

# CERTIFICATE

**Internal manufacturing checks with monitoring of the final assessment - Module A1**

**Certificate No: 2.3.13A1/007**

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:	<b>Stainless steel brazed plate heat exchangers</b> LB238; LB328; LB464; LB466; LB468; LB134; LB136; LB138; LB534; LB535; LB536; LB537; LB538
Category:	I; II
Maximum allowable pressure, bar:	16.0
Maximum allowable temperature, °C:	-200...+200
Fluid group:	I – (use for types LB238; LB328; LB464; LB466; LB468; LB134; LB136; LB138) II – (use for all types)
Drawing No:	LB000.000.00
Test report No:	2.3.13/A1/007-PZ; 2.3.13/A1/007-PZ-2013.03

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: **28 March 2013**

Engineer: **Aleksandrs Brašis**  Signature

Union of Technical Safety Experts of  
Manufacturers of Latvia  
TUV Rheinland Group, Ltd  
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<b>Internal production control with monitoring of the final assessment</b>							
<b>Module:</b>	A1	B	B1	C1	F	G	<b>Test report No: 2.3.13/A1/007-PZ-2013.03</b>
Manufacturer: "Eko Air" SIA				Address of manufacturing plant: 30D Miera Street, Salaspils, LV-2169, Latvia			

<b>TECHNICAL DATA – ALL MENTIONED TYPES OF HEAT EXCHANGERS ARE UNITED IN A SINGLE CERTIFICATION GROUP</b>					
<b>Type of heat exchanger</b>	<b>LB238</b>	<b>LB328</b>	<b>LB464; LB466; LB468</b>	<b>LB134; LB136; LB138</b>	<b>LB534; LB535; LB536; LB537; LB538</b>
Maximum number of plates	50	50	60	140	140
Maximum volume, L	1,9	2,7	4,56	11,62	16,38
Maximum allowable pressure, bar:	16,0	16,0	16,0	16,0	16,0
Maximum/minimum allowable temperature, °C:	+200/-200	+200/-200	+200/-200	+200/-200	+200/-200
Fluid group (features)	I, II (liquids, gases)	I, II (liquids, gases)	I, II (liquids, gases)	I, II (liquids, gases)	II (liquids, gases)

<b>MANUFACTURED ACCORDING TO THE FOLLOWING DIRECTIVE AND STANDARDS:</b>	
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

<b>INTERNAL PRODUCTION CONTROL WITH MONITORING OF THE FINAL ASSESSMENT:</b>		
Conformity of the documentation with laws and regulations:	Acceptable	Not acceptable
Conformity of the pressure equipment with the design No: <b>LB000.000.00</b>	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:	LB138 H20 serial No 14030045		LB138 H20 serial No 14030046		LB538 H20 serial No 14030048	
	1.kanāls	2.kanāls	1.kanāls	2.kanāls	1.kanāls	2.kanāls
Visual inspection	accept.	accept.	accept.	accept.	accept.	accept.
Dimensional check	accept.	accept.	accept.	accept.	accept.	accept.
Test pressure, bar	28,4	28,4	28,4	28,4	28,4	28,4
Test medium	air	air	air	air	air	air
Visual inspection after pressure test	accept.	accept.	accept.	accept.	accept.	accept.
Date of testing	21.03.2013		21.03.2013		21.03.2013	

**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:** 27/03/2013

"LRTDEA" TUV Rheinland Group  
Centre of Production Certification

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



Jānis Gurtiņš

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.

## Test report

<b>Internal manufacturing check</b>							<b>Burst test</b>	
<b>Module:</b>	A1	B	B1	C1	F	G	<b>Test report No: 2.3.13/A1/007-PZ</b>	
<b>Manufacturer:</b> Eko Air, SIA							<b>Address of manufacturing plant:</b> 30D Miera Street, Salaspils, LV-2169, Latvia	

### DESCRIPTION OF STAINLESS STEEL BRAZED PLATE HEAT EXCHANGERS

Type of heat exchanger	LB238	LB328	LB464; LB466; LB468	LB134; LB136; LB138	LB534; LB535; LB536; LB537; LB538
Maximum number of plates	50	50	60	140	140
Maximum volume, L	1,9	2,7	4,56	11,62	16,38
Maximum allowable pressure, bar	16,0	16,0	16,0	16,0	16,0
Maximum/minimum allowable temperature, °C:	+200/-200	+200/-200	+200/-200	+200/-200	+200/-200
Fluid group	I, II (liquids, gases)	I, II (liquids, gases)	I, II (liquids, gases)	I, II (liquids, gases)	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: <b>LB000.000.00</b>	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	LB138 H20 serial No 14030045	LB138 H20 serial No 14030046	LB538 H20 serial No 14030047	LB538 H20 serial No 14030048
Visual inspection before burst test	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Dimensional check before burst test	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Required burst pressure, bar	73,3	73,3	73,3	73,3	73,3
Test medium	oil	oil	oil	oil	oil
Date of burst test	02.11.2012	21.03.2013	21.03.2013	21.03.2013	21.03.2013
Measured burst pressure, bar	127,55	119,0**	111,81	139,35	139,12
Visual inspection after burst test	Internal rupture between the flow channels. Visible small deformation against connectors.	Visible small deformation against connectors. Slightly bended front plate.	Internal rupture between the flow channels. Visible small deformation against connectors. Slightly bended front plate.	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> <p>**- during the test the joint gasket was torn and the test was not continued, as the heat exchanger had passed the burst pressure of 73,3bar.</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 EN1345-3: 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. 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. Before placing of the heat exchangers on the market, the manufacturer shall perform the final assessment and pressure tests for each produced heat exchanger.

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: 27/03/2013

"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

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