

# ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

## Vallox 51 MV RA11

EPD of multiple products, based on worst-case results.

Products from Vallox 51 MV, ValloPlus 180, DV51 Adroit and DV180 ENTRO-V series




|                         |   |
|-------------------------|---|
| Programme               | The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a> |
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# GENERAL INFORMATION

## Programme information

| ACCOUNTABILITIES FOR PCR, LCA AND INDEPENDENT, THIRD-PARTY VERIFICATION |   |
|---|---|
| Product Category Rules (PCR)  | CEN standard EN 15804 serves as the Core Product Category Rules (PCR)<br>Product Category Rules (PCR): <i>PCR 2019:14-c-PCR-018 c-PCR-018 Ventilation components (c-PCR under PCR 2019:14) (Adopted from EPD Norway)</i><br>PCR review was conducted by: <i>Claudia A. Peña, ADDERE Research &amp; Technology</i> |
| Life Cycle Assessment (LCA)   | LCA accountability: <i>Aleksi Surakka, Comatec Mobility Oy</i><br>www.comatec.fi<br>e-mail: <a href="mailto:aleksi.surakka@comatec.fi">aleksi.surakka@comatec.fi</a><br>phone: +358 40 184 2478<br>                            |
| Third-party verification  | Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:<br><input checked="" type="checkbox"/> EPD verification by individual verifier<br>Third-party verifier: <i>Marcus Wendin, Miljögiraff AB</i><br>Approved by: The International EPD® System                    |
|   | Procedure for follow-up of data during EPD validity involves third party verifier:<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   |

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EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover

products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact as-

|           |   |
|-----------|---|
| Programme | The International EPD® System                                       |
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essment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.



## Company information

**Vallox Oy** is a Finnish company focused on designing and manufacturing ventilation products. For more than 50 years, it has been visionary in the development of indoor air technology, and today it serves customers widely across Europe.

Vallox is on a mission to take care of wellbeing of people and maintaining the value of the homes with smart ventilation. High-quality and energy-efficient Vallox ventilation products enable a healthy indoor climate and are designed with today's needs in mind. Vallox products are known for their simple, elegant design, ease of use and silence.

**Vallox is the Home of Fresh air.**



|   |   |
|---|---|
| Owner of the EPD  | Vallox Oy   |
| Contact   | Sari Ponkala<br>sari.ponkala@vallox.com<br>www.vallox.com |
| Product-related or management system-related certifications | ISO 9001<br>ISO 14001                                     |
| Name and location of the production site                    | Vallox Oy<br>Myllykyläntie 9-11<br>32200 Loimaa           |

# Product information

## Product name

Air handling unit: Vallox 51 MV



## Product identification

Air handling units (AHU) as referred in standards NS-EN 1886, NS-EN 13053 and EN 13141-7. Vallox ventilation unit 51 MV composing mainly of steel, aluminum, electronics and plastics. EPD follows additional requirements for construction products considered as Electronic or Electric Equipment (EEE).

## Product description

People spend up to 90% of their time indoors and breathe thousands of litres of air each day. Ventilation aims at creating healthy and cosy indoor air in the building. Healthy indoor air is crucial in terms of well-being, even though it is not as concrete as food, water or motion.

It is important to pay attention to the exchange of air for the following reasons.

1. Cooking, dishwashing, washing, taking a sauna bath, washing clothes and breathing produce humidity, smokes and odours that are eliminated efficiently by ventilation.
2. Low oxygen content causes headaches and fatigue. Efficient ventilation keeps the carbon dioxide level sufficiently low and makes the residents feel better and more active.
3. Ventilation removes the emissions caused by construction and furnishing materials from indoor air.

In the traditional way of building, indoor air quality was taken care of with the help of natural ventilation, based on pressure differences caused by the differences in height and temperature and by the wind. The pressure difference made stuffy air and humidity go out via the flues, whereas fresh replacement air came in as leaks through window chinks or openings built for replacement air.

In homes built or renovated in the modern way to be tight, natural ventilation is no longer a sufficient way of guaranteeing good indoor air. Today's living habits lead to a high humidity load indoors as it is usual to take a shower several times a day and clothes are washed and dried indoors. As the vapour barrier and tight windows do not let fresh air in, humidity cannot escape. It is therefore necessary to deal with ventilation mechanically.

Vallox ventilation units are reliable and energy-efficient. They have been designed and manufactured in Finland. The selection includes suitable

ventilation units for different uses, sizes and needs. By choosing a Vallox ventilation system you can always enjoy clean and fresh indoor air. Vallox ventilation units have an estimated average lifetime of 25 years.

Vallox ventilation units can be configured to different market areas and client needs and thus the naming of the unit may differ. The configuration that represents environmental impacts in this EPD is the one with the biggest impact as it has been configured with all possible additional accessories (heating resistors, MyVallox Touch Panel), and an aluminum heat recovery cell. Other heat recovery cells available for different needs are manufactured from plastic and a combination of aluminum/steel and plastic.

Product variations (for further configuration naming policies see annex 1) covered in the EPD:

| Product variation    | Annual assessed energy consumption (kWh) | Airflow (m <sup>3</sup> /hr) |
|----------------------|--|------------------------------|
| Vallox 51 MV         | 536                                      | 118,8                        |
| ValloPlus 180 series |  |                              |
| DV51 Adroit series   |  |                              |
| DV180 ENTRO-V series |  |                              |

### Worst-case product: Vallox 51 MV RA11

Vallox 51 MV RA11 is a ventilation unit configured with an aluminum heat recovery cell, post-heating resistor and a touch panel.

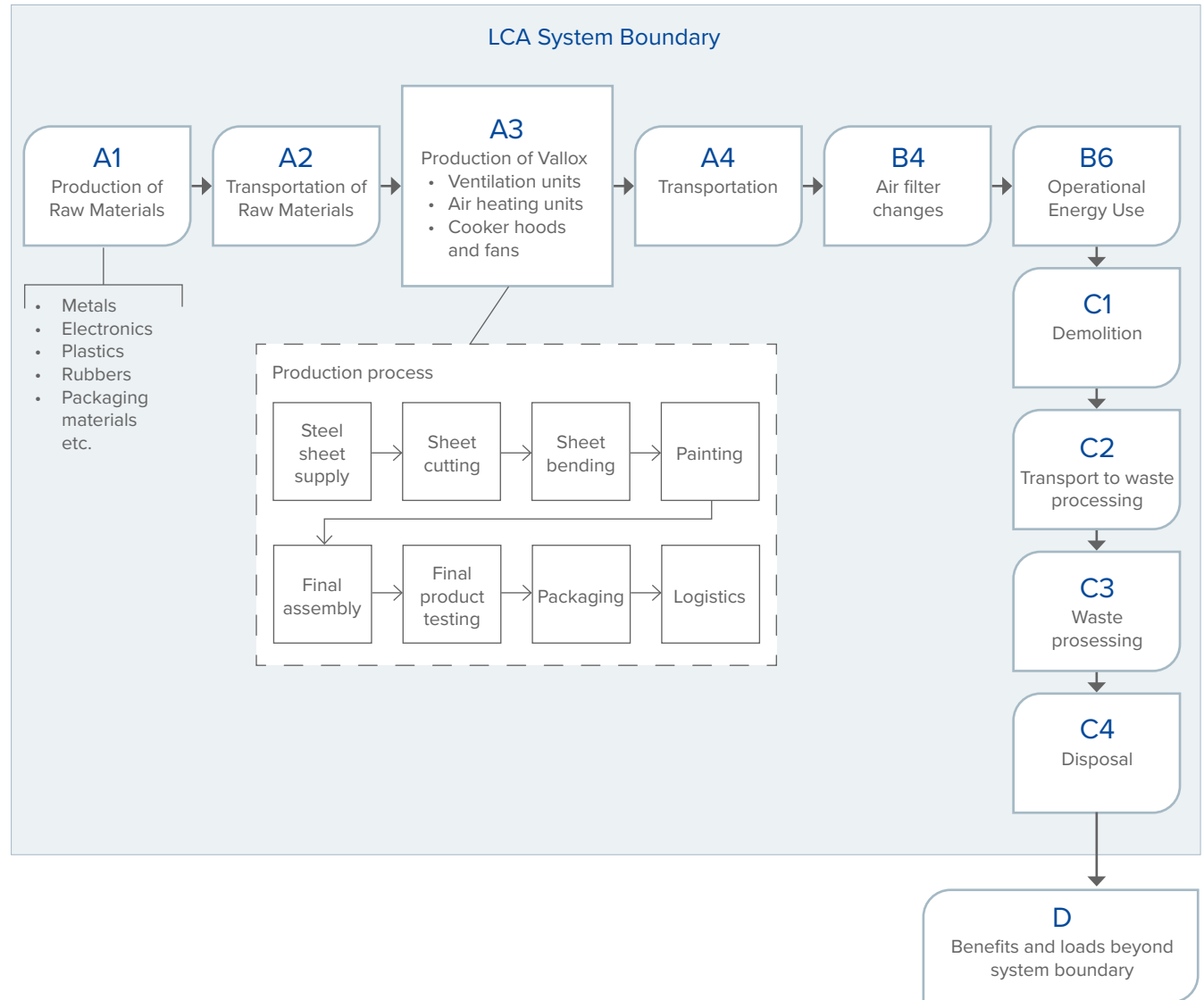
|                           |  |         |
|---------------------------|--|---------|
| <b>UN CPC code</b>        | The CPC code applied is CPC 54632 Ventilation and air-conditioning equipment installation services.  |         |
| <b>Geographical scope</b> | Production facility for the ventilation unit is Loimaa, Finland. The intended market for the products are widely in different parts of Europe. |         |
|                           | A1 Raw material supply:  | Europe  |
|                           | A2 Transport of raw materials:   | Europe  |
|                           | A3 Manufacturing:  | Finland |
|                           | A4 Transport to supplier:  | Europe  |
|                           | B4 Replacement (manufacturing of filters):   | Europe  |
|                           | B6 Operational Energy Use  | Europe  |
|                           | C1-C4 End-of-life:   | Europe  |
|                           | D Resource recovery:   | Europe  |



# LCA information

|                                   |  |
|-----------------------------------|--|
| Declared unit                     | 1 manufactured ventilation unit maintained for 25 years.   |
| Reference service life            | Reference service life for the air handling units is 25 years.   |
| Time representativeness           | 2020–2022  |
| Database(s) and LCA software used | LCA software: SimaPro 9.5<br>Majority of data from Ecoinvent 3.9.1.<br>Steel LCI results from world-steel. |
| Description of system boundaries  | Cradle to gate with options: A1-A3, A4, B4, B6, C1-C4 + D  |

System diagram:



Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

|                      | Product stage       |           |               | Construction process stage |                           | Use stage |             |        |             |               |                        |                       | End of life stage          |           |                  |          | Resource recovery stage            |
|----------------------|---------------------|-----------|---------------|----------------------------|---------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|------------------------------------|
|                      | Raw material supply | Transport | Manufacturing | Transport                  | Construction installation | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| Module               | A1                  | A2        | A3            | A4                         | A5                        | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4       | D                                  |
| Modules declared     | x                   | x         | x             | x                          | ND                        | x         | x           | x      | x           | x             | x                      | x                     | x                          | x         | x                | x        | x                                  |
| Geography            | EU                  | EU        | FI            | EU                         | -                         | EU        | EU          | EU     | EU          | EU            | EU                     | EU                    | EU                         | EU        | EU               | EU       | EU                                 |
| Specific data used   | <90%                |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – products | >10%                |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – sites    | 0%                  |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |

X = Module declared, ND = Not declared

B1-B3, B5 and B7 have no inputs or outputs during the life cycle of the ventilation unit. All environmental indicators for them are calculated as 0 as there is no activity in those modules that consider the ventilation unit. Zero values for these modules are not shown in the results tables.

## Product life cycle – used data and assumptions

### Product stage (A1-A3)

The product stage considers the manufacturing of raw materials, their transportation to the production facility and the stages of the product manufacturing process.

**A1:** Raw materials refer to materials and sub-assembled components used to manufacture the ventilation units.

**A2:** Transportation of the raw materials and sub-assembled components to the production facility of Vallox in Loimaa, Finland. Details on the transportation scenarios can be found later in this EPD.

**A3:** Manufacturing and packaging of the ventilation units at the production facility. In this case, manufacturing means assembling and testing of the ventilation units from sub-assembly parts. Stage A3 covers the energy (electricity and heating) use during the production process and waste generated during manufacturing of the units.

Electricity was modeled as Finnish residual electricity mix (2021 data) with an GWP100 results of 0,398 kgCO<sub>2</sub>eq/kWh.

Heating energy is district heating mainly produced by burning wood chips (79%) and heat recovery (17%). The amount of energy and heat of each product was determined according to the weight of the product.

Manufacturing waste streams include wood waste, cardboard, combustible waste, mixed waste and

metal scrap (iron, aluminum, copper). Cardboard, metal scrap and combustible waste are reusable and recyclable waste, and they are sent for material recovery. The amount of waste was determined by the weight of the product.

### Construction process stage (A4)

**A4:** Transportation to use was calculated as a conservative scenario as indicated in c-PCR-018 Ventilation components. Transport distance used was 155 km from Loimaa factory to capital of Finland, Helsinki and 300 km as the distance to a distributor.

### Use (B)

**B4:** Filters are replaced by assumption twice per year during the life cycle of the ventilation unit. Filters are manufactured for use in Europe and Finland, used and disposed as municipal solid waste after use in Europe. Transports of the filters were also included and the transport scenario was similar to A4.

**B6:** Vallox Ventilation Units are connected to a 230 V / 50 Hz electrical outlet. Electric current is mostly used to control the blower motor(s) and the heating resistor(s) of the ventilation unit. The energy consumption thus in module B6 comes from the usage of the blower fan and the resistor. The varying need for heating incoming air is dependent on the climate and annual electricity consumption can differ from the one stated in this EPD.

Annual electricity consumption is based on calculations complying with Commission Delegated Regu-

lation (EU) No 1254/2014 of 11 July 2014. For a more detailed calculation report please refer certificates on our product website: <https://www.vallox.com/en/products/ventilation-units/>

Energy Label Certificates for each product can be found by clicking the product and by navigating to the downloadable files.

As the ventilation units are used all over Europe, an average market dataset for European low voltage electricity was used. The GWP100 factor for the used dataset was 0,362kgCO<sub>2</sub>-eq/kWh.





## End of life cycle (C1-C4)

**C1:** De-construction/demolition is assumed to be close to zero as the ventilation units are manually removed from the buildings.

**C2:** Transport to waste processing was calculated with an distance assumption of 100km.

**C3-C4:** Waste processing and disposal was modeled as a conservative scenario as indicated in c-PCR-018 and the share of materials entering different waste treatment was retrieved from Eurostat waste databases. An average of 27 EU countries was used. Additionally paper and board used for the product were assumed to be recycled. For aluminum and steel recycling processes an assumption of 100km of transportation was used.

## Resource recovery stage (D)

The benefits of recycled steel and aluminum in module C3 were considered to have a possible environmental benefit as substituted material.

| Material        | C3 Waste Processing   | C4 Waste Disposal  |
|-----------------|---|--|
| Plastic, rubber | Municipal incineration with energy recovery (100% of material)  | Landfilling of ashes from incineration                                       |
| Metal           | Central sorting of mixed construction waste. Recycling of metals. (99% of material)                                 | Landfilling of wasted product in sanitary landfill                           |
| Electronics     | Waste of Electrical and Electronic Equipment (WEE) recycling. Incineration of non-recycled parts. (83% of material) | Landfilling of ashes from incineration and residuals from recycling/sorting. |
| Paper, board    | Recycling (98% of material)   | Incineration and landfilling   |
| Other           | -   | Incineration and landfilling   |

## Life Cycle Transport Scenarios

| Life Cycle Phase/Module | Scenario assumptions   | Road transport  | Water transport                            |
|-------------------------|--|---|--|
| A2                      | Based on distances between supplier locations and Vallox factory   | transport, freight, lorry<br>16–32 metric tons, EURO6 | transport, freight, sea,<br>container ship |
| A4                      | As in c-PCR-018:<br>From Vallox Factory to Helsinki, Finland (~155km).<br>300km conservative distance to non-specified distributor | transport, freight, lorry<br>16–32 metric tons, EURO6 | -  |
| C2                      | 100km to nearest waste processing center   | transport, freight, lorry<br>16–32 metric tons, EURO6 | -  |

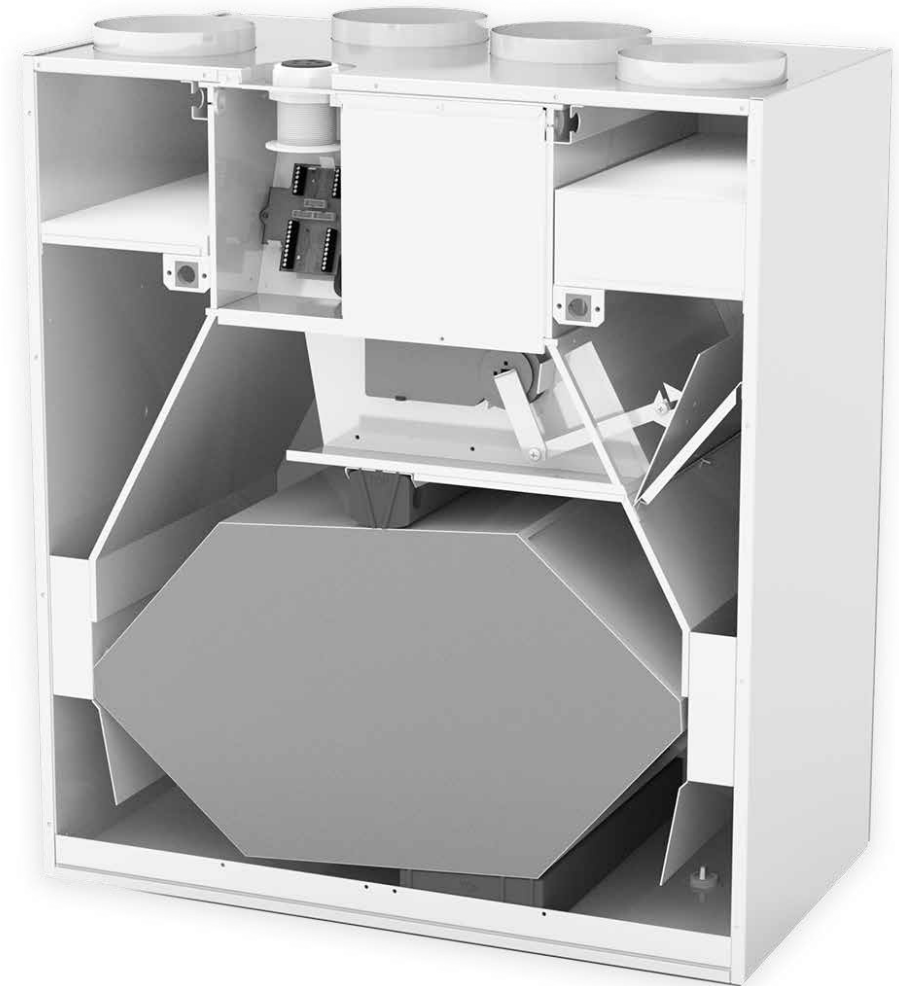
# CONTENT INFORMATION

No substances that appear in the REACH candidate list of SVHC (Candidate List of Substances of Very High Concern) are present or used in the products concerning this EPD.

Wooden pallets are allocated between units that on average are placed on it during transport and average number of use cycles. Weight of the wooden pallet is 24kg.

## Vallox 51 MV RA11

| Product components   | Weight, kg | Post-consumer material, weight-% | Biogenic material, weight-% and kg C/kg |
|--|------------|----------------------------------|---|
| Steel  | 33,71      | 0                                | 0                                       |
| Aluminum   | 5,8        | 0                                | 0                                       |
| Plastics   | 2,53       | 0                                | 0                                       |
| Electronics  | 3,4        | 0                                | 0                                       |
| Other  | 1,56       | 0                                | 0                                       |
| Packaging materials  |            | Weight-% (versus the product)    | Weight biogenic carbon, kg C/kg         |
| Cardboard  | 1,7        | 3,56                             | 0,45                                    |
| Paper (manuals etc.)   | 0,1        | 0,22                             | 0,43                                    |
| Wooden pallet (24 kg, mass allocation between 6 units and 20 use cycles) | 0,2        | 0,4                              | 0,47                                    |
| <b>TOTAL (excl. wooden pallet)</b>                                       | 49         |                                  |   |



# RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

Vallox 51 MV RA11 Mandatory impact category indicators according to EN 15804, results per declared unit

| Indicator            | Unit  | A1-A3 total | A4       | B4       | B6       | C1       | C2       | C3       | C4       | D         |
|----------------------|---|-------------|----------|----------|----------|----------|----------|----------|----------|-----------|
| GWP-fossil           | kg CO <sub>2</sub> eq.  | 2,60E+02    | 4,12E+00 | 4,09E+01 | 4,82E+03 | 0,00E+00 | 9,05E-01 | 4,32E+00 | 3,64E-02 | -9,36E+01 |
| GWP-biogenic         | kg CO <sub>2</sub> eq.  | 2,84E+00    | 3,77E-03 | 1,43E+00 | 1,64E+02 | 0,00E+00 | 8,29E-04 | 6,80E-04 | 9,16E-01 | -8,43E-02 |
| GWP-luluc            | kg CO <sub>2</sub> eq.  | 1,20E+00    | 2,03E-03 | 7,83E-02 | 1,20E+01 | 0,00E+00 | 4,47E-04 | 8,74E-04 | 1,01E-05 | -9,48E-01 |
| GWP-total            | kg CO <sub>2</sub> eq.  | 2,64E+02    | 4,13E+00 | 4,24E+01 | 4,99E+03 | 0,00E+00 | 9,07E-01 | 4,32E+00 | 9,52E-01 | -9,47E+01 |
| ODP                  | kg CFC 11 eq.   | 4,77E-06    | 8,97E-08 | 2,04E-05 | 9,17E-05 | 0,00E+00 | 1,97E-08 | 1,83E-08 | 3,17E-10 | -1,17E-06 |
| AP                   | mol H <sup>+</sup> eq.  | 1,25E+00    | 9,00E-03 | 1,38E-01 | 2,76E+01 | 0,00E+00 | 1,98E-03 | 7,04E-03 | 1,43E-04 | -3,74E-01 |
| EP-freshwater        | kg P eq.  | 9,26E-02    | 2,93E-04 | 7,34E-03 | 4,56E+00 | 0,00E+00 | 6,43E-05 | 1,73E-04 | 6,82E-06 | -2,28E-02 |
| EP-marine            | kg N eq.  | 2,90E-01    | 2,27E-03 | 4,19E-02 | 4,46E+00 | 0,00E+00 | 4,99E-04 | 2,56E-03 | 1,31E-03 | -5,42E-02 |
| EP-terrestrial       | mol N eq.   | 2,26E+00    | 2,31E-02 | 3,30E-01 | 4,04E+01 | 0,00E+00 | 5,07E-03 | 2,75E-02 | 4,00E-04 | -5,03E-01 |
| POCP                 | kg NMVOC eq.  | 7,67E-01    | 1,40E-02 | 1,33E-01 | 1,30E+01 | 0,00E+00 | 3,07E-03 | 1,21E-02 | 3,83E-04 | -2,25E-01 |
| ADP-minerals&metals* | kg Sb eq.   | 1,12E-02    | 1,35E-05 | 1,90E-04 | 5,75E-02 | 0,00E+00 | 2,96E-06 | 4,71E-06 | 4,96E-08 | -2,06E-04 |
| ADP-fossil*          | MJ  | 3,53E+03    | 5,85E+01 | 8,98E+02 | 1,09E+05 | 0,00E+00 | 1,29E+01 | 1,36E+01 | 2,62E-01 | -1,12E+03 |
| WDP*                 | m <sup>3</sup>  | -3,32E+02   | 2,41E-01 | 1,90E+01 | 1,23E+03 | 0,00E+00 | 5,30E-02 | 8,97E-02 | 5,68E-03 | -6,89E+02 |
| Acronyms             | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |             |          |          |          |          |          |          |          |           |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

## Vallox 51 MV RA11 Resource use indicators, results per declared unit

| Indicator | Unit   | A1-A3 total | A4       | B4       | B6       | C1       | C2       | C3       | C4       | D        |
|-----------|--|-------------|----------|----------|----------|----------|----------|----------|----------|----------|
| PERE      | MJ   | 0.00E+00    | 0.00E+00 | 0.00E+00 | 1.13E+04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PERM      | MJ   | 4.19E+02    | 7.01E-01 | 7.63E+01 | 1.25E+04 | 9.20E-01 | 5.49E+01 | 0.00E+00 | 2.02E-01 | 5.95E-01 |
| PERT      | MJ   | 4.19E+02    | 7.01E-01 | 7.63E+01 | 2.38E+04 | 9.20E-01 | 5.49E+01 | 0.00E+00 | 2.02E-01 | 5.95E-01 |
| PENRE     | MJ   | 3.59E+03    | 4.75E+01 | 5.39E+02 | 1.14E+05 | 6.22E+01 | 9.64E+02 | 0.00E+00 | 1.37E+01 | 1.45E+01 |
| PENRM     | MJ   | 1.47E+02    | 0.00E+00 | 0.00E+00 | 7.00E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PENRT     | MJ   | 3.74E+03    | 4.75E+01 | 5.39E+02 | 1.14E+05 | 6.22E+01 | 9.64E+02 | 0.00E+00 | 1.37E+01 | 1.45E+01 |
| SM        | kg   | 0.00E+00    | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| RSF       | MJ   | 0.00E+00    | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| NRSF      | MJ   | 0.00E+00    | 0.00E+00 | 4.61E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| FW        | m <sup>3</sup>   | 3.26E+00    | 6.42E-03 | 3.52E-01 | 8.62E+01 | 8.42E-03 | 4.98E-01 | 0.00E+00 | 1.85E-03 | 3.89E-03 |
| Acronyms  | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |             |          |          |          |          |          |          |          |          |

## Vallox 51 MV RA11 Additional mandatory and voluntary impact category indicators, results per declared unit

| Indicator                  | Unit                   | A1-A3 total | A4       | B4       | B6       | C1       | C2       | C3       | C4       | D         |
|----------------------------|------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|-----------|
| GWP-GHG <sup>1</sup>       | kg CO <sub>2</sub> eq. | 2.62E+02    | 4.12E+00 | 4.23E+01 | 4.85E+03 | 0.00E+00 | 9.06E-01 | 4.32E+00 | 6.97E-01 | -9.49E+01 |
| Ecotoxicity. freshwater    | CTUe                   | 1.88E+03    | 2.89E+01 | 1.68E+02 | 1.83E+04 | 0.00E+00 | 6.36E+00 | 3.35E+01 | 2.99E+00 | -1.82E+02 |
| Human toxicity. cancer     | CTUh                   | 3.26E-07    | 1.88E-09 | 1.29E-08 | 2.25E-06 | 0.00E+00 | 4.13E-10 | 2.27E-08 | 6.54E-10 | -1.43E-07 |
| Human toxicity. non-cancer | CTUh                   | 6.88E-06    | 4.15E-08 | 2.90E-07 | 8.93E-05 | 0.00E+00 | 9.13E-09 | 8.12E-08 | 4.49E-08 | -1.09E-06 |
| Land use                   | Pt                     | 9.65E+02    | 3.54E+01 | 2.26E+02 | 2.13E+04 | 0.00E+00 | 7.77E+00 | 7.29E+00 | 5.22E-01 | -2.34E+01 |
| Particulate matter         | disease inc.           | 1.33E-05    | 3.07E-07 | 1.58E-06 | 1.01E-04 | 0.00E+00 | 6.75E-08 | 1.22E-06 | 1.75E-09 | -5.03E-06 |

<sup>1</sup> This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO<sub>2</sub> is set to zero.

| Indicator                     | Unit | A1-A3 total | A4       | B6       | B4       | C1       | C2       | C3       | C4       | D        |
|-------------------------------|------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|
| Hazardous waste disposed      | kg   | 0.00E+00    | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Non-hazardous waste disposed  | kg   | 0.00E+00    | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Radioactive waste disposed    | kg   | 0.00E+00    | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Components for re-use         | kg   | 0.00E+00    | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Material for recycling        | kg   | 1.24E+00    | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.88E+01 | 0.00E+00 | 0.00E+00 |
| Materials for energy recovery | kg   | 0.00E+00    | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy, electricity  | MJ   | 0.00E+00    | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy, thermal      | MJ   | 0.00E+00    | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

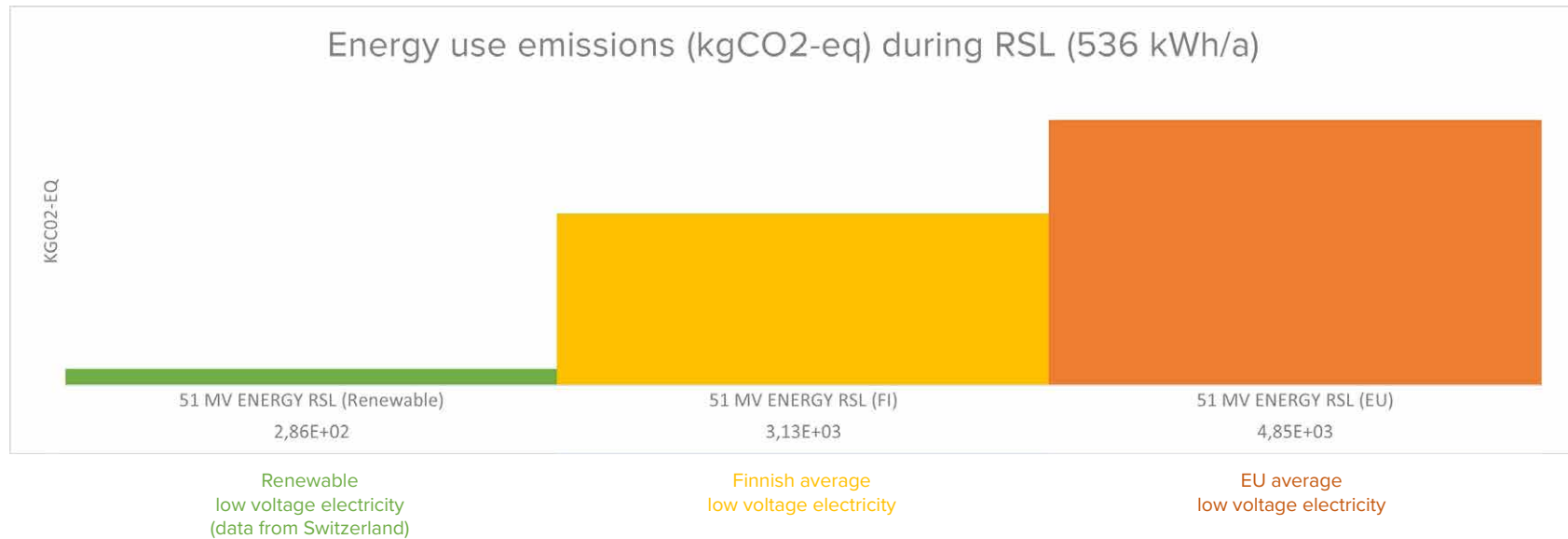
# Additional LCA Results (B6)

## Energy use during use-phase

Vallox has no effect on the energy source of their ventilation units. B6 was declared with the average EU electricity but in addition, other electricity mixes (Finnish and renewable electricity from Switzerland) were inspected to see the impact of different energy sources.

Only GWP100 results are included in this EPD to show the effect of energy source on environmental impacts. Based on these assessment results Vallox recommends its' clients to use energy sources with lower environmental impacts when possible.

The calculation assumptions for all electricity scenarios are same as for the declared B6 Operational Energy use.



# ADDITIONAL ENVIRONMENTAL INFORMATION

In order for the ventilation unit to maintain its efficiency during its life cycle Vallox recommends that the filters of the ventilation units are replaced twice a year. It is also recommended that the heat recovery cell of the units is cleaned annually as instructed in the manual. Always refer to the manual when doing maintenance for the ventilation units!

Vallox is a ISO 14001 certified company aiming to improve its overall sustainability. Making LCA's and EPD's for Vallox products is one of the many efforts Vallox is developing in order to reduce the environmental burden of Vallox products and the organization.

More information on Vallox, product manuals and recycling instructions for the ventilation units can be found from Vallox website: [www.vallox.com](http://www.vallox.com).



# DIFFERENCES TO PREVIOUS VERSIONS

Revision 2024-09-17: Correction of error in results (A1-A3 and B6): Results on wrong lines on the table and GWP-luluc miscalculated result corrected.



# REFERENCES

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# ANNEX 1. Configurations and their different market names.

|                    |               |   |
|--------------------|---------------|---|
| Handedness         | R / L         | Right / Left  |
| Heat recovery cell | A / P / E     | Aluminum / Plastic / Enthalpy   |
| Control panel      | 0 / 1         | does not include the control panel / includes the control panel                                     |
| Heating resistor   | 0 / 1 / 2 / 3 | no resistors / post-heating resistor / post- and additional heating resistor / pre-heating resistor |

| Product line | ID                  | Configuration name   | HR cell<br>A / P / E | Control panel<br>0 / 1 | Resistor<br>0 / 1 / 2 / 3 |
|--------------|---------------------|--|----------------------|------------------------|---------------------------|
| Vallox 51    | 4105063 / 4105064   | Vallox 51 MV LA11 / Vallox 51 MV RA11                                  | A                    | 1                      | 1                         |
|              | 4106649 / 4106650   | Vallox 51 MV RA01 / Vallox 51 MV LA01                                  | A                    | 0                      | 1                         |
|              | 4106657 / 4106658   | DV51 (R) Adroit EPH / DV51 (L) Adroit EPH                              |                      |                        |                           |
|              | 4107557 / 4111696   | Vallox 51 SC RA03 / Vallox 51 SC LA03                                  | A                    | 0                      | 3                         |
|              | 90001300 / 90001301 | DV180(R) ENTRO-V / DV180(L) ENTRO-V                                    |                      |                        |                           |
|              | 4106653 / 4106654   | DV51 (R) Adroit / DV51 (L) Adroit                                      | A                    | 0                      | 0                         |
|              | 3232 / 3233         | VALLOX Valloplus 180 MV rechts / VALLOX Valloplus 180 MV links         | p                    | 0                      | 0                         |
|              | 3230 / 3231         | VALLOX Valloplus 180 SC rechts / VALLOX Valloplus 180 SC links         |                      |                        |                           |
|              | 4113706 / 4113707   | Vallox 51 MV RE01 / Vallox 51 MV LE01                                  | E                    | 0                      | 1                         |
|              | 3236 / 3237         | VALLOX Valloplus 180 MV-E / Rechts / VALLOX Valloplus 180 MV-E / Links | E                    | 0                      | 0                         |

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