

Statement of usability of Ecowec hybrid exchanger

Requested by: Wasenco Oy

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Askonkatu 9 E
15100 Lahti, Finland

Order 17.8.2015, Jouni Helppolainen

Contact person **VTT Expert Services Ltd**
Expert Ville Hietanen
Kemistintie 3, Espoo, Finland
P.O. BOX 1001, 02044 VTT
Tel. +358 40 687 6431
Email ville.hietanen@vtt.fi

Assignment **Statement of usability of Ecowec hybrid exchanger**

Task The task is to assess the usability of Ecowec hybrid exchanger in relation to national requirements ¹⁾ and to give a statement of usability based on the assessment results.

Background information

The manufacturer delivered following material for the declaration:

- Installation and usage instructions of the device
- Product card
- Brochure
- Sample for assessment and testing

Intended use The intended use of the Ecowec hybrid exchanger is to recover heat from wastewater. Heat can be transferred to preheat domestic hot water or heat can be used as a heat source for a heat pump.

According to the manufacturer's declaration heat can be transferred directly to heat semi-warm space or for ventilation air preheating. Ecowec hybrid exchanger can also be connected to receive renewably energy from solar heat or solar electricity.

Installation according to the manufacturer's installation manual.

No European Standard or any national requirement specification are available for the product category. The assessment is made based on Finnish national regulation and other relevant directions.

¹⁾ The Decree of Finnish Ministry of Environment of building's water and sewer facility. Part D1, 2007.

The test results relate only to the sample tested.

Technical specification

Metallic parts are made of stainless steel: EN 1.4301, AISI 304 / EN 1.4401, AISI 316 / EN 1.4307, AISI 304L / EN 1.4404, AISI 316L

Component	Characteristic
<ul style="list-style-type: none"> - Water storage vessel 	<ul style="list-style-type: none"> • PN4 • Pressure class I/II • Connections <ul style="list-style-type: none"> ○ Cover: 2 x DN20 / ¾” for filling, for safety valve (4 bar) and for bleed/venting valve ○ Side: 4 x DN50 / 2” for heat pump circuit or immersion heater ○ Bottom: 1 x ¾” emptying ○ Domestic water and wastewater connections as presented below
<ul style="list-style-type: none"> - Domestic water coil / heat exchanger 	<ul style="list-style-type: none"> • 2 x DN50 / 2” manifold connections • PN10 • Electrolytically polished
<ul style="list-style-type: none"> - Waste water pipe 	<ul style="list-style-type: none"> • DO 114,3 mm • PN10 • V-band or a flange connection (114,3 mm / DN100) • Electrolytically polished
<ul style="list-style-type: none"> - Accessories 	<ul style="list-style-type: none"> • Three adjustable legs • Two lifting rings on the cover • Condensation insulation, 20 mm (additional)

The test results relate only to the sample tested.

Requirements

The National Building Code of Finland		
D1: Water supply and drainage installations for buildings		
Item in D1	Essential technical requirement or directive method of implementation	Qualify
Rule 2.3.3	<p>Domestic water supply system needs to be designed so that no compounds dissolves to water from materials in contact with water.</p> <p>Water has to comply always with quality requirements. Materials needs to suitable and to the quality needs to be tested and inspected</p>	Domestic water coil (connections and heat exchanger) is made of stainless steel which is commonly used pipe material in contact with drinking water.
Rule 2.3.4	<p>The domestic water supply system has to be designed to prevent:</p> <ul style="list-style-type: none"> - backflow prevention - pollution caused by liquid and gas penetration <p>The device shall be designed so that possible leakages can be detected.</p>	<p>The wastewater exchanger and domestic water pipes are separated by medium.</p> <p>Vessel is recommended to equip with pressure indicator to indicate leakages.</p>
Rule 2.5.1	The domestic water system shall sustain 1000 kPa of internal pressure.	Domestic water heat exchanger and connections are PN10
Rule 4.2.5	Drainage shall be built so that no stink is resulted	Drainage pipe of Ecowec is connectec to main drainage system which is ventilated properly.
D1 Appendix 4	Proper drain ventilation shall be taken care of.	

The test results relate only to the sample tested.

Item in D1	Essential technical requirement or directive method of implementation	Qualify
Rule 4.5.3	<p>Wastewater system shall be made of durable materials and provide sufficient reliability during the device's lifetime. The system shall be watertight as well.</p> <p>Suitable materials are presented in the D1 Appendix 5 (ASTM 304/ASTM 316).</p>	See technical specifications.
Rule 4.5.6	The wastewater systems shall be equipped with easily accessible cleaning apertures.	Connection to drain shall be as presented in the Annex 1.
D1 Appendix 4	According to the instructions for dimensioning of drainage system a single drain needs to be capable to sewer 1,5 times the design flow of directed taps/showers/etc. No clogging shall be caused.	<p>Ecowec hybrid exchanger is connected by a properly sized drainage pipe as a shunt connection as presented in the Picture 2 in Annex 1.</p> <p>In case of blockage in the Ecowec hybrid exchanger the proper main drainage pipe works as an overflow.</p> <p>The connection to main drainage and the manholes shall be made accessible so that wastewater coil of Ecowec hybrid exchanger can be cleaned e.g. by pressurized water.</p>
General requirement	The material shall be applicable to operating temperature.	Operating temperature stays under 90 °C. Materials presented in technical specification are suitable for maximum operating temperature.

The test results relate only to the sample tested.

General terms of water supply (HSY 2015)		
Vesihuollon yleiset toimitusehdot (HSY 2015)		
	Essential technical requirement	Qualify
Item 7.8.	It is not allowed to cool down the wastewater so low that it would cause freezing risk	The wastewater temperature is always above the cold water temperature

Remarks It is recommended to attach type plate and identification for each unit.

Declaration The assessed product complies with the requirements of National Building Regulations and other national requirements and it is suitable for the intended use when installed, operated and maintained according to the instructions.

The declaration relate only to the sample assessed and defined by the technical specification.

Espoo, 22.3.2016



Ville Hietanen
Expert



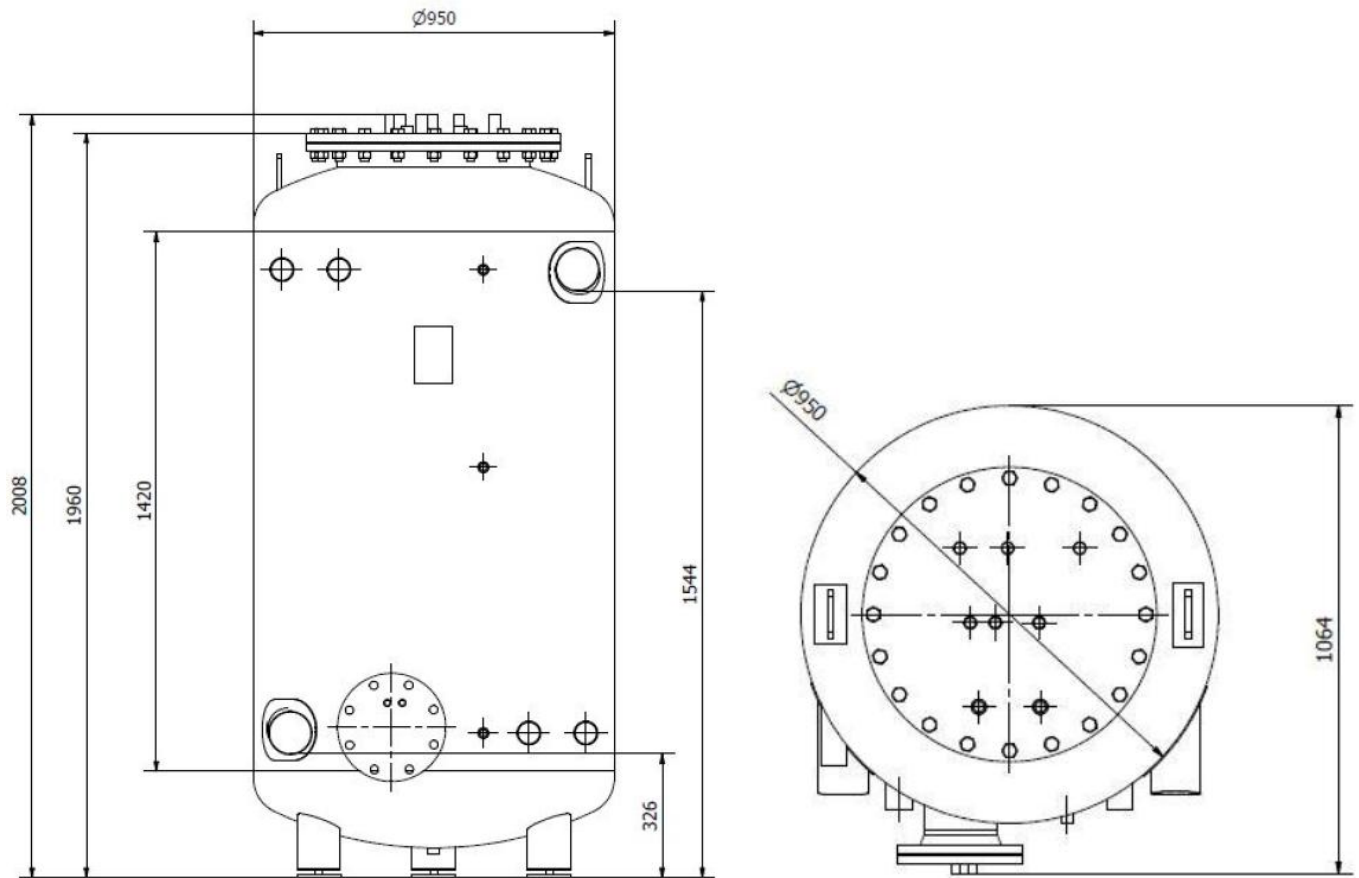
Antti Turtola
Business Manager

Appendices 1: Product drawings

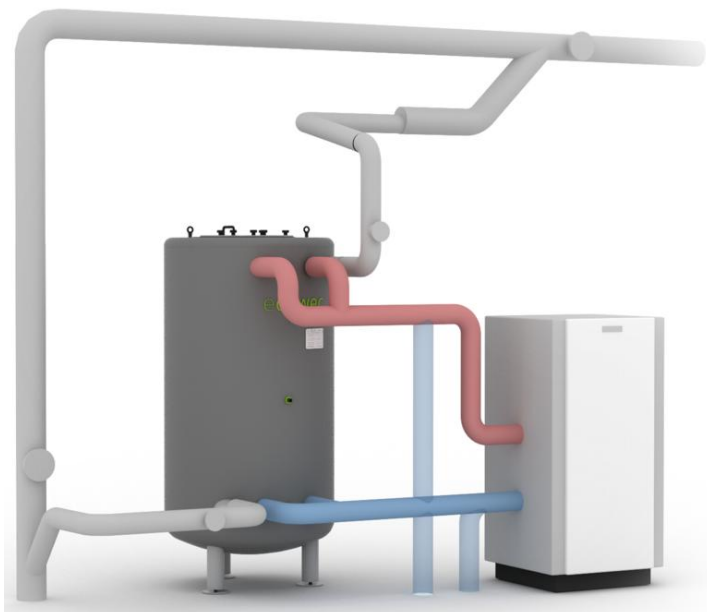
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The test results relate only to the sample tested.

Technical details of the product



Picture 1. Technical drawing



Picture 2. Connection to main drainage

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