

CERTIFICATE

EC type-examination (Module B)

Certificate No: 2.3.13/B/010

Name of manufacturer:	Eko Air, SIA
Legal address:	11A Ūnijas Street, Rīga, LV-1039, Latvia
Address of manufacturing plant:	30D Miera Street, Salaspils, LV-2169, Latvia
Description of pressure equipment: Type:	Stainless steel brazed plate heat exchangers LB534; LB535; LB536; LB537; LB538; LB754; LB756; LB758
Category:	III
Maximum allowable pressure, bar:	16.0
Maximum allowable temperature, °C:	-200...+200
Fluid group:	I; II
Drawing No:	LB000.000.00; LB75x.000.00
Test report No:	2.3.13/B/010-PZ

We hereby certify, that the pressure equipment mentioned above are manufactured in accordance with the essential safety requirements of the Pressure Equipment Directive 97/23/EC and Regulations of the Cabinet of Ministers of the Republic of Latvia No 165 of 2 May 2000 „Regulations regarding Pressure Equipment and Assemblies thereof”.

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: **04 June 2013**
Expiry date: **04 June 2023**

Engineer:




Aleksandrs Braslis

Union of Technical Safety Experts of
Manufacturers of Latvia
TUV Rheinland Group, Ltd
3/C2 Ieriķu Street, Riga, Latvia

Phone: +37167568610
Fax: +37167568605

www.tuv.lv
E-mail: tuv@tuv.lv

Test report

Internal manufacturing check							Burst test	
Module:	A1	B	B1	C1	F	G	Test report No: 2.3.13/B/010-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	LB534; LB535; LB536; LB537; LB538	LB754; LB756; LB758
Maximum number of plates	140	200
Maximum volume, L	18,38	52,14
Maximum allowable pressure, bar:	16,0	16,0
Maximum/minimum allowable temperature, °C:	+200/-200	+200/-200
Fluid group	I, II (liquids, gases)	I, II (liquids, gases)

MANUFACTURED ACCORDING TO THE FOLLOWING DIRECTIVE AND STANDARDS:	
Directive 97/23/EC (Pressure equipment)	
Regulations of the Cabinet of Ministers of the Republic of Latvia No 165 of 2 May 2000 „Regulations regarding Pressure Equipment and Assemblies thereof”	
EN 13445-3:2009	Unfired pressure vessels - Part 3: Design. Annex T. Design by experimental methods
EN 13445-5:2009	Unfired pressure vessels - Part 5: Inspection and testing
EN 10028-7:2008	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: LB000.000.00	Acceptable	Not acceptable	
Traceability of the materials used	Acceptable	Not acceptable	
Marking of equipment	Acceptable	Not acceptable	Experimental samples were not intended for labeling
Draft Declaration of conformity	Acceptable	Not acceptable	A draft Declaration of conformity will be examined during the monitoring of the final assessment

Heat exchanger:	LB533 H140* serial No 3010120002	LB538 H20 serial No 1403130047	LB538 H20 serial No 1403130048	LB758 H100 serial No 0706130100
Visual inspection before burst test	Acceptable	Acceptable	Acceptable	Acceptable
Dimensional check before burst test	Acceptable	Acceptable	Acceptable	Acceptable
Required burst pressure, bar	73,3	73,3	73,3	73,3
Test medium	oil	oil	oil	oil
Date of burst test	02.11.2012	21.03.2013	21.03.2013	8.05.2013
Measured burst pressure, bar	127,55	139,35	139,12	77,78
Visual inspection after burst test	Internal rupture between the flow channels. Visible small deformation against connectors.	Internal rupture between the flow channels. Visible small deformation against connectors.	Internal rupture between the flow channels. Visible small deformation against connectors.	Internal rupture between the flow channels. Visible small deformation against connectors.
Procedure of burst test:				
<p>*-The heat exchanger NB533 H140 was tested, to be used for work with the pressure of 31.0 bar. The tests were not passed, and the construction was improved. The tested construction of the heat exchanger meets the construction of the new LB group, which is designed for pressures up to 16.0 bar.</p>				

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: 2009. All acceptance criteria were met. Since, the heat exchangers withstood the pressure of 73,3 bar, then their maximum allowable pressure is determined 16, 0 bar.
Requirements of Directive 97/23/EC and Regulations of the Cabinet of Ministers of the Republic of Latvia No 165 of 2 May 2000 "Regulations regarding Pressure Equipment and Assemblies thereof" have been met.

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 EC type-examination (module B) requires conformity to type assessment according module C1.
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: 03/06/2013

"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.

CERTIFICATE

Conformity to type - Module C1

Certificate No: 2.3.13/C1/011

Name of manufacturer:	Eko Air, SIA
Legal address:	11A Ūnijas Street, Riga, LV-1039, Latvia
Address of manufacturing plant:	30D Miera Street, Salaspils, LV-2169, Latvia
Description of pressure equipment: Type:	Stainless steel brazed plate heat exchangers LB534; LB535; LB536; LB537; LB538; LB754; LB756; LB758
Category:	III
Maximum allowable pressure, bar:	16.0
Maximum allowable temperature, °C:	-200...+200
Fluid group:	I; II
Drawing No:	LB000.000.00; LB75x.000.00
Test report No:	2.3.13/C1/011-PZ
Certificate No. of EC Type-Examination:	2.3.13/B/010

We hereby certify, that the pressure equipment mentioned above are manufactured in accordance with the essential safety requirements of the Pressure Equipment Directive 97/23/EC and Regulations of the Cabinet of Ministers of the Republic of Latvia No 165 of 2 May 2000 „Regulations regarding Pressure Equipment and Assemblies thereof”.

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

On the basis of tests the manufacturer has to affix CE marking to each item of pressure equipment within the framework of this module as follows:

CE 1407

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

Date of issue: **04 June 2013**

Engineer:  Aleksandrs Braslis



Union of Technical Safety Experts of
Manufacturers of Latvia
TUV Rheinland Group, Ltd
3/C2 Ieriķu Street, Riga, Latvia

Phone: +37167568610
Fax: +37167568605

www.tuv.lv
E-mail: tuv@tuv.lv

Test report

Conformity to type with monitoring of the final assessment							
Module:	A1	B	B1	C1	F	G	Test report No: 2.3.13/C1/011-PZ
Manufacturer: "Eko Air" SIA				Address of manufacturing plant: 30D Miera Street, Salaspils, LV-2169, Latvia			

TECHNICAL DATA – ALL MENTIONED TYPES OF HEAT EXCHANGERS ARE UNITED IN A SINGLE CERTIFICATION GROUP		
Type of heat exchanger	LB534; LB535; LB536; LB537; LB538	LB754; LB756; LB758
Maximum number of plates	140	200
Maximum volume, L	16,38	52,14
Maximum allowable pressure, bar:	16,0	16,0
Maximum/minimum allowable temperature, °C:	+200/-200	+200/-200
Fluid group (features)	I, II (liquids, gases)	I, II (liquids, gases)

MANUFACTURED ACCORDING TO THE FOLLOWING DIRECTIVE AND STANDARDS:	
Directive 97/23/EC (Pressure equipment)	
Regulations of the Cabinet of Ministers of the Republic of Latvia No 165 of 2 May 2000 „Regulations regarding Pressure Equipment and Assemblies thereof”	
EN 13445-3:2009	Unfired pressure vessels - Part 3: Design
EN 13445-5:2009	Unfired pressure vessels - Part 5: Inspection and testing
EN 10028-7:2008	Flat products made of steels for pressure purposes - Part 7: Stainless steels

CONFORMITY TO TYPE WITH MONITORING OF THE FINAL ASSESSMENT:		
Conformity of the documentation with laws and regulations:	Acceptable	Not acceptable
Conformity of the pressure equipment with the design No: LB000.000.00; LB75x.000.00	Acceptable	Not acceptable
Traceability of the materials used (certificates)	Acceptable	Not acceptable
Marking of equipment	Acceptable	Not acceptable
Draft declaration of conformity	Acceptable	Not acceptable

Heat exchanger:	LB538 H20 serial No 1403130048		LB758 H100 serial No 0705130100	
	1st channel	2nd channel	1st channel	2nd channel
Visual inspection	accept.	accept.	accept.	accept.
Dimensional check	accept.	accept.	accept.	accept.
Test pressure, bar	28,4	28,4	28,4	28,4
Test medium	air	air	air	air
Visual inspection after pressure test	accept.	accept.	accept.	accept.
Date of testing	21.03.2013		8.05.2013	

Conclusion: The mentioned tests were performed in accordance with the regulatory requirements. Requirements of Directive 97/23/EC and Regulations of the Cabinet of Ministers No 165 of 2 May 2000 "Regulations regarding Pressure Equipment and Assemblies thereof" have been met.
After the award of the certificate each pressure equipment shall be marked with the CE marking accompanied by the identification number of the notified body "LRTDEA" TUV Rheinland Group 1407.

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. The final assessment of the pressure equipment shall be made by the manufacturer, who, by the use of the method of unexpected visits (at least once a year) shall be supervised by the notified body selected by the manufacturer.

Appendices: —

Place: Riga

Date: 03/06/2013

"LRTDEA" TUV Rheinland Group
Centre of Production Certification

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



Jānis Gurtigis

Notified body No1407

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