**MESCOLI**
CALDAIE DAL 1962

CONFORMITÀ AI REQUISITI
D.M. 16 FEBBRAIO 2016 (CONTO TERMICO 2.0)

La sottoscritta Società, rivenditrice in Italia dei collettori solari della ditta "**GASOKOL GmbH - Austria**" attesta che i seguenti modelli di collettori solari:

- **SUNNYSOL 23V**
- **SUNNYSOL 23H**

Rispondono ai requisiti minimi richiesti per l'accesso all'incentivo riportati nelle Regole Applicative del D.M. 16/02/2016 al capitolo 5, paragrafo 10.2.

Più precisamente:

- i collettori solari sono in possesso della certificazione Solar Keymark (vedere certificato in allegato n. **011-7S019 F**);
- i collettori solari hanno valori di producibilità specifica, espressa in termini di energia solare annua prodotta per unità di superficie lorda $A_G$ calcolata a partire dal dato contenuto nella certificazione Solar Keymark per una temperatura media di funzionamento di 50°C, **superiore a 300 kWh$_t$/m$^2$ anno, con riferimento alla località Würzburg** (vedere risultati test in allegato n. **011-7S019 F** secondo EN ISO 9806).

  Valori di energia solare annua prodotta per singolo collettore riferita a Würzburg:

| MODELLO COLLETTORE | SUPERFICIE LORDA $A_G$ [m$^2$] | ENERGIA TERMICA ANNUA $Q_{col}$ [kWh] | ENERGIA SOLARE ANNUA PER UNITÀ DI SUPERFICIE LORDA $Q_U$ [kWh/m$^2$] |
|---|---|---|---|
| SUNNYSOL UP-V | 2,25 | 1.055 | 468,8 |
| SUNNYSOL UP-H | 2,25 | 1.055 | 468,8 |

- I collettori solari, e le serie di bollitori e puffer sotto elencate hanno garanzia 5 anni solo in abbinamento a sistemi solari:
  - Bollitori per A.C.S. serie FIX, FAR e FAT;
  - Puffer serie GEA;
  - Puffer combinati per A.C.S. serie TRIGENIO e GAMMA.
- Accessori e componenti elettrici/elettronici sono garantiti 2 anni.

Si rilascia la presente dichiarazione anche per l'utilizzo alternativo ai fini dell'**ottenimento alla detrazione di imposta** per interventi di risparmio energetico (**Ecobonus**) Art. 1, **comma 346** della legge finanziaria 2007 e Legge di bilancio 2017 (legge 11 dicembre 2016, n. 232).

Vignola, lì 22 aprile 2020

MESCOLI CALDAIE SRL
*Il Legale Rappresentante*
*Mescoli Dott. Ing. Gianni*

**MESCOLI CALDAIE S R L** - 41058 Vignola (MO) ITALY - Via del Commercio, 285
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Gesellschaft für Konformitätsbewertung mbH

# ZERTIFIKAT

| | |
|---|---|
| **Zertifikatinhaber** | **GASOKOL GmbH**<br>**Solarpark 1**<br>**4351 Saxen**<br>**ÖSTERREICH** |
| **Herstellwerk** | Saxen |
| **Produkt** | Sonnenkollektoren |
| **Typ, Modell** | sunnySol 23V, sunnySol 23H |
| **Prüfgrundlage(n)** | DIN EN 12975-1:2011-01<br>DIN EN 12975-2:2006-06<br>DIN EN ISO 9806:2018-04<br>SOLAR KEYMARK Programmregeln (2019-03) |
| **Konformitätszeichen** | |
| **Registernummer** | 011-7S019 F |
| **Gültig bis** | 2023-07-31 |
| **Nutzungsrecht** | Dieses Zertifikat berechtigt zum Führen des oben stehenden Konformitätszeichens in Verbindung mit der genannten Registernummer.<br><br>Weitere Angaben siehe Anhang. |

2019-11-25

DipL.-Wi.-Ing. (FH) Sören Scholz
Leiter der Zertifizierungsstelle

GESELLSCHAFT FÜR KONFORMITÄTSBEWERTUNG MBH DIN CERTCO

DAkkS
Deutsche
Akkreditierungsstelle
D-ZE-11125-01-00

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# ANHANG



**Zertifikat** 011-7S019 F von 2019-11-25

**Technische Angaben** siehe Datenblatt für den Prüfbericht von 2015-07-20

Bemerkung(en):

- Die Prüfung der Frostbeständigkeit nach DIN EN 12975-2, Abschnitt 5.8 ist nicht erforderlich. Laut Herstellerangabe dürfen die zertifizierten Kollektoren in frostgefährdeten Gebieten nur unter Verwendung geeigneter Frostschutzmittel oder geeigneter Frostschutz-Regeleinrichtungen betrieben werden.

- Die optionale Prüfung der Schlagfestigkeit nach DIN EN 12975-2, Abschnitt 5.10 wurde nicht durchgeführt.

**Prüflaboratorium/ Überwachungsstelle**

TÜV Rheinland Energy GmbH
Am Grauen Stein 1
51105 Köln
DEUTSCHLAND

**Prüfbericht(e)** Nr. 2.04.01243.1.0-3-LT und -QT von 2015-07-20

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Precisely Right.



## Annex to Solar Keymark Certificate

| | |
|---|---|
| **Licence Number** | **011-7S019 F** |
| **Date issued** | **2019-11-20** |
| **Issued by** | **TÜV Rheinland Energy GmbH** |

| | | | |
|---|---|---|---|
| **Licence holder** | **Gasokol GmbH** | **Country** | Austria |
| **Brand** (optional) | - | **Web** | www.gasokol.at |
| **Street, Number** | Solarpark 1 | **E-mail** | office@gasokol.at |
| **Postcode, City** | A-4351 Saxen | **Tel** | +43 726 976 600 |

| | |
|---|---|
| **Collector Type** | Flat plate collector |

| **Collector name** | **Gross area ($A_G$)** | **Gross length** | **Gross width** | **Gross height** | **Power output per collector** Gb = 850 W/m2, Gd = 150 W/m2 & u = 1.3 m/s $\vartheta_m - \vartheta_a$ | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 0 K | 10 K | 30 K | 50 K | 70 K | 90 K |
| | m² | mm | mm | mm | W | W | W | W | W | W |
| **sunnySol 23V** | 2.25 | 2 100 | 1 070 | 105 | 1 541 | 1 473 | 1 325 | 1 161 | 980 | 783 |
| **sunnySol 23H** | 2.25 | 1 070 | 2 100 | 105 | 1 541 | 1 473 | 1 325 | 1 161 | 980 | 783 |
| | | | | | | | | | | |
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| | | | | | | | | | | |
| **Power output per m² gross area** | | | | | 685 | 655 | 589 | 516 | 436 | 348 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Performance parameters test method** | Quasi dynamic | | | | | | | | | |
| **Performance parameters (related to $A_G$)** | η0, b | a1 | a2 | a3 | a4 | a5 | a6 | a7 | a8 | Kd |
| **Units** | - | W/(m²K) | W/(m²K²) | J/(m³K) | - | J/(m²K) | s/m | W/(m²K⁴) | W/(m²K⁴) | - |
| **Test results** | 0.688 | 2.93 | 0.009 | 0.000 | 0.00 | 15 690 | 0.000 | 0.00 | 0.0E+00 | 0.97 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Incidence angle modifier test method** | | Quasi dynamic - outdoor | | | | | | | | |
| **Incidence angle modifier** | Angle | 10° | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° |
| **Transversal** | $K_{\theta T,coll}$ | 1.00 | 0.99 | 0.98 | 0.96 | 0.93 | 0.88 | 0.77 | 0.44 | 0.00 |
| **Longitudinal** | $K_{\theta L,coll}$ | 1.00 | 0.99 | 0.98 | 0.96 | 0.93 | 0.88 | 0.77 | 0.44 | 0.00 |

| | | | |
|---|---|---|---|
| **Heat transfer medium for testing** | | Water | |
| **Flow rate for testing (per gross area, $A_G$)** | dm/dt | 0.050 | kg/(sm²) |
| **Maximum temperature difference during thermal performance test** | $(\vartheta_m-\vartheta_a)_{max}$ | 60 | K |
| **Standard stagnation temperature (G = 1000 W/m²; $\vartheta_a$ = 30 °C)** | $\vartheta_{stg}$ | 200 | °C |
| **Maximum operating temperature** | $\vartheta_{max\ op}$ | - | °C |
| **Maximum operating pressure** | $p_{max,op}$ | 1000 | kPa |

| | | | |
|---|---|---|---|
| **Testing laboratory** | TÜV Rheinland Energy GmbH | www.tuv.com/solarpower | |
| **Test report(s)** | 2.04.01243.1.0-3-LT (by AIT)<br>2.04.01243.1.0-3-QT (by AIT) | **Dated** | 20.07.2015<br>20.07.2015 |

**Comments of testing laboratory**

Datasheet version: 6.1, 2019-09-26

The collector had been tested according to EN ISO 9806:2013 by AIT Austrian Institute for Technology GmbH. According to an aperture area of 2.01 m², the collector parameter would be $\eta_{0,hem,a}$=0.765; $a_{1a}$=3.277 and $a_{2a}$=0.010.

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TÜV Rheinland Energy GmbH
Am Grauen Stein
51105 Köln

| Annex to Solar Keymark Certificate | Licence Number | 011-7S019 F |
|---|---|---|
| Supplementary Information | Issued | 2019-11-20 |

**Annual collector output in kWh/collector at mean fluid temperature $\vartheta_m$**

| Standard Locations | Athens | | | Davos | | | Stockholm | | | Würzburg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Collector name / $\vartheta_m$ | 25°C | 50°C | 75°C | 25°C | 50°C | 75°C | 25°C | 50°C | 75°C | 25°C | 50°C | 75°C |
| sunnySol 23V | 2 505 | 1 855 | 1 284 | 1 935 | 1 393 | 933 | 1 420 | 970 | 625 | 1 548 | 1 055 | 668 |
| sunnySol 23H | 2 505 | 1 855 | 1 284 | 1 935 | 1 393 | 933 | 1 420 | 970 | 625 | 1 548 | 1 055 | 668 |
| Annual output per m² gross area | 1 113 | 825 | 571 | 860 | 619 | 415 | 631 | 431 | 278 | 688 | 469 | 297 |
| Annual efficiency, $\eta_a$ | 63% | 47% | 32% | 53% | 38% | 25% | 54% | 37% | 24% | 55% | 38% | 24% |
| Fixed or tracking collector | Fixed (slope = latitude - 15°; rounded to nearest 5°) | | | | | | | | | | | |
| Annual irradiation on collector plane | 1765 kWh/m² | | | 1630 kWh/m² | | | 1166 kWh/m² | | | 1244 kWh/m² | | |
| Mean annual ambient air temperature | 18.5°C | | | 3.2°C | | | 7.5°C | | | 9.0°C | | |
| Collector orientation or tracking mode | South, 25° | | | South, 30° | | | South, 45° | | | South, 35° | | |

The collector is operated at constant temperature ϑm (mean of in- and outlet temperatures). The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool Scenocalc Ver. 6.1 (September 2019). A detailed description of the calculations is available at http://www.estif.org/solarkeymarknew/

## Additional Information

| | | | | | |
|---|---|---|---|---|---|
| Collector heat transfer medium | | | | Water-Glycole | |
| The collector is deemed to be suitable for roof integration | | | | No | |
| | | | | | |
| The collector was tested successfully under the following conditions: | | | | | |
| Climate class (A+, A, B or C) | | | | B | -- |
| G (W/m²) > | 900 | $\vartheta_a$ (°C) > | 15 | $H_x$ (MJ/m²) > | 540 |
| Maximum tested positive load | | | | 2000 | Pa |
| Maximum tested negative load | | | | 1500 | Pa |
| Hail resistance using steel ball (maximum drop height) | | | | - | m |

## Additional collector attribute(s)

☐ Using external power source(s) for normal operation ☐ Active or passive measure(s) for self-protection

☐ Co-generating thermal and electrical power ☐ Façade collector(s)

## Energy Labelling Information

| | Reference Area, $A_{sol}$ (m²) |
|---|---|
| sunnySol 23V | 2.25 |
| sunnySol 23H | 2.25 |

**Data required for CDR (EU) No 811/2013 - Reference Area $A_{sol}$**

| | |
|---|---|
| Collector efficiency ($\eta_{col}$) | 55% |

Remark: Collector efficiency (ηcol) is defined in CDR (EU) No 811/2013 as collector efficiency of the solar collector at a temperature difference between the solar collector and the surrounding air of 40 K and a global solar irradiance of 1000 W/m², expressed in % and rounded to the nearest integer. Deviating from the regulation ηcol is based on reference area (Asol) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2017.

## Additional Informative Technical Data

| | Hydraulic Designation Code | Aperature Area, $A_a$ (m²) |
|---|---|---|
| sunnySol 23V | 8-V-12S-7.2,1940-20.4,2098 | 2.01 |
| sunnySol 23H | 8-V-12S-7.2,1935-20.4,1545 | 2.01 |

**Data required for CDR (EU) No 812/2013 - Reference Area $A_{sol}$**

| | | |
|---|---|---|
| Zero-loss efficiency ($\eta_0$) | 0.68 | -- |
| First-order coefficient ($a_1$) | 2.93 | W/(m²K) |
| Second-order coefficient ($a_2$) | 0.009 | W/(m²K²) |
| Incidence angle modifier IAM (50°) | 0.93 | -- |

*Remark: The data given in this section are related to collector reference area ($A_{sol}$) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806. Consistent data sets for either aperture or gross area can be used in calculations like in the regulation 811 and 812 and simulation programs.*

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