

# AENOR

## Keymark Certificate Solar thermal energy



**078/000319**

AENOR certifies that the organization

### **BDR THERMEA GROUP B.V**

|                       |  |
|-----------------------|--|
| registered office     | MARCHANTSTRAAT, 55 7300 AA APELDOORN (Holanda - Países Bajos)  |
| supplies              | Factory made thermal solar heating systems   |
| in compliance with    | UNE-EN 12976-1:2006 (EN 12976-1:2006)  |
| Trade Mark            | BAXI STS 200 2.0 LP  |
| Technical information | Specified in Annexes to the Certificate  |
| Production site       | CL MANGANÉS, 2 POLIG. INDUSTRIAL CAN ALBAREDA 08755<br>CASTELLBISBAL (Barcelona - España)  |
| Certification scheme  | In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP 078.02. |
| First issued on       | 2019-06-18   |
| Validity date         | 2024-06-18   |

Rafael GARCÍA MEIRO  
Chief Executive Officer

Original Electronic Certificate

**AENOR INTERNACIONAL S.A.U.**  
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Product certification body accredited by ENAC, number 01/C-PR002.078



|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|---|--|--|----------------------------------|----------------------------|-------------------|-------------------------------------|--------------------------------|---------------------|--------------------|--------------------|--------------------------------|--------------------------------------|
| <b>Summary of</b>   |  | <b>EN12976-2</b>   | <b>SOLAR SYSTEM test results</b> |                            |                   | <b>Licence Number</b>               |                                | <b>078/000319</b>   |                    |                    |                                |                                      |
| <b>Annex to Solar KEYMARK Certificate</b>                           |  |  |                                  |                            | <b>Issued</b>     |                                     | <b>2019-06-18</b>              |                     |                    |                    |                                |                                      |
| <b>Company</b>  |  | BDR THERMEA GROUP B.V.   |                                  |                            | <b>Country</b>    |                                     | NETHERLANDS                    |                     |                    |                    |                                |                                      |
| <b>Brand (optional)</b>   |  | BAXI   |                                  |                            | <b>Website</b>    |                                     | www.bdrthermea.com             |                     |                    |                    |                                |                                      |
| <b>Street</b>   |  | MARCHANSTRAAT 55   |                                  |                            | <b>E-mail</b>     |                                     | oleguer.fuertes@BDRThermea.com |                     |                    |                    |                                |                                      |
| <b>Postal Code</b>  |  | 7300 AA  | APPELDOORN                       |                            | <b>Tel. / Fax</b> |                                     | +34                            | 902.898.989         |                    |                    |                                |                                      |
| <b>System classification</b>  |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Application(s)</b>   |  |  |                                  | Hot water                  |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Solar loop, circulation principle</b>                            |  |  |                                  | Thermosyphon               |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Direct solar loop / heat exchanger</b>                           |  |  |                                  | Heat exchanger             |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Open, vented or closed solar loop</b>                            |  |  |                                  | Closed                     |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Drain back/down</b>  |  |  |                                  | Always filled (no drain)   |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Store location</b>   |  |  |                                  | Outdoor                    |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Store orientation (of main axis)</b>                             |  |  |                                  | Horizontal                 |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Type of auxiliary heating (internal back-up heat)</b>            |  |  |                                  | None                       |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>If other auxiliary/internal back-up heating, please specify:</b> |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Solar+supplementary OR Solar-only / Solar pre-heat</b>           |  |  |                                  | Solar only / Solar preheat |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Collector(s)</b>   |  |  |                                  |                            |                   | <b>Heat store(s)</b>                |                                |                     |                    |                    |                                |                                      |
| <b>Company</b>  |  | FABRISOLIA, S.L.U.   |                                  |                            |                   | <b>Company</b>                      |                                | SOLE S.A.           |                    |                    |                                |                                      |
| <b>Keymark lic.no. if available</b>                                 |  | 078/000266   |                                  |                            |                   | <b>Keymark lic.no. if available</b> |                                |                     |                    |                    |                                |                                      |
| <b>Collector name</b>   |  | <b>Per module</b>  |                                  |                            | <b>Store name</b> |                                     | <b>Total nominal volume</b>    | <b>Gross height</b> | <b>Gross width</b> | <b>Gross depth</b> | <b>Auxiliary heated volume</b> | <b>Electrical aux. heating power</b> |
|   |  | <b>Gross Area (Ag)</b>   | <b>Gross length</b>              | <b>Gross width</b>         |                   |                                     |                                |                     |                    |                    |                                |                                      |
| BAXI MEDITERRANEO SLIM 200  |  | 2,02   | 1757                             | 1151                       | STS LP 200        |                                     | 178                            | 530                 | 1145               | --                 | --                             | --                                   |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Solar loop controller</b>  |  |  |                                  |                            |                   | <b>Solar loop fluid</b>             |                                |                     |                    |                    |                                |                                      |
| <b>Keymark lic.no. if available</b>                                 |  | --   |                                  |                            |                   | <b>Recommended/required</b>         |                                | Required            |                    |                    |                                |                                      |
| <b>Company</b>  |  | --   |                                  |                            |                   | <b>Company</b>                      |                                | BAXI                |                    |                    |                                |                                      |
| <b>Name</b>   |  | --   |                                  |                            |                   | <b>Name</b>                         |                                | FAC 10              |                    |                    |                                |                                      |
| <b>Solar loop pump - power range</b>                                |  | W to W   |                                  |                            |                   | <b>Freezing point</b>               |                                | -10 °C              |                    |                    |                                |                                      |
| <b>System family overview</b>                                       |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Collector name</b>   |  | <b>Number of collectors in each configuration for each store</b> |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  | <b>Store name</b>  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  | STS LP 200   |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
| BAXI MEDITERRANEO SLIM 200  |  | 1  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Testing Laboratory</b>   |  | Fundación CENER-CIEMAT   |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Website</b>  |  | www.cener.com  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Test report id. number</b>                                       |  | 30.3452.0-1 Test report  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Date of test report</b>  |  | 2019-05-10   |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
| <b>Comments of test lab</b>   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |
|   |  |  |                                  |                            |                   |                                     |                                |                     |                    |                    |                                |                                      |





|   |                            |  |                          |  |            |   |            |              |           |                     |            |              |           |
|---|----------------------------|--|--------------------------|--|------------|---|------------|--------------|-----------|---------------------|------------|--------------|-----------|
| <b>Summary of</b>   | <b>EN12976-2</b>           | <b>test results</b>  | <b>Certification No.</b> | <b>078/000319</b>                        |            |   |            |              |           |                     |            |              |           |
| <b>Annex to Solar KEYMARK Certificate</b>                             |                            |  | <b>Issued</b>            | <b>2019-06-18</b>                        |            |   |            |              |           |                     |            |              |           |
| <b>Company</b>  | BDR THERMEA GROUP B.V.     |  | <b>Country</b>           | NETHERLANDS                              |            |   |            |              |           |                     |            |              |           |
| <b>Brand (optional)</b>   | BAXI                       |  | <b>Website</b>           | www.bdrthermea.com                       |            |   |            |              |           |                     |            |              |           |
| <b>Street</b>   | MARCHANSTRAAT 55           |  | <b>E-mail</b>            | oleguer.fuertes@BDRThermea.com           |            |   |            |              |           |                     |            |              |           |
| <b>Postal Code</b>  | 7300 AA                    | APPELDOORN   | <b>Tel. / Fax</b>        | +34 902898989                            |            |   |            |              |           |                     |            |              |           |
| <b>System family overview</b>   |                            |  |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>For each storage and collector size, give number of collectors</b> |                            |  |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>Collector name</b>   | STS LP 200                 |  |                          |  |            |   |            |              |           |                     |            |              |           |
| BAXI MEDITERRANEO SLIM 200  | 1                          |  |                          |  |            |   |            |              |           |                     |            |              |           |
|   |                            |  |                          |  |            |   |            |              |           |                     |            |              |           |
|   |                            |  |                          |  |            |   |            |              |           |                     |            |              |           |
|   |                            |  |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>Name of system configuration</b>                                   |                            |  | BAXI STS 200 2.0 LP      |  |            |   |            |              |           |                     |            |              |           |
| <b>Collector name</b>   | BAXI MEDITERRANEO SLIM 200 | <b>No. Collectors</b>  | 1                        | <b>Storage name</b>                      | STS LP 200 |   |            |              |           |                     |            |              |           |
| <b>Calculated annual results for "solar-only / preheat system"</b>    |                            |  |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>Location</b>   | Qd,sh<br>MJ/y              | Daily drawoff 140 l  |                          |  |            | Daily drawoff 170 l   |            |              |           | Daily drawoff 200 l |            |              |           |
|   |                            | Qd,hw<br>MJ/y  | QL<br>MJ/y               | Qpar<br>MJ/y                             | fsol<br>%  | Qd,hw<br>MJ/y   | QL<br>MJ/y | Qpar<br>MJ/y | fsol<br>% | Qd,hw<br>MJ/y       | QL<br>MJ/y | Qpar<br>MJ/y | fsol<br>% |
| Stockholm SE  | --                         | 7814   | 2969                     | 0  | 38,0       | 9489  | 3132       | 0            | 33,0      | 11163               | 3229       | 0            | 28,9      |
| WürzburgDE  | --                         | 7494   | 3155                     | 0  | 42,1       | 9099  | 3364       | 0            | 37,0      | 10705               | 3458       | 0            | 32,3      |
| Davos CH  | --                         | 8479   | 4315                     | 0  | 50,9       | 10295   | 4550       | 0            | 44,2      | 12112               | 4670       | 0            | 38,6      |
| Athens GR   | --                         | 5823   | 4111                     | 0  | 70,6       | 7071  | 4551       | 0            | 64,4      | 8319                | 4852       | 0            | 58,3      |
|   |                            |  |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>Perf. indicators for the table above</b>                           |                            |  |                          |  |            |   |            |              |           |                     |            |              |           |
| Qd,sh   | MJ/y                       | Not relevant for solar domestic hot water system             |                          |  |            |   |            |              |           |                     |            |              |           |
| Qd  | MJ/y                       | Annual heat demand for domestic hot water                    |                          |  |            |   |            |              |           |                     |            |              |           |
| QL  | MJ/y                       | Annual heat energy delivered by the solar system             |                          |  |            |   |            |              |           |                     |            |              |           |
| Qpar  | MJ/y                       | Annual parasitic energy: (electricity for pumps/controllers) |                          |  |            |   |            |              |           |                     |            |              |           |
| $f_{sol}=Q_L/Q_d$   | -                          | Solar fraction   |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>Ref. conditions</b>  |                            | Stockholm SE   | Würzburg DE              | Davos CH                                 | Athens GR  |   |            |              |           |                     |            |              |           |
|   | G                          | 1.157  | 1.230                    | 1.684                                    | 1.736      |   |            |              |           |                     |            |              |           |
|   | Ta,ave                     | 7,5  | 9,0                      | 3,2                                      | 18,5       |   |            |              |           |                     |            |              |           |
|   | Tc,ave                     | 8,5  | 10,0                     | 5,4                                      | 17,8       |   |            |              |           |                     |            |              |           |
|   | ± ΔTc                      | 6,4  | 3,0                      | 0,8                                      | 7,4        |   |            |              |           |                     |            |              |           |
| G   | kWh/m <sup>2</sup>         | Annual irradiation South, 45°                                |                          |  |            |   |            |              |           |                     |            |              |           |
| Ta,ave  | °C                         | Annual average outdoor air temperature                       |                          |  |            |   |            |              |           |                     |            |              |           |
| Tc,ave  | °C                         | Annual average mains cold water temp.                        |                          |  |            |   |            |              |           |                     |            |              |           |
| ΔTc   | K                          | Seasonal variation of Tc                                     |                          |  |            |   |            |              |           |                     |            |              |           |
| Th  | 45 °C                      | Desired hot water temperature (mixing valve temperature).    |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>Max. operating press. - collector side</b>                         |                            | 1000   | kPa                      | <b>Max. operating press. - tank side</b> |            | 8000  | kPa        |              |           |                     |            |              |           |
| <b>Testing Laboratory</b>   | Fundación CENER-CIEMAT     |  |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>Website</b>  | www.cener.com              |  |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>Test report id. number</b>   | 30.3452.0-1 Test report    |  |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>Date of test report</b>  | 2019-05-10                 |  |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>Test method</b>  | ISO 9459-5 (DST)           |  |                          |  |            |   |            |              |           |                     |            |              |           |
| <b>Comments of test lab</b>   |                            |  |                          |  |            |   |            |              |           |                     |            |              |           |
| No comments   |                            |  |                          |  |            |   |            |              |           |                     |            |              |           |
|   |                            |  |                          |  |            |  <b>CENER</b><br>ADItech<br>NATIONAL RENEWABLE ENERGY CENTRE |            |              |           |                     |            |              |           |

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

Version 4.5, 2017-10-24