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| 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 KEYMARK | Registration No. | SKM 9965/13 |
| | Registernummer | |
| | Num. d'enregistrement | |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|--------------------------------|--------------------------|---|
| Company / Firma / Société | NOBEL INTERNATIONAL EAD | Country/Land/Pays | BULGARIA |
| Street / Straße / Rue | 48, VITOSHA BLV | Website | |
| Postal Code, Place / PLZ, Ort / Code postal, Place | 2100 | SOFIA BULGARIA | E-mail info1@nobel.gr |
| | | Tel. / Fax | +0359 2 4210232 |

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|--------------------------------------|---|
| System classification / G / F | |
| Flow principle / G / F | Thermosyphon / G / F |
| Direct / indirect / G / F | Direct / G / F |
| Press. principle / G / F | Closed / G / F |
| Drain back/down / G / F | No drain (always filled) / G / F |
| Storage location / G / F | Outdoor / G / F |
| Storage position / G / F | Horizontal / 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 |

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|--|---|--|---|--|--|--------------------------------------|---|---|---|---------------------------------------|
| Collector(s) / Kollektor(en) / Capteur(s) | | | | | Storage(s) / Akkumulator(en) / F | | | | | |
| Company / Hersteller / Manufactuer NOBEL INTERNATIONAL | | | | | Company / Hersteller / Manufactuer NOBEL INTERNATIONAL EAD | | | | | |
| Keymark reg. no. (optional) SKM 9965/7 | | | | | | | | | | |
| Model Bezeichnung Modèle | Per module / G / F | | | | Model Bezeichnung Modèle | Total volume G F litres | Gross diameter/width Diam. / Breite (Außenmaß) Diam. / Largeur hors Tout | Gross length Länge (Außenmaß) longueur hors tout | Back-up heated volume G F litres | El. back-up power G F kW |
| | Aperture area (Aa) Aperturfläche (Aa) Superficie d'entrée (Aa) m ² | Gross length Länge (Außenmaß) Longueur Hors tout m | Gross width Breite (Außenmaß) Largeur hors Tout m | No. modules G F min - max | | | | | | |
| AEIOS CuB 1500 | 1.4 | 1.53 | 1.03 | 1 - 1 | 120L | 114 | 580 | 782 | ~ | 0 - 4 |
| AEIOS CuB 2000 | 1.88 | 2.03 | 1.03 | 1 - 1 | 160L | 151 | 580 | 1053 | ~ | 0 - 4 |
| AEIOS CuB 2600 | 2.37 | 2.03 | 1.28 | 1 - 1 | 200L | 191 | 580 | 1312 | ~ | 0 - 4 |
| | | | | | 250L | 241 | 580 | 1706 | ~ | 0 - 4 |
| | | | | | 300L | 293 | 580 | 1970 | ~ | 0 - 4 |
| | | | | | 320L | 309 | 580 | 2072 | ~ | 0 - 4 |

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|---------------------------------------|--------------------------------|--|--|-------------|--|
| Controller / G / F | | | Fluid / G / F | | |
| Company/Hersteller/Manufacteur | | | Company/Hersteller/Manufacteur | | |
| Model / Bezeichnung / Modèle | | | Model / Bezeichnung / Modèle Propylene glycol solution | | |
| Functions G F | English Deutsch Francais | | Freezing point G F | -6 to 10 °C | |

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|---------------------------------------|-------------------------------|------|------|------|------|------|
| System family overview / G / F | | | | | | |
| Collector G F | No. collectors / G / F | | | | | |
| | Storage / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AEIOS CuB 1500 | | 2 | 2 | | | |
| AEIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AEIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |
| 0 | | | | | | |
| 0 | | | | | | |

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| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais | NCSR "DEMOKRITOS" - SOLAR & ENERGY SYSTEMS LAB |
| Website | www.solar.demokritos.gr |
| Test report id. number / Prüberichtsnummer / F | 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 |
| Date of test report / Datum G / date F | 4/9/2013, 28/9/2015 |

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| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire | |
| English | |
| Deutsch Francais | |



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| 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 KEYMARK | Registration Registernummer Num. d'enregistrement | SKM 9965/13 |
| | Date / Datum / Date | |

| | | | |
|---|---|--|---|
| Company / Firma / Société Street / Straße / Rue Postal Code, Place / PLZ, Ort / Code postal, Place | NOBEL INTERNATIONAL EAD 48, VITOSHA BLV 2100 SOFIA BULGARIA | Country/Land/Pays Website E-mail Tel. / Fax | BULGARIA info1@nobel.gr +0359 2 4210232 |
|---|---|--|---|

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AEIOS CuB 1500 | | 2 | 2 | | | |
| AEIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AEIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | |
|--|----------------|---------------------------------|---|
| Name of system configuration / G / F AEIOS 120/2 CuB | | | |
| Collector type G F | AEIOS CuB 2000 | No. collectors G F | 1 |
| Storage type G F | | 120L | |

| Calculated annual results / G / F | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|------|------|----------------------|------|------|--------------------|------|------|------------------------|--|--|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | |
| | 80 | 110 | 140 | 80 | 110 | 140 | 80 | 110 | 140 | | | |
| | 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 | 1244 | 1708 | 2172 | 691 | 830 | 911 | 55.7 | 48.7 | 42.1 | | | |
| Würzburg, DE | 1191 | 1638 | 2085 | 676 | 830 | 929 | 56.8 | 50.7 | 44.5 | | | |
| Davos, CH | 1349 | 1848 | 2356 | 964 | 1139 | 1244 | 71.3 | 61.6 | 52.7 | | | |
| Athens, GR | 929 | 1270 | 1621 | 823 | 1030 | 1235 | 89.0 | 83.1 | 76.6 | | | |

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|-----------------------------------|---|
| Perf. indicators G F | Q _d Heat demand / G / F Q _L System output / G / F f _{sol} QL/Q _d ; solar fraction / G / F Q _{par} Elec. for pumps/controllers / G / F |
|-----------------------------------|---|

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|---------------------------------------|--------------------|--|-------------|-----------|-------------|--|--|--|
| Ref. conditions G G F | | Stockholm SE | Würzburg DE | Davos CH | Athens GR | | | |
| | G | 1,156 | 1,226 | 1,682 | 1,717 | | | |
| | T _a | 7.5 | 9.0 | 3.2 | 18.5 | | | |
| | T _c | 8.5 | 10.0 | 5.4 | 17.8 | | | |
| | ΔT _c | 2.1 - 14.9 | 7.0 - 13.0 | 4.6 - 6.2 | 10.4 - 25.2 | | | |
| G | kWh/m ² | Annual irradiation South, 45° / G / F | | | | | | |
| T _a | °C | Annual mean air temp. / G / F | | | | | | |
| T _c | °C | Annual mean cold water temp. / G / F | | | | | | |
| ΔT _c | °C | Seasonal variation of T _c / G / F | | | | | | |
| T _h | 45°C | Desired (mix. valve) temp. / G / F | | | | | | |

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|---|---------|--|-----------|
| Max. operating press. - collector side G F | 300 kPa | Max. operating press. - tank side G F | 1,000 kPa |
|---|---------|--|-----------|

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| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais Website Test report id. number / Prüberichtsnummer / F Date of test report / G / F Test method / G / F | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB www.solar.demokritos.gr 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 4/9/2013, 28/9/2015 ISO 9459-5 (DST) |
|--|--|

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|--|---|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire English Deutsch Français | N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belessiotis Tel: +210 6503815 - Fax: +210 6544502 153 10 Ag. Paraskevi - Attiki - Greece |
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| 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 KEYMARK | Registration | |
| | Registernummer | SKM 9965/13 |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|--------------------------------|--------------------------|--|
| Company / Firma / Société | NOBEL INTERNATIONAL EAD | Country/Land/Pays | BULGARIA |
| Street / Straße / Rue | 48, VITOSHA BLV | Website | |
| Postal Code, Place / PLZ, Ort / Code postal, Place | 2100 | SOFIA BULGARIA | E-mail info1@nobel.gr |
| | | Tel. / Fax | +0359 2 4210232 |

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AELIOS CuB 1500 | | 2 | 2 | | | |
| AELIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AELIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | | |
|---|-----------------------|---------------------------------|----------|-------------------------------|
| Name of system konfiguration / G / F | | | | AELIOS 160/2 CuB |
| Collector type G F | AEIOS CuB 2000 | No. collectors G F | 1 | Storage type G F |
| | | | | 160L |

| Calculated annual results / G / F | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|--|------|----------------------|------|------|--------------------|------|------|------------------------|--|--|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | |
| | 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 | | | |
| | Q _d kWh/y | | | Q _L kWh/y | | | f _{sol} % | | | Q _{par} kWh/y | | |
| Stockholm, SE | 1708 | 2172 | 2637 | 838 | 937 | 1007 | 49.1 | 43.3 | 38.2 | | | |
| Würzburg, DE | 1638 | 2085 | 2532 | 836 | 946 | 1025 | 51.1 | 45.6 | 40.5 | | | |
| Davos, CH | 1848 | 2356 | 2856 | 1148 | 1270 | 1349 | 61.9 | 53.8 | 47.1 | | | |
| Athens, GR | 1270 | 1621 | 1962 | 1060 | 1253 | 1402 | 83.3 | 77.6 | 71.3 | | | |
| 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 SE | Würzburg DE | Davos CH | Athens GR | | |
|---------------------------|--------------------|--|-------------|-----------|-------------|-------|--|
| | G | G | 1,156 | 1,226 | 1,682 | 1,717 | |
| | T _a | 7.5 | 9.0 | 3.2 | 18.5 | | |
| | T _c | 8.5 | 10.0 | 5.4 | 17.8 | | |
| | ΔT _c | 2.1 - 14.9 | 7.0 - 13.0 | 4.6 - 6.2 | 10.4 - 25.2 | | |
| G | kWh/m ² | Annual irradiation South, 45° / G / F | | | | | |
| T _a | °C | Annual mean air temp. / G / F | | | | | |
| T _c | °C | Annual mean cold water temp. / G / F | | | | | |
| ΔT _c | °C | Seasonal variation of T_c / G / F | | | | | |
| T _h | 45°C | Desired (mix. valve) temp. / G / F | | | | | |

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|---|----------------|--|------------------|
| Max. operating press. - collector side G F | 300 kPa | Max. operating press. - tank side G F | 1,000 kPa |
|---|----------------|--|------------------|

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| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB |
| Website | www.solar.demokritos.gr |
| Test report id. number / Prüberichtsnummer / F | 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 |
| Date of test report / G / F | 4/9/2013, 28/9/2015 |
| Test method / G / F | ISO 9459-5 (DST) |

| | |
|--|--|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire | |
| English Deutsch Francais | N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belesiotis Tel: +210 6503815 - Fax: +210 6544592 153 10 Ag. Paraskevi - Attiki - Greece |



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| | Registernummer | |
| | Num. d'enregistrement | |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|--------------------------------|--------------------------|------------------------|
| Company / Firma / Société | NOBEL INTERNATIONAL EAD | Country/Land/Pays | BULGARIA |
| Street / Straße / Rue | 48, VITOSHA BLV | Website | |
| Postal Code, Place / PLZ, Ort / Code postal, Place | 2100 SOFIA BULGARIA | E-mail | info1@nobel.gr |
| | | Tel. / Fax | +0359 2 4210232 |

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AEIOS CuB 1500 | | 2 | | 2 | | |
| AEIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AEIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | | | |
|---|-----------------------|-----------------------|----------|---------------------|--------------------------|
| Name of system konfiguration / G / F | | | | | AEIOS 160/2.6 CuB |
| Collector type | AEIOS CuB 2600 | No. collectors | 1 | Storage type | 160L |
| G | | G | | G | |
| F | | F | | F | |

| Calculated annual results / G / F | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|------|------|----------|------|------|--------------------|------|------|------------------------|--|--|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | |
| | 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 | | | |
| | Qd kWh/y | | | QL kWh/y | | | f _{sol} % | | | Q _{par} kWh/y | | |
| Stockholm, SE | 1708 | 2172 | 2637 | 937 | 1069 | 1156 | 54.7 | 49.1 | 43.7 | | | |
| Würzburg, DE | 1638 | 2085 | 2532 | 920 | 1060 | 1165 | 56.0 | 51.1 | 46.2 | | | |
| Davos, CH | 1848 | 2356 | 2856 | 1296 | 1463 | 1568 | 69.9 | 62.2 | 54.9 | | | |
| Athens, GR | 1270 | 1621 | 1962 | 1121 | 1349 | 1542 | 88.3 | 83.6 | 78.5 | | | |

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|-------------------------|------------------|--|--|
| Perf. indicators | Q _d | Heat demand / G / F | |
| G | Q _L | System output / G / F | |
| F | f _{sol} | QL/Q _d ; solar fraction / G / F | |
| | Q _{par} | Elec. for pumps/controllers / G / F | |

| | | | | |
|------------------------|----------------------------|-------------|-----------|-------------|
| Ref. conditions | Stockholm SE | Würzburg DE | Davos CH | Athens GR |
| G | 1,156 | 1,226 | 1,682 | 1,717 |
| G | T _a 7.5 | 9.0 | 3.2 | 18.5 |
| F | T _c 8.5 | 10.0 | 5.4 | 17.8 |
| | ΔT _c 2.1 - 14.9 | 7.0 - 13.0 | 4.6 - 6.2 | 10.4 - 25.2 |

| | | |
|-----------------|--------------------|--|
| G | kWh/m ² | Annual irradiation South, 45° / G / F |
| T _a | °C | Annual mean air temp. / G / F |
| T _c | °C | Annual mean cold water temp. / G / F |
| ΔT _c | °C | Seasonal variation of T _c / G / F |
| Th | 45°C | Desired (mix. valve) temp. / G / F |

| | | | |
|---|----------------|--|------------------|
| Max. operating press. - collector side | 300 kPa | Max. operating press. - tank side | 1,000 kPa |
| G | | G | |
| F | | F | |

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|---|---|
| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais | NCSR "DEMOKRITOS" - SOLAR & ENERGY SYSTEMS LAB |
| Website | www.solar.demokritos.gr |
| Test report id. number / Prüberichtsnummer / F | 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 |
| Date of test report / G / F | 4/9/2013, 28/9/2015 |
| Test method / G / F | ISO 9459-5 (DST) |

| | |
|--|--|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire | <p>English Deutsch Français</p> <p>N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belessiotis Tel: +210 6503815 - Fax: +210 6544386 153 10 Ag. Paraskevi - Attiki - Greece</p> |
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| 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 KEYMARK | Registration | |
| | Registernummer | SKM 9965/13 |
| | Num. d'enregistrement | |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|--------------------------------|--------------------------|------------------------|
| Company / Firma / Société | NOBEL INTERNATIONAL EAD | Country/Land/Pays | BULGARIA |
| Street / Straße / Rue | 48, VITOSHA BLV | Website | |
| Postal Code, Place / PLZ, Ort / Code postal, Place | 2100 SOFIA BULGARIA | E-mail | info1@nobel.gr |
| | | Tel. / Fax | +0359 2 4210232 |

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AELIOS CuB 1500 | | 2 | 2 | | | |
| AELIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AELIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | | |
|---|------------------------|-----------------------|----------|-------------------------|
| Name of system konfiguration / G / F | | | | AELIOS 160/3 CuB |
| Collector type | AElios CuB 1500 | No. collectors | 2 | Storage type |
| G | | G | | G |
| F | | F | | F |
| | | | | 160L |

| Calculated annual results / G / F | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|--|------|----------|------|------|--------|------|------|------------|--|--|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | |
| | 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 | | | |
| | Qd kWh/y | | | QL kWh/y | | | fsol % | | | Qpar kWh/y | | |
| Stockholm, SE | 1708 | 2172 | 2637 | 990 | 1148 | 1261 | 57.9 | 52.9 | 47.8 | | | |
| Würzburg, DE | 1638 | 2085 | 2532 | 964 | 1130 | 1261 | 58.8 | 54.4 | 50.0 | | | |
| Davos, CH | 1848 | 2356 | 2856 | 1375 | 1594 | 1734 | 74.5 | 67.6 | 60.7 | | | |
| Athens, GR | 1270 | 1621 | 1962 | 1156 | 1402 | 1621 | 90.8 | 86.9 | 82.6 | | | |
| Perf. indicators | Qd | Heat demand / G / F | | | | | | | | | | |
| G | QL | System output / G / F | | | | | | | | | | |
| F | fsol | QL/Qd; solar fraction / G / F | | | | | | | | | | |
| | Qpar | Elec. for pumps/controllers / G / F | | | | | | | | | | |

| Ref. conditions G F | Stockholm SE Würzburg DE Davos CH Athens GR | | | | |
|---------------------------|---|--|------------|-----------|-------------|
| | G | 1,156 | 1,226 | 1,682 | 1,717 |
| | 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/m ² | 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 | 300 kPa | Max. operating press. - tank side | 1,000 kPa |
| G | | G | |
| F | | F | |

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| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB |
| Website | www.solar.demokritos.gr |
| Test report id. number / Prüberichtsnummer / F | 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 |
| Date of test report / G / F | 4/9/2013, 28/9/2015 |
| Test method / G / F | ISO 9459-5 (DST) |

| | |
|--|---|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire | <p>English Deutsch Francais</p> <p>N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belesiotis Tel: +210 6503915 - Fax: +210 6544502 153 10 Ag. Paraskevi - Attiki - Greece</p> |
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| | Num. d'enregistrement 10/10/2015 |
| | Date / Datum / Date |

| | | | |
|---|--|--|--|
| Company / Firma / Société Street / Straße / Rue Postal Code, Place / PLZ, Ort / Code postal, Place | NOBEL INTERNATIONAL EAD 48, VITOSHA BLV 2100 SOFIA BULGARIA | Country/Land/Pays Website E-mail Tel. / Fax | BULGARIA info1@nobel.gr +0359 2 4210232 |
|---|--|--|--|

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AELIOS CuB 1500 | | 2 | 2 | | | |
| AELIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AELIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | | | | |
|--|--|--|--|---------------------------------|-------------------------------|--|
| Name of system konfiguration / G / F Collector type G F | | | | No. collectors G F | Storage type G F | AELIOS 200/2.6 CuB 200L |
| AEIOS CuB 2600 | | | | 1 | | |

| Calculated annual results / G / F | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|------|------|----------|------|------|--------|------|------|------------|--|--|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | |
| | 170 | 200 | 250 | 170 | 200 | 250 | 170 | 200 | 250 | | | |
| | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | | | |
| | Qd kWh/y | | | QL kWh/y | | | fsol % | | | Qpar kWh/y | | |
| Stockholm, SE | 2637 | 3101 | 3881 | 1183 | 1253 | 1340 | 44.7 | 40.5 | 34.6 | | | |
| Würzburg, DE | 2532 | 2970 | 3714 | 1191 | 1270 | 1358 | 47.0 | 42.8 | 36.6 | | | |
| Davos, CH | 2856 | 3364 | 4205 | 1594 | 1682 | 1778 | 55.8 | 50.1 | 42.3 | | | |
| Athens, GR | 1962 | 2313 | 2891 | 1559 | 1717 | 1901 | 79.2 | 74.4 | 65.7 | | | |

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

| | | | | | |
|----------------------------------|--|----------------------------------|---------------------------|----------------------------|--|
| Ref. conditions G F | Stockholm SE Würzburg DE Davos CH Athens GR | 1,156 1,226 1,682 1,717 | 7.5 9.0 3.2 18.5 | 8.5 10.0 5.4 17.8 | 2.1 - 14.9 7.0 - 13.0 4.6 - 6.2 10.4 - 25.2 |
|----------------------------------|--|----------------------------------|---------------------------|----------------------------|--|

| | | |
|----------------------------|--|---|
| G Ta Tc ΔTc Th | kWh/m ² °C °C °C 45°C | Annual irradiation South, 45° / G / F Annual mean air temp. / G / F Annual mean cold water temp. / G / F Seasonal variation of Tc / G / F Desired (mix. valve) temp. / G / F |
|----------------------------|--|---|

| | | | |
|---|----------------|--|------------------|
| Max. operating press. - collector side G F | 300 kPa | Max. operating press. - tank side G F | 1,000 kPa |
|---|----------------|--|------------------|

| | |
|--|--|
| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais Website Test report id. number / Prüberichtsnummer / F Date of test report / G / F Test method / G / F | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB www.solar.demokritos.gr 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 4/9/2013, 28/9/2015 ISO 9459-5 (DST) |
|--|--|

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| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire English Deutsch Francais | |
|--|--|



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|--|----------------------------|--------------------|
| 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 KEYMARK | Registration No. | SKM 9965/13 |
| | Registernummer | |
| | Num. d'enregistrement | |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|--------------------------------|--------------------------|------------------------|
| Company / Firma / Société | NOBEL INTERNATIONAL EAD | Country/Land/Pays | BULGARIA |
| Street / Straße / Rue | 48, VITOSHA BLV | Website | |
| Postal Code, Place / PLZ, Ort / Code postal, Place | 2100 SOFIA BULGARIA | E-mail | info1@nobel.gr |
| | | Tel. / Fax | +0359 2 4210232 |

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AELIOS CuB 1500 | | 2 | 2 | | | |
| AELIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AELIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | | |
|---|-----------------------|-----------------------|----------|-------------------------|
| Name of system konfiguration / G / F | | | | AELIOS 200/3 CuB |
| Collector type | AEIOS CuB 1500 | No. collectors | 2 | Storage type |
| G | | G | | G |
| F | | F | | F |
| | | | | 200L |

| Calculated annual results / G / F | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|--|------|----------|------|------|--------------------|------|------|------------------------|--|--|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | |
| | 170 | 200 | 250 | 170 | 200 | 250 | 170 | 200 | 250 | | | |
| | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | | | |
| | Qd kWh/y | | | QL kWh/y | | | f _{sol} % | | | Q _{par} kWh/y | | |
| Stockholm, SE | 2637 | 3101 | 3881 | 1288 | 1384 | 1489 | 48.8 | 44.5 | 38.3 | | | |
| Würzburg, DE | 2532 | 2970 | 3714 | 1288 | 1393 | 1507 | 50.8 | 46.9 | 40.6 | | | |
| Davos, CH | 2856 | 3364 | 4205 | 1761 | 1875 | 1997 | 61.6 | 55.8 | 47.5 | | | |
| Athens, GR | 1962 | 2313 | 2891 | 1638 | 1831 | 2067 | 83.2 | 79.2 | 71.6 | | | |
| Perf. indicators G F | Q _d | Heat demand / G / F | | | | | | | | | | |
| | Q _L | System output / G / F | | | | | | | | | | |
| | f _{sol} | QL/Qd; solar fraction / G / F | | | | | | | | | | |
| | Q _{par} | Elec. for pumps/controllers / G / F | | | | | | | | | | |

| Ref. conditions G F | Stockholm SE | | | | Würzburg DE | | Davos CH | | Athens GR | |
|---------------------------|--------------------|--|------------|-----------|-------------|--|----------|--|-----------|--|
| | G | 1,156 | 1,226 | 1,682 | 1,717 | | | | | |
| | T _a | 7.5 | 9.0 | 3.2 | 18.5 | | | | | |
| | T _c | 8.5 | 10.0 | 5.4 | 17.8 | | | | | |
| | ΔT _c | 2.1 - 14.9 | 7.0 - 13.0 | 4.6 - 6.2 | 10.4 - 25.2 | | | | | |
| G | kWh/m ² | Annual irradiation South, 45° / G / F | | | | | | | | |
| T _a | °C | Annual mean air temp. / G / F | | | | | | | | |
| T _c | °C | Annual mean cold water temp. / G / F | | | | | | | | |
| ΔT _c | °C | Seasonal variation of T_c / G / F | | | | | | | | |
| Th | 45°C | Desired (mix. valve) temp. / G / F | | | | | | | | |

| | | | | | |
|---|------------|------------|--|--------------|------------|
| Max. operating press. - collector side | 300 | kPa | Max. operating press. - tank side | 1,000 | kPa |
| G | | | G | | |
| F | | | F | | |

| | |
|---|--|
| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB |
| Website | www.solar.demokritos.gr |
| Test report id. number / Prüberichtsnummer / F | 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 |
| Date of test report / G / F | 4/9/2013, 28/9/2015 |
| Test method / G / F | ISO 9459-5 (DST) |

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|--|--|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire | N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belesiotis Tel: +210 6503815 - Fax: +210 6544592 153 10 Ag. Paraskevi - Attiki - Greece |
| English Deutsch Francais | |



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|--|----------------------------|--------------------|
| 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 KEYMARK | Registration No. | SKM 9965/13 |
| | Registernummer | |
| | Num. d'enregistrement | |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|-----------------------------------|--------------------------|------------------------|
| Company / Firma / Société | NOBEL INTERNATIONAL EAD | Country/Land/Pays | BULGARIA |
| Street / Straße / Rue | 48, VITOSHA BLV | Website | |
| Postal Code, Place / PLZ, Ort / Code postal, Place | 2100 SOFIA BULGARIA | E-mail | info1@nobel.gr |
| | | Tel. / Fax | +0359 2 4210232 |

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AELIOS CuB 1500 | | 2 | 2 | | | |
| AELIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AELIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | | |
|---|-----------------------|-----------------------|----------|-------------------------|
| Name of system konfiguration / G / F | | | | AELIOS 200/4 CuB |
| Collector type | AEIOS CuB 2000 | No. collectors | 2 | Storage type |
| G | | G | | G |
| F | | F | | F |
| | | | | 200L |

| Calculated annual results / G / F | | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|---|------|----------|------|------|--------------------|------|------|--|------------------------|-----|-----|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | | |
| | 170 | 200 | 250 | 170 | 200 | 250 | 170 | 200 | 250 | | 170 | 200 | 250 |
| | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | | l/d | l/d | l/d |
| | Qd kWh/y | | | QL kWh/y | | | f _{sol} % | | | | Q _{par} kWh/y | | |
| Stockholm, SE | 2637 | 3101 | 3881 | 1463 | 1603 | 1761 | 55.6 | 51.7 | 45.3 | | | | |
| Würzburg, DE | 2532 | 2970 | 3714 | 1437 | 1586 | 1778 | 56.8 | 53.4 | 47.8 | | | | |
| Davos, CH | 2856 | 3364 | 4205 | 2041 | 2225 | 2418 | 71.3 | 66.1 | 57.5 | | | | |
| Athens, GR | 1962 | 2313 | 2891 | 1752 | 1989 | 2321 | 89.1 | 86.0 | 80.5 | | | | |
| Perf. indicators G F | Q _d | Heat demand / G / F | | | | | | | | | | | |
| | Q _L | System output / G / F | | | | | | | | | | | |
| | f _{sol} | QL/Q_d; solar fraction / G / F | | | | | | | | | | | |
| | Q _{par} | Elec. for pumps/controllers / G / F | | | | | | | | | | | |

| Ref. conditions G F | | Stockholm SE | Würzburg DE | Davos CH | Athens GR |
|---------------------------|--------------------|--|-------------|-----------|-------------|
| | G | 1,156 | 1,226 | 1,682 | 1,717 |
| | T _a | 7.5 | 9.0 | 3.2 | 18.5 |
| | T _c | 8.5 | 10.0 | 5.4 | 17.8 |
| | ΔT _c | 2.1 - 14.9 | 7.0 - 13.0 | 4.6 - 6.2 | 10.4 - 25.2 |
| G | kWh/m ² | Annual irradiation South, 45° / G / F | | | |
| T _a | °C | Annual mean air temp. / G / F | | | |
| T _c | °C | Annual mean cold water temp. / G / F | | | |
| ΔT _c | °C | Seasonal variation of T_c / G / F | | | |
| Th | 45°C | Desired (mix. valve) temp. / G / F | | | |

| | | | | | |
|---|------------|------------|--|--------------|------------|
| Max. operating press. - collector side | 300 | kPa | Max. operating press. - tank side | 1,000 | kPa |
| G | | | G | | |
| F | | | F | | |

| | |
|---|--|
| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB |
| Website | www.solar.demokritos.gr |
| Test report id. number / Prüberichtsnummer / F | 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 |
| Date of test report / G / F | 4/9/2013, 28/9/2015 |
| Test method / G / F | ISO 9459-5 (DST) |

| | |
|--|---|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire | N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belessiotis Tel: +210 6503815 - Fax: +210 6544509 153 10 Ag. Paraskevi - Attiki - Greece |
| English Deutsch Francais | |



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|--|-----------------------|--------------------|
| 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 KEYMARK | Registration | |
| | Registernummer | SKM 9965/13 |
| | Num. d'enregistrement | |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|--------------------------------|--------------------------|---|
| Company / Firma / Société | NOBEL INTERNATIONAL EAD | Country/Land/Pays | BULGARIA |
| Street / Straße / Rue | 48, VITOSHA BLV | Website | |
| Postal Code, Place / PLZ, Ort / Code postal, Place | 2100 | SOFIA BULGARIA | E-mail info1@nobel.gr |
| | | Tel. / Fax | +0359 2 4210232 |

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AELIOS CuB 1500 | | 2 | 2 | | | |
| AELIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AELIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | | |
|---|------------------------|---------------------------------|----------|-------------------------------|
| Name of system konfiguration / G / F | | | | AELIOS 250/4 CuB |
| Collector type G F | AELIOS CuB 2000 | No. collectors G F | 2 | Storage type G F |
| | | | | 250L |

| Calculated annual results / G / F | | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|--|------|----------|------|------|--------|------|------|--|------------|-----|-----|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | | |
| | 200 | 250 | 300 | 200 | 250 | 300 | 200 | 250 | 300 | | 200 | 250 | 300 |
| | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | | l/d | l/d | l/d |
| | Qd kWh/y | | | QL kWh/y | | | fsol % | | | | Qpar kWh/y | | |
| Stockholm, SE | 3101 | 3881 | 4652 | 1620 | 1804 | 1918 | 52.3 | 46.5 | 41.3 | | | | |
| Würzburg, DE | 2970 | 3714 | 4459 | 1603 | 1813 | 1954 | 53.9 | 48.8 | 43.8 | | | | |
| Davos, CH | 3364 | 4205 | 5046 | 2242 | 2470 | 2611 | 66.6 | 58.7 | 51.7 | | | | |
| Athens, GR | 2313 | 2891 | 3469 | 1997 | 2348 | 2628 | 86.4 | 81.3 | 75.7 | | | | |
| Perf. indicators G F | Qd | Heat demand / G / F | | | | | | | | | | | |
| | QL | System output / G / F | | | | | | | | | | | |
| | fsol | QL/Qd; solar fraction / G / F | | | | | | | | | | | |
| | Qpar | Elec. for pumps/controllers / G / F | | | | | | | | | | | |

| Ref. conditions G F | Stockholm SE | Würzburg DE | Davos CH | Athens GR | | |
|---------------------------|--------------------|--|-----------|-------------|-------|--|
| | G | 1,156 | 1,226 | 1,682 | 1,717 | |
| 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/m ² | 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 | 1,000 kPa |
|---|----------------|--|------------------|

| | |
|---|--|
| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB |
| Website | www.solar.demokritos.gr |
| Test report id. number / Prüberichtsnummer / F | 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 |
| Date of test report / G / F | 4/9/2013, 28/9/2015 |
| Test method / G / F | ISO 9459-5 (DST) |

| | |
|--|--|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire | |
| English Deutsch Français | N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belesiotis Tel: +210 6503815 - Fax: +210 6544507 153 10 Ag. Paraskevi - Attiki - Greece |



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|--|--|--------------------|
| 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 KEYMARK | Registration Registernummer Num. d'enregistrement | SKM 9965/13 |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|---|--|--|
| Company / Firma / Société Street / Straße / Rue Postal Code, Place / PLZ, Ort / Code postal, Place | NOBEL INTERNATIONAL EAD 48, VITOSHA BLV 2100 SOFIA BULGARIA | Country/Land/Pays Website E-mail Tel. / Fax | BULGARIA info1@nobel.gr +0359 2 4210232 |
|---|---|--|--|

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AELIOS CuB 1500 | | 2 | 2 | | | |
| AELIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AELIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | | | | |
|---|--|--|--|--|------------------------------------|--|
| Name of system konfiguration / G / F Collector type G F | | | | AElios CuB 2600 No. collectors G F | 2 Storage type G F | AElios 250/5.2 CuB 250L |
|---|--|--|--|--|------------------------------------|--|

| Calculated annual results / G / F | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|------|------|----------|------|------|--------|------|------|------------|-----|-----|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | |
| | 200 | 250 | 300 | 200 | 250 | 300 | 200 | 250 | 300 | | | |
| | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | 200 | 250 | 300 |
| | Qd kWh/y | | | QL kWh/y | | | fsol % | | | Qpar kWh/y | | |
| Stockholm, SE | 3101 | 3881 | 4652 | 1647 | 1848 | 2006 | 53.1 | 47.6 | 43.1 | | | |
| Würzburg, DE | 2970 | 3714 | 4459 | 1673 | 1927 | 2120 | 56.3 | 51.9 | 47.5 | | | |
| Davos, CH | 3364 | 4205 | 5046 | 2470 | 2794 | 3005 | 73.4 | 66.5 | 59.5 | | | |
| Athens, GR | 2313 | 2891 | 3469 | 1997 | 2356 | 2663 | 86.4 | 81.5 | 76.8 | | | |

| | | | | | | | | | | | | |
|-----------------------------------|----------------------------------|-------------------------------------|-------------|-----------|-------------|--|--|--|--|--|--|--|
| Perf. indicators G F | Qd | Heat demand / G / F | | | | | | | | | | |
| | QL | System output / G / F | | | | | | | | | | |
| | fsol | QL/Qd; solar fraction / G / F | | | | | | | | | | |
| | Qpar | Elec. for pumps/controllers / G / F | | | | | | | | | | |
| | Ref. conditions G F | | | | | | | | | | | |
| | | Stockholm SE | Würzburg DE | Davos CH | Athens GR | | | | | | | |
| G | kWh/m ² | 1,156 | 1,226 | 1,682 | 1,717 | | | | | | | |
| Ta | °C | 7.5 | 9.0 | 3.2 | 18.5 | | | | | | | |
| Tc | °C | 8.5 | 10.0 | 5.4 | 17.8 | | | | | | | |
| ΔTc | °C | 2.1 - 14.9 | 7.0 - 13.0 | 4.6 - 6.2 | 10.4 - 25.2 | | | | | | | |
| 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 | 1,000 kPa |
|---|----------------|--|------------------|

| | |
|--|--|
| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais Website Test report id. number / Prüberichtsnummer / F Date of test report / G / F Test method / G / F | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB www.solar.demokritos.gr 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 4/9/2013, 28/9/2015 ISO 9459-5 (DST) |
|--|--|

| | |
|--|--|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire English Deutsch Francais | N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belesiotis Tel: +210 6503815 - Fax: +210 6544500 153 10 Ag. Paraskevi - Attiki - Greece |
|--|--|



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|--|---------------------|--------------------|
| 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 KEYMARK | Registration | |
| | Registernummer | SKM 9965/13 |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|--------------------------------|--------------------------|------------------------|
| Company / Firma / Société | NOBEL INTERNATIONAL EAD | Country/Land/Pays | BULGARIA |
| Street / Straße / Rue | 48, VITOSHA BLV | Website | |
| Postal Code, Place / PLZ, Ort / Code postal, Place | 2100 SOFIA BULGARIA | E-mail | info1@nobel.gr |
| | | Tel. / Fax | +0359 2 4210232 |

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AELIOS CuB 1500 | | 2 | 2 | | | |
| AELIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AELIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | | |
|---|------------------------|-----------------------|----------|-------------------------|
| Name of system konfiguration / G / F | | | | AELIOS 300/4 CuB |
| Collector type | AElios CuB 2000 | No. collectors | 2 | Storage type |
| G | | G | | G |
| F | | F | | F |
| | | | | 300L |

| Calculated annual results / G / F | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|--|------|----------|------|------|--------------------|------|------|------------------------|--|--|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | |
| | 250 | 300 | 400 | 250 | 300 | 400 | 250 | 300 | 400 | | | |
| | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | | | |
| | Qd kWh/y | | | QL kWh/y | | | f _{sol} % | | | Q _{par} kWh/y | | |
| Stockholm, SE | 3881 | 4652 | 6202 | 1699 | 1805 | 1962 | 43.8 | 38.8 | 31.6 | | | |
| Würzburg, DE | 3714 | 4459 | 5948 | 1770 | 1918 | 2085 | 47.6 | 43.0 | 35.1 | | | |
| Davos, CH | 4205 | 5046 | 6728 | 2479 | 2646 | 2829 | 59.0 | 52.4 | 42.1 | | | |
| Athens, GR | 2891 | 3469 | 4625 | 2225 | 2488 | 2838 | 77.0 | 71.7 | 61.4 | | | |
| Perf. indicators | Q _d | Heat demand / G / F | | | | | | | | | | |
| G | Q _L | System output / G / F | | | | | | | | | | |
| F | f _{sol} | QL/Qd; solar fraction / G / F | | | | | | | | | | |
| | Q _{par} | Elec. for pumps/controllers / G / F | | | | | | | | | | |

| Ref. conditions G F | Stockholm SE Würzburg DE Davos CH Athens GR | | | | |
|---------------------------|---|--|------------|-----------|-------------|
| | G | 1,156 | 1,226 | 1,682 | 1,717 |
| | 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/m ² | 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 | 300 kPa | Max. operating press. - tank side | 1,000 kPa |
| G | | G | |
| F | | F | |

| | |
|---|--|
| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB |
| Website | www.solar.demokritos.gr |
| Test report id. number / Prüberichtsnummer / F | 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 |
| Date of test report / G / F | 4/9/2013, 28/9/2015 |
| Test method / G / F | ISO 9459-5 (DST) |

| | |
|--|--|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire | |
| English Deutsch Francais | N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belesiotis Tel: +210 6503815 - Fax: +210 6544592 153 10 Ag. Paraskevi - Attiki - Greece |



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|--|---------------------|--------------------|
| 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 KEYMARK | Registration | |
| | Registernummer | SKM 9965/13 |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|--------------------------------|--------------------------|------------------------|
| Company / Firma / Société | NOBEL INTERNATIONAL EAD | Country/Land/Pays | BULGARIA |
| Street / Straße / Rue | 48, VITOSHA BLV | Website | |
| Postal Code, Place / PLZ, Ort / Code postal, Place | 2100 SOFIA BULGARIA | E-mail | info1@nobel.gr |
| | | Tel. / Fax | +0359 2 4210232 |

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AELIOS CuB 1500 | | 2 | 2 | | | |
| AELIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AELIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | | |
|---|------------------------|-----------------------|----------|---------------------------|
| Name of system konfiguration / G / F | | | | AELIOS 300/5.2 CuB |
| Collector type | AElios CuB 2600 | No. collectors | 2 | Storage type |
| G | | G | | G |
| F | | F | | F |
| | | | | 300L |

| Calculated annual results / G / F | | | | | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|--|------|----------|------|------|--------|------|------|------------|-----|-----|-----|-----|-----|--|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | | | | | |
| | 250 | 300 | 400 | 250 | 300 | 400 | 250 | 300 | 400 | 250 | 300 | 400 | 250 | 300 | 400 | |
| | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | |
| | Qd kWh/y | | | QL kWh/y | | | fsol % | | | Qpar kWh/y | | | | | | |
| Stockholm, SE | 3881 | 4652 | 6202 | 1901 | 2059 | 2278 | 49.0 | 44.3 | 36.7 | | | | | | | |
| Würzburg, DE | 3714 | 4459 | 5948 | 1945 | 2164 | 2418 | 52.4 | 48.5 | 40.6 | | | | | | | |
| Davos, CH | 4205 | 5046 | 6728 | 2821 | 3066 | 3320 | 67.1 | 60.8 | 49.3 | | | | | | | |
| Athens, GR | 2891 | 3469 | 4625 | 2383 | 2698 | 3162 | 82.4 | 77.8 | 68.4 | | | | | | | |
| Perf. indicators | Qd | Heat demand / G / F | | | | | | | | | | | | | | |
| G | QL | System output / G / F | | | | | | | | | | | | | | |
| F | fsol | QL/Qd; solar fraction / G / F | | | | | | | | | | | | | | |
| | Qpar | Elec. for pumps/controllers / G / F | | | | | | | | | | | | | | |

| Ref. conditions G F | Stockholm SE | | | | Würzburg DE | | | | Davos CH | | | | Athens GR | | | |
|---------------------------|--------------------|--|------------|-----------|-------------|--|--|--|----------|--|--|--|-----------|--|--|--|
| | G | 1,156 | 1,226 | 1,682 | 1,717 | | | | | | | | | | | |
| | 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/m ² | 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 | 300 kPa | Max. operating press. - tank side | 1,000 kPa |
| G | | G | |
| F | | F | |

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| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB |
| Website | www.solar.demokritos.gr |
| Test report id. number / Prüberichtsnummer / F | 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 |
| Date of test report / G / F | 4/9/2013, 28/9/2015 |
| Test method / G / F | ISO 9459-5 (DST) |

| | |
|--|--|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire | |
| English Deutsch Francais | N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belesiotis Tel: +210 6503815 - Fax: +210 6544592 153 10 Ag. Paraskevi - Attiki - Greece |



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| 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 KEYMARK | Registration | |
| | Registernummer | SKM 9965/13 |
| | Num. d'enregistrement | |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|--------------------------------|--------------------------|---|
| Company / Firma / Société | NOBEL INTERNATIONAL EAD | Country/Land/Pays | BULGARIA |
| Street / Straße / Rue | 48, VITOSHA BLV | Website | |
| Postal Code, Place / PLZ, Ort / Code postal, Place | 2100 | SOFIA BULGARIA | E-mail info1@nobel.gr |
| | | Tel. / Fax | +0359 2 4210232 |

| System family overview / G / F | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|
| Collector type G F | Number of collectors / G / F | | | | | |
| | Storage type / G / F | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L |
| AELIOS CuB 1500 | | 2 | 2 | | | |
| AELIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 3 |
| AELIOS CuB 2600 | | 1 | 1 | 2 | 2 | 2 |

| | | | | |
|---|------------------------|---------------------------------|----------|-------------------------------|
| Name of system konfiguration / G / F | | | | AELIOS 320/4 CuB |
| Collector type G F | AElios CuB 2000 | No. collectors G F | 2 | Storage type G F |
| | | | | 320L |

| Calculated annual results / G / F | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|--|------|----------|------|------|--------|------|------|------------|--|--|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | |
| | 250 | 300 | 400 | 250 | 300 | 400 | 250 | 300 | 400 | | | |
| | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | | | |
| | Qd kWh/y | | | QL kWh/y | | | fsol % | | | Qpar kWh/y | | |
| Stockholm, SE | 3881 | 4652 | 6202 | 1831 | 1980 | 2164 | 47.3 | 42.6 | 34.9 | | | |
| Würzburg, DE | 3714 | 4459 | 5948 | 1840 | 2006 | 2190 | 49.5 | 44.9 | 36.9 | | | |
| Davos, CH | 4205 | 5046 | 6728 | 2505 | 2681 | 2882 | 59.5 | 53.0 | 42.8 | | | |
| Athens, GR | 2891 | 3469 | 4625 | 2365 | 2672 | 3066 | 82.0 | 77.1 | 66.3 | | | |
| Perf. indicators G F | Qd | Heat demand / G / F | | | | | | | | | | |
| | QL | System output / G / F | | | | | | | | | | |
| | fsol | QL/Qd; solar fraction / G / F | | | | | | | | | | |
| | Qpar | Elec. for pumps/controllers / G / F | | | | | | | | | | |

| Ref. conditions G F | | Stockholm SE | Würzburg DE | Davos CH | Athens GR | | |
|---------------------------|--------------------|--|-------------|-----------|-------------|-------|--|
| | G | G | 1,156 | 1,226 | 1,682 | 1,717 | |
| | 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/m ² | 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 | 1,000 kPa |
|---|----------------|--|------------------|

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|---|--|
| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB |
| Website | www.solar.demokritos.gr |
| Test report id. number / Prüberichtsnummer / F | 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 |
| Date of test report / G / F | 4/9/2013, 28/9/2015 |
| Test method / G / F | ISO 9459-5 (DST) |

| | |
|--|---|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire | |
| English Deutsch Francais | N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilios Belesiotis Tel: +210 6503815 - Fax: +210 6544592 153 10 Ag. Paraskevi - Attiki - Greece |



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|--|--|---|
| 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 KEYMARK | Registration No. Registernummer Num. d'enregistrement Date / Datum / Date | SKM 9965/13 10/10/2015 |
|--|--|---|

| | | | |
|---|--|--|--|
| Company / Firma / Société Street / Straße / Rue Postal Code, Place / PLZ, Ort / Code postal, Place | NOBEL INTERNATIONAL EAD 48, VITOSHA BLV 2100 SOFIA BULGARIA | Country/Land/Pays Website E-mail Tel. / Fax | BULGARIA info1@nobel.gr +0359 2 4210232 |
|---|--|--|--|

| System family overview / G / F | | | | | | | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|--|--|--|---|---|---|
| Collector type G F | Number of collectors / G / F | | | | | | | | | | | |
| | Storage type / G / F | | | | | | | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L | | | | | | |
| AElios CuB 1500 | | 2 | 2 | | | | | | | | | |
| AElios CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 | | | | 2 | 3 | |
| AElios CuB 2600 | | 1 | 1 | 2 | 2 | | | | | 2 | | 2 |

| | | | | | | | | | | | | | | |
|--|--|--|---------------------------------|--|--|--------------------------|--|--|-------------------------------|--|--|--|--|--|
| Name of system konfiguration / G / F Collector type G F | | | | | | | | | | | | AElios 320/5.2 CuB 320L | | |
| AElios CuB 2600 G F | | | No. collectors G F | | | 2 2 | | | Storage type G F | | | 320L 320L | | |

| Calculated annual results / G / F | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|------|------|----------|------|------|--------------------|------|------|------------------------|-----|-----|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | |
| | 250 | 300 | 400 | 250 | 300 | 400 | 250 | 300 | 400 | | | |
| | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d |
| | Qd kWh/y | | | QL kWh/y | | | f _{sol} % | | | Q _{par} kWh/y | | |
| Stockholm, SE | 3881 | 4652 | 6202 | 1910 | 2067 | 2295 | 49.2 | 44.4 | 37.0 | | | |
| Würzburg, DE | 3714 | 4459 | 5948 | 1953 | 2172 | 2435 | 52.6 | 48.7 | 40.9 | | | |
| Davos, CH | 4205 | 5046 | 6728 | 2829 | 3075 | 3346 | 67.3 | 60.9 | 49.7 | | | |
| Athens, GR | 2891 | 3469 | 4625 | 2383 | 2707 | 3180 | 82.4 | 78.0 | 68.8 | | | |

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

| | | | | | | | |
|----------------------------------|-----------------|--------------|-------------|-----------|-------------|--|--|
| Ref. conditions G F | | Stockholm SE | Würzburg DE | Davos CH | Athens GR | | |
| | G | 1,156 | 1,226 | 1,682 | 1,717 | | |
| | T _a | 7.5 | 9.0 | 3.2 | 18.5 | | |
| | T _c | 8.5 | 10.0 | 5.4 | 17.8 | | |
| | ΔT _c | 2.1 - 14.9 | 7.0 - 13.0 | 4.6 - 6.2 | 10.4 - 25.2 | | |

| | | |
|-----------------|--------------------|--|
| G | kWh/m ² | Annual irradiation South, 45° / G / F |
| T _a | °C | Annual mean air temp. / G / F |
| T _c | °C | Annual mean cold water temp. / G / F |
| ΔT _c | °C | Seasonal variation of T _c / 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 | 1,000 kPa |
|---|-------------------|--|---------------------|

| | |
|--|--|
| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais Website Test report id. number / Prüberichtsnummer / F Date of test report / G / F Test method / G / F | NCSR "DEMOKRITOS" - SOLAR & ENERGY SYSTEMS LAB www.solar.demokritos.gr 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 4/9/2013, 28/9/2015 ISO 9459-5 (DST) |
|--|--|

| | |
|--|--|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire English Deutsch Français | N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belesiotis Tel: +210 6503815 - Fax: +210 6544507 153 10 Ag. Paraskevi - Attiki - Greece |
|--|--|



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|--|----------------------------|--------------------|
| 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 KEYMARK | Registration No. | SKM 9965/13 |
| | Registernummer | |
| | Num. d'enregistrement | |
| | Date / Datum / Date | 10/10/2015 |

| | | | |
|---|--------------------------------|--------------------------|------------------------|
| Company / Firma / Société | NOBEL INTERNATIONAL EAD | Country/Land/Pays | BULGARIA |
| Street / Straße / Rue | 48, VITOSHA BLV | Website | |
| Postal Code, Place / PLZ, Ort / Code postal, Place | 2100 SOFIA BULGARIA | E-mail | info1@nobel.gr |
| | | Tel. / Fax | +0359 2 4210232 |

| System family overview / G / F | | | | | | | | | | | | |
|--------------------------------|------------------------------|------|------|------|------|------|---|---|---|---|---|--|
| Collector type G F | Number of collectors / G / F | | | | | | | | | | | |
| | Storage type / G / F | | | | | | | | | | | |
| | 120L | 160L | 200L | 250L | 300L | 320L | | | | | | |
| AELIOS CuB 1500 | | 2 | 2 | | | | | | | | | |
| AELIOS CuB 2000 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | |
| AELIOS CuB 2600 | | 1 | 1 | | 2 | | | 2 | | 2 | 2 | |

| | | | | | | | | | | | | | | |
|---|-----------------------|-----------------------|----------|---------------------|--|--|--|--|--|--|--|-------------------------|--|-------------|
| Name of system konfiguration / G / F | | | | | | | | | | | | AELIOS 320/6 CuB | | |
| Collector type | AEIOS CuB 2000 | No. collectors | 3 | Storage type | | | | | | | | | | 320L |
| G | | G | | G | | | | | | | | | | |
| F | | F | | F | | | | | | | | | | |

| Calculated annual results / G / F | | | | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|---|------|----------|------|------|--------------------|------|------|--|--|--|------------------------|-----|-----|
| Location G F | Daily draw-off litres/day / G / F / | | | | | | | | | | | | | | |
| | 250 | 300 | 400 | 250 | 300 | 400 | 250 | 300 | 400 | | | | 250 | 300 | 400 |
| | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | l/d | | | | l/d | l/d | l/d |
| | Qd kWh/y | | | QL kWh/y | | | f _{sol} % | | | | | | Q _{par} kWh/y | | |
| Stockholm, SE | 3881 | 4652 | 6202 | 2199 | 2444 | 2751 | 56.7 | 52.5 | 44.4 | | | | | | |
| Würzburg, DE | 3714 | 4459 | 5948 | 2146 | 2418 | 2786 | 57.8 | 54.2 | 46.9 | | | | | | |
| Davos, CH | 4205 | 5046 | 6728 | 3066 | 3390 | 3776 | 72.8 | 67.1 | 56.1 | | | | | | |
| Athens, GR | 2891 | 3469 | 4625 | 2602 | 3005 | 3670 | 90.0 | 86.7 | 79.5 | | | | | | |
| Perf. indicators G F | Q _d | Heat demand / G / F | | | | | | | | | | | | | |
| | Q _L | System output / G / F | | | | | | | | | | | | | |
| | f _{sol} | QL/Q_d; solar fraction / G / F | | | | | | | | | | | | | |
| | Q _{par} | Elec. for pumps/controllers / G / F | | | | | | | | | | | | | |

| Ref. conditions G F | Stockholm SE | | | | Würzburg DE | | | | Davos CH | | | | Athens GR | | | | |
|---------------------------|--------------------|--|--|--|-------------|------------|--|--|----------|-----------|--|--|-----------|-------------|--|--|--|
| | G | 1,156 | | | | 1,226 | | | | 1,682 | | | | 1,717 | | | |
| | T _a | 7.5 | | | | 9.0 | | | | 3.2 | | | | 18.5 | | | |
| | T _c | 8.5 | | | | 10.0 | | | | 5.4 | | | | 17.8 | | | |
| | ΔT _c | 2.1 - 14.9 | | | | 7.0 - 13.0 | | | | 4.6 - 6.2 | | | | 10.4 - 25.2 | | | |
| G | kWh/m ² | Annual irradiation South, 45° / G / F | | | | | | | | | | | | | | | |
| T _a | °C | Annual mean air temp. / G / F | | | | | | | | | | | | | | | |
| T _c | °C | Annual mean cold water temp. / G / F | | | | | | | | | | | | | | | |
| ΔT _c | °C | Seasonal variation of T_c / G / F | | | | | | | | | | | | | | | |
| Th | 45°C | Desired (mix. valve) temp. / G / F | | | | | | | | | | | | | | | |

| | | | | | |
|---|------------|------------|--|--------------|------------|
| Max. operating press. - collector side | 300 | kPa | Max. operating press. - tank side | 1,000 | kPa |
| G | | | G | | |
| F | | | F | | |

| | |
|---|--|
| Testing Laboratory / Prüflaboratorium / Laboratoire d'essais | NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB |
| Website | www.solar.demokritos.gr |
| Test report id. number / Prüberichtsnummer / F | 6030 DE2, 6032 DE3, 6032 F4, 6032 F9 |
| Date of test report / G / F | 4/9/2013, 28/9/2015 |
| Test method / G / F | ISO 9459-5 (DST) |

| | |
|--|--|
| Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire | N.C.S.R "DEMOKRITOS" SOLAR ENERGY LABORATORY Head: Dr Vassilis Belesiotis Tel: +210 6503815 - Fax: +210 6544597 153 10 Ag. Paraskevi - Attiki - Greece |
| English | |
| Deutsch | |
| Francais | |