TÜVRheinland®
LRTDEA

LATAK - S1-239

# CERTIFICATE

## EU-Type examination – production type (Module B)

### Certificate No: 2.3.18/B/001

| | |
|---|---|
| Name of manufacturer: | **Eko Air, SIA** |
| Legal address: | **30D Miera Street, Salaspils, LV-2169, Latvia** |
| Address of manufacturing plant: | **30D Miera Street, Salaspils, LV-2169, Latvia** |
| Description of pressure equipment: | **Stainless steel brazed plate heat exchangers** |
| Type: | **HB23x; HB32x; HB13x; HB46x; HB53x; HB75x** |
| Project No: | **HB000.000.00** |
| Drawing No: | **HB23X-53X BPHE Assembly; HB75X BPHE Assembly** |
| Category: | **III** |
| Fluid group: | **I; II** |
| Test report No: | **2.3.18/B/001-PZ** |

We hereby certify, that the pressure equipment mentioned above are manufactured in accordance with the essential safety requirements of the Pressure Equipment Directive 2014/68/EU

Standards applied: EN13445-3; EN13445-5; EN10028-7

Test report and the conditions for the use of the certificate are integral part of the certificate.

Date of issue: **19 January 2018**

Expiry date: **19 January 2028**

Engineer: Signature Aleksandrs Braslis

LRTDEA Sertifikācijas centrs
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# Test report

| Internal manufacturing check | | | | | | | Burst test | |
|---|---|---|---|---|---|---|---|---|
| **Module:** | A2 | B (production) | B (design) | C2 | F | G | **Test report No:** | **2.3.18/B/001-PZ** |
| Manufacturer: **Eko Air, SIA** | | | | | | | Address of manufacturing plant: **30D Miera Street, Salaspils, LV-2169, Latvia** | |

| **DESCRIPTION OF STAINLESS STEEL BRAZED PLATE HEAT EXCHANGERS** | | | | | | |
|---|---|---|---|---|---|---|
| **Type of heat exchanger** | **HB23x** | **HB32x** | **HB46x** | **HB13x** | **HB53x** | **HB75x** |
| Maximum number of plates | 50 | 50 | 60 | 140 | 140 | 80 |
| Maximum volume, L | 1,9 | 2,7 | 4,56 | 11,62 | 16,38 | 22,1 |
| Maximum allowable pressure, bar: | 45,0 | 45,0 | 45,0 | 45,0 | 45,0 | 45,0 |
| Maximum/minimum allowable temperature, ˚C: | -200/+135 | -200/+135 | -200/+135 | -200/+135 | -200/+135 | -200/+135 |
| Fluid group | I, II (liquids, gases) | I, II (liquids, gases) | I, II (liquids, gases) | I, II (liquids, gases) | I, II (liquids, gases) | I, II (liquids, gases) |

| **MANUFACTURED ACCORDING TO THE FOLLOWING DIRECTIVE AND STANDARDS:** | |
|---|---|
| Directive 2014/68/ES (Pressure equipment ) | |
| EN 13445-3:2015 | Unfired pressure vessels - Part 3: Design. Annex T. Design by experimental methods |
| EN 13445-5:2015 | Unfired pressure vessels - Part 5: Inspection and testing |
| EN 10028-7:2016 | Flat products made of steels for pressure purposes - Part 7: Stainless steels |

| **INTERNAL MANUFACTURING CHECK AND BURST TEST:** | | | |
|---|---|---|---|
| Conformity of manufacturing documentation: | Acceptable | Not acceptable | |
| Conformity of the pressure equipment with the design **No: HB000.000.00**; drawings No: **23X-53X BPHE Assembly; HB75X BPHE Assembly** | Acceptable | Not acceptable | |
| Traceability of the materials used | Acceptable | Not acceptable | |
| Marking of equipment | Acceptable | Not acceptable | |
| Draft Declaration of conformity | Acceptable | Not acceptable | A draft Declaration of conformity will be examined during the assessment of conformity to type |

■ - the chosen procedure, condition or conclusion

| Heat exchanger: | HB758 14 DN50 | HB138 14 DN32 | HB538 16 DN32 | HB468 14 DN20 | HB238 14 DN20 | HB538 14 DN32 | HB238 14 DN20 | HB758 20 DN50 |
|---|---|---|---|---|---|---|---|---|
| **Serial No.:** | **02087** | **00360** | **02680** | **02636** | **00821** | **03280** | **00757** | **02118** |
| Visual inspection before burst test | Acceptable | Acceptable | Acceptable | Acceptable | Acceptable | Acceptable | Acceptable | Acceptable |
| Dimensional check before burst test | Acceptable | Acceptable | Acceptable | Acceptable | Acceptable | Acceptable | Acceptable | Acceptable |
| Required burst pressure, bar | 183,7 | 183,7 | 183,7 | 183,7 | 183,7 | 183,7 | 183,7 | 183,7 |
| Test medium | oil | oil | oil | oil | oil | oil | oil | oil |
| Date of burst test | 11.03. 2016. | 11.03. 2016. | 11.03. 2016. | 11.03. 2016. | 11.03. 2016. | 04.08. 2017. | 04.08. 2017. | 04.08. 2017. |
| Measured burst pressure, bar | 199,07 | 193,06 | 201,62 | 234,26 | 206,02 | 196,53 | 200,0 | 219,44 |
| Visual inspection after burst test | Internal rupture between the flow channels. External deformation: front cover plate up to 1.0 - 1.5 mm; rear reinforcement plate up to 2.0mm. | | | | | | | |

**Conclusion:** The maximum allowable working pressure of pressure equipment was determined by experimental design method as provided in the Annex T to the standard EN13445-3: 2015. All acceptance criteria were met. Since, the heat exchangers withstood the pressure of 183,7bar, then their maximum allowable pressure is determined 45, 0 bar.

**Notes:**

1. The test results relate exclusively to the described test object. Partial reproduction of and extraction from the test report without a written authorization are not permitted.
2. Before placing of the heat exchangers on the market in addition to the EU-type examination – production type (module B) requires conformity to type assessment according module C2 (Conformity to type based on internal production control plus supervised pressure equipment checks at random intervals).
3. The details of the changes shall be submitted to the Centre of Product Certification, if changes are made to the design of the certified heat exchangers, manufacturing technology or material used.

**Place:** Riga **Date:** 19/01/2018

**"LRTDEA" TUV Rheinland Group**
**Centre of Product Certification**

The test has been performed and the report has been drawn up by: **Jānis Gurtiņš**

**Notified body No 1407**

The certification data will be stored in the archive of the Centre of Product Certification of "LRTDEA" TUV Rheinland Group.

Data protection guaranteed.