer / F	SYS10_03
Date of test report / G / F	06.09.2011
Test method / G / F	ISO 9459-5 (DST)

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

*: Werte beziehen sich auf eine tägliche Entnahmerate von 600 l/Tag; values for daily draw-off rate of 600 litres/day

Stamp & signature of test lab

Version 0.5, 04-02-2008