



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

S-Series Roof Fans 83-88W
VILPE Oy



EPD HUB, EPD number HUB-4236

Published on 24.10.2025, last updated on 24.10.2025, valid until 24.10.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	VILPE Oy
Address	Kauppatie 9, FI-65610 Mustasaari
Contact details	sales@vilpe.com
Website	https://www.vilpe.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, B6, and modules C1-C4, D
EPD author	Milja Sarapaa, VILPE Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	S-Series Roof Fans 83-88W
Additional labels	-
Product reference	-
Place(s) of raw material origin	Finland, EU, Turkey, China
Place of production	Mustasaari, Finland
Place(s) of installation and use	Finland, Poland, Russia, Sweden, Hungary, Ukraine
Period for data	01/01/2024-31/12/2024
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	-3,4% / -1,7%
A1-A3 Specific data (%)	4,36

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 product
Declared unit mass	4,71 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	1,83E+01
GWP-total, A1-A3 (kgCO ₂ e)	1,71E+01
Secondary material, inputs (%)	5,95
Secondary material, outputs (%)	93,8
Total energy use, A1-A3 (kWh)	91,9
Net freshwater use, A1-A3 (m ³)	0,21

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

VILPE Oy is a Finnish family-owned company that develops and manufactures ventilation and roofing solutions for the construction industry. The company's operations are based on customer-oriented and innovative product development. Our high quality VILPE® products bring better indoor air quality, energy efficiency and longevity of structures to all spaces and thus improve people's quality of life. VILPE represents safe construction and living, which reinforces the company's commitment to quality and reliability.

PRODUCT DESCRIPTION

The S-series roof fans are designed to be installed in the ventilation shaft, onto a silencer or in or other horizontal surface. The S-roof fans are used, for example, in blocks of flats and terraced houses, when flat-specific ventilation is required. The S-series roof fan can also be used for modifying an old natural ventilation system into a mechanical one during renovation.

ECo 110S FLOW Roof Fan 300 X 300: Energy-efficient roof fan for radon ventilation. Can be controlled with, for example, the ECo Controller, ECo Potentiometer, or a building automation system using a 0–10 V signal. The fan includes an external service switch. Also suitable for use as a fan for an eco-toilet. The product has a direct current (EC) motor. The radon fan is not suitable for indoor air ventilation due to fire regulations. Installed onto a ventilation duct, chimney, or silencer. When installing on a horizontal flat surface, use the installation kit included in the package.

Dimensions: Duct size Ø 110 mm; installation set 300 x 300 mm, installation area must be at least the same size.

ECo 125S FLOW Roof Fan 300 X 300: Energy-efficient roof fan for mechanical exhaust ventilation or as a cooker hood fan. Can be controlled with, for example, the ECo Controller, ECo Ideal, or a building automation system using

a 0–10 V signal. The fan includes an external service switch. The product has a direct current (EC) motor. Installed onto a ventilation duct, chimney, or silencer. When installing on a horizontal flat surface, use the installation kit included in the package.

Dimensions: Duct size Ø 125 mm; installation set 300 x 300 mm, installation area must be at least the same size.

ECo 160S FLOW Roof Fan 300 X 300: Energy-efficient roof fan for mechanical exhaust ventilation or as a cooker hood fan. Can be controlled with, for example, the ECo Controller, ECo Ideal, or a building automation system using a 0–10 V signal. The fan includes an external service switch. The product has a direct current (EC) motor. Installed onto a ventilation duct, chimney, or silencer. When installing on a horizontal flat surface, use the installation kit included in the package.

Dimensions: Duct size Ø 160 mm; installation set 300 x 300 mm, installation area must be at least the same size.

ECo 110S: Product description: Energy-efficient roof fan for radon ventilation. The fan is equipped with a potentiometer, so no separate controller is needed. The speed is preset (3 V). Suitable for retrofitting on a pipe with an external diameter of 160 mm. Also suitable for use as a fan for an eco-toilet. The product has a direct current (EC) motor. The radon fan is not suitable for indoor air ventilation due to fire regulations. Installed onto a ventilation duct, chimney, or silencer. When installing on a horizontal flat surface, use the 250 x 250 mm installation kit included in the package.

Dimensions: Duct size Ø 110 mm, installation set 250 x 250 mm, installation area must be at least the same size.

E220S/Ø160 Roof Fan 300 x 300: Roof fan with an AC motor, installed onto a ventilation duct, chimney, or silencer. Controlled with, for example, the VILPE

Controller AC. When installing on a horizontal flat surface, the S installation kit included in the package is required.

Dimensions: Duct size Ø 160 mm; installation set 300 x 300 mm, installation area must be at least the same size.

Further information can be found at:
<https://www.vilpe.com/>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	24,71 %	Finland, EU, China
Minerals	-	-
Fossil materials	75,29 %	Finland, EU, Turkey, China
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,338

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 product
Mass per declared unit	4,71 kg
Functional unit	This roof fan provides mechanical exhaust ventilation with a nominal power of 83W
Reference service life	20 years

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
X	X	X	X	X	ND	ND	ND	ND	ND	X	ND	X	X	X	X	X		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = ND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory.

Roof fans of VILPE Oy are manufactured at the Mustasaari site in Finland. The production process consists of raw material delivery, injection molding, quality inspection, and packaging. During injection molding, the raw material is plasticized, injected into the mold, cooled, and removed from the mold. Some assembly is automated. Each roof fan is tested for functionality after assembly before packaging. Production requires electricity, heat, and water. Slightly less than 10% of the electricity comes from the production facility's own solar power plant, and the rest is from nuclear electricity. The waste heat from the machines is directed to a heat recovery center and used for building heating. The cooling water is in a closed loop. The material requirement and generated waste vary depending on the size of the product. Production waste is recycled in the process for other products.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The average distribution distance is calculated as a weighted average of the significant sales volumes. Products are transported in full pallets. During installation, the disposal of packaging material is included in the estimate. Roof fans are packed in cardboard boxes. The amount of packaging material varies slightly depending on the type and size of the roof fan. After installation, the packaging material is transported by truck to a recycling facility. The average distance to a recycling facility in Finland has been used. Scenario estimates have employed average recycling methods and practices.

There is no material waste during installation. The energy consumption during installation, mainly consisting of the use of a drill, has been excluded from the calculations as it is assumed to be insignificant per examined product unit.

PRODUCT USE AND MAINTENANCE (B1-B7)

The product consumes electricity during use phase and the scenario in this study is based on; Electricity, Finland, 2022 (One Click LCA), Electricity Poland, Electricity, Russia, 2022 (One Click LCA), Electricity Sweden, Electricity, Hungary, 2022 (One Click LCA) and Electricity, Ukraine, 2022 (One Click LCA). This EPD follows additional requirements for products using energy in module B6 of the use stage and permanently installed into building or infrastructure (defined by the manufacturer).

The nominal power of the products included in the calculations varies between 83W, 85W, and 88W. The difference in consumption over the product lifecycle between the products representing the maximum and minimum power was 6%. Roof fans have technical warranty of 20 years, which has been selected as the reference service life. Roof fans operate at the desired rotation speed depending on the application. With EC motors control is achieved via a 0–10V signal. When demand-controlled ventilation is used, the fan speed is initially reduced but increases according to the CO₂ or RH levels detected by sensors. When using other control methods, such as a cooker hood, the user manually selects between alternative rotation speeds as needed. In basic control setups, such as with the ECO motor controller, the user adjusts the rotation speed steplessly to achieve the desired airflow. AC fans can be controlled either with a manual VILPE AC controller or with a controller from another manufacturer, such as a cooker hood.

The calculations and product comparisons have been carried out using nominal power, to ensure that the result reflects the maximum possible

scenario in line with the precautionary principle. However, for the representative product, a B-module scenario has also been calculated using average power. This does not represent all products, but is specific to the representative product. The estimate is based on expert judgment, and deviations may occur depending on the application and environment. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

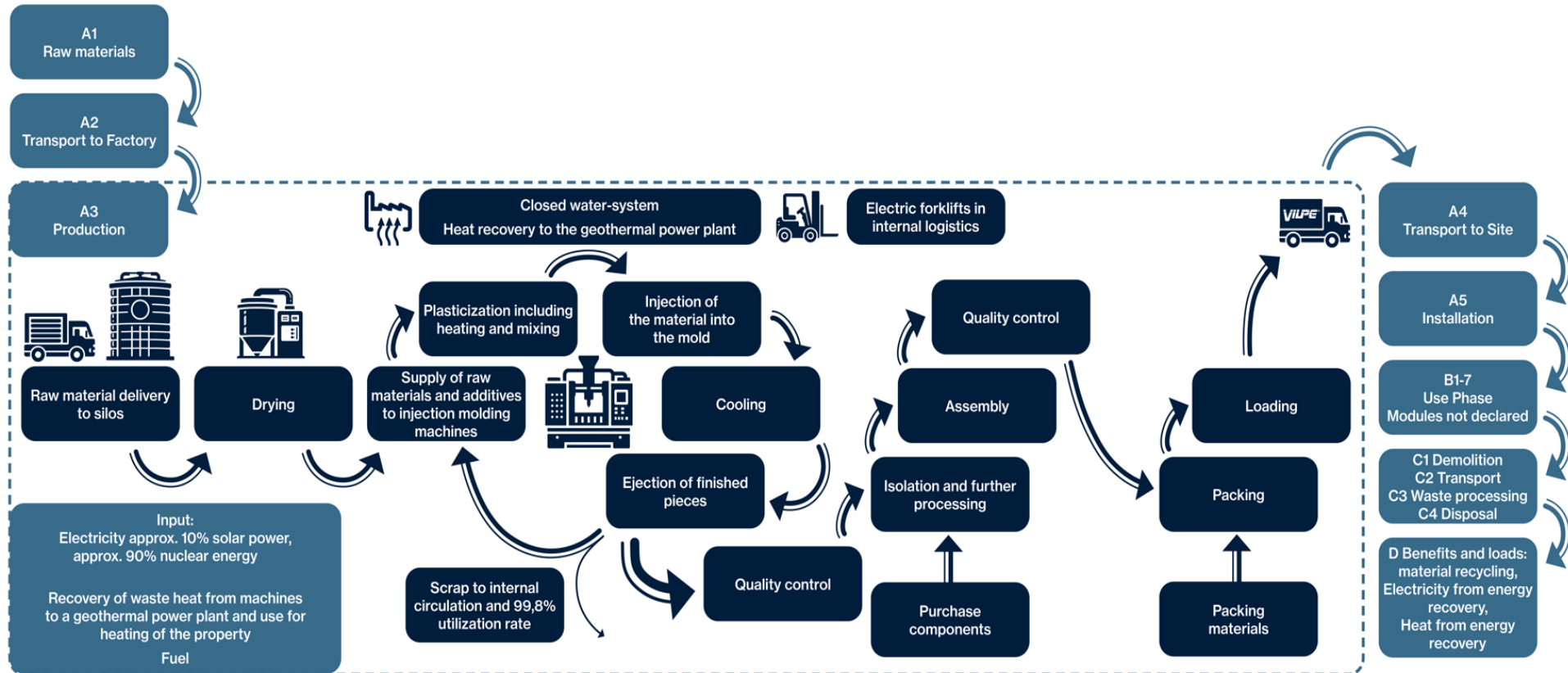
The end-of-life stage consists of the following modules:

- C1: Deconstruction of the product
- C2: Transportation of the discarded product
- C3: Waste processing
- C4: Disposal

The EOL-scenario represents the most probable option in Finland and is based on local waste management scenarios. The average distance to waste treatment facilities in Finland has been used for waste transportation distance. At the end of its service life, the product can be dismantled from its installation environment. It is assumed in the calculation that the product is further disassembled into parts and the different waste fractions are processed separately. It is assumed that plastic waste (PP, PE, TPE, PMMA, PA) ends up entirely in incineration (100%). For components made of steel, a treatment method of 95% recycling and 5% landfill is assumed (source: World Stainless 2024). For the ferrous components of electronics, it is assumed that 80% are recycled and 20% end up in landfill (Recycling rates are considered according to EN 50693). For aluminum components in electronics, it is assumed that 70% are recycled and 30% go to landfill (Recycling rates are considered according to EN 50693). For copper components in electronics, it is assumed that 60% are recycled and 40% end up in landfill (Recycling rates are considered according to EN 50693). Other smaller fractions of electronic components are also assumed to be treated as electronic waste, with copper-based metals being recovered.

The benefits and loads of incineration and recycling are included in Module D. This covers loads from the incineration of plastics (PP, TPE, PA, PMMA, PE) as well as benefits in the form of heat and electricity generated from incineration. For steel, loads include the recycling process. The benefit of steel recycling is avoiding primary steel production (recycled). The use of secondary material (0.2 kg/kg) is not included in the calculations. For cardboard, loads include the recycling process (use of secondary materials: 0.98 kg/kg is not included in the calculations) and the incineration process. Benefits include the use of secondary materials and heat and electricity from incineration. For wooden pallets, loads include the recycling process (use of secondary materials: 1.17 kg/unit, or 4.68%, is not included in the calculations) and the incineration process. Benefits include the use of secondary materials and heat and electricity from incineration. All assumptions follow current recycling practices in Finland.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

Plastic manufacturing waste is not included in calculations because total amount of plastic which goes to energy waste is only 400kg per year and less than 1% of plastic production. Since the combined amount of ancillary materials including added water to the closed system is less than 1% and no REACH chemicals have been used, they have been excluded from the calculation. Energy consumption during the installation is very small (drilling machine) that is not included to the calculations.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN

15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	Allocated by mass or volume
Packaging material	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

The calculation for Phase B has been performed based on nominal power. The actual required power will adjust according to demand and is lower than this. However, nominal power was chosen for the calculation perspective, following the precautionary principle. A scenario based on estimated power consumption has been calculated for a representative product.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	-3,4% / -1,7%

The average has been calculated for 6 products, and to ensure the permissible range of variation, three products representing different size categories were selected for the calculation. The most representative product was chosen based on the highest sales volume. The products are comparable in terms of materials, applications, and manufacturing methods. The impact of the difference in nominal power on energy consumption during the use phase and on emission calculations has been confirmed to be within the allowable variation range (less than 10%). The products covered by the EPD are also comparable in terms of the EOL (End of Life) stages, and the most significant differences are in the packaging materials and the mass of product components, which result from size variations of the products. The analysis concluded that all products fall within the same average range for A1–A3 Global Warming Potential (GWP).

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2’.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	1,70E+01	6,92E-01	-6,11E-01	1,71E+01	3,27E-01	1,38E+00	ND	ND	ND	ND	ND	4,76E+03	ND	0,00E+00	3,10E-02	8,68E+00	0,00E+00	8,98E+00
GWP – fossil	kg CO ₂ e	1,69E+01	6,91E-01	7,39E-01	1,83E+01	3,26E-01	2,10E-02	ND	ND	ND	ND	ND	3,08E+03	ND	0,00E+00	3,10E-02	8,68E+00	0,00E+00	8,68E+00
GWP – biogenic	kg CO ₂ e	5,90E-02	1,20E-04	-1,36E+00	-1,30E+00	7,39E-05	1,36E+00	ND	ND	ND	ND	ND	1,68E+03	ND	0,00E+00	6,92E-06	1,67E-03	0,00E+00	2,96E-01
GWP – LULUC	kg CO ₂ e	1,07E-02	3,23E-04	1,26E-02	2,36E-02	1,46E-04	1,53E-05	ND	ND	ND	ND	ND	5,53E-01	ND	0,00E+00	1,38E-05	8,25E-05	0,00E+00	-1,16E-03
Ozone depletion pot.	kg CFC-11e	3,81E-07	1,01E-08	2,31E-08	4,14E-07	4,82E-09	2,32E-10	ND	ND	ND	ND	ND	1,24E-04	ND	0,00E+00	4,48E-10	2,26E-09	0,00E+00	-3,84E-08
Acidification potential	mol H ⁺ e	1,01E-01	6,13E-03	4,09E-03	1,11E-01	1,13E-03	1,20E-04	ND	ND	ND	ND	ND	2,91E+01	ND	0,00E+00	1,05E-04	1,67E-03	0,00E+00	4,36E-03
EP-freshwater ²⁾	kg Pe	2,02E+00	4,71E-05	2,37E-04	2,02E+00	2,54E-05	6,06E-06	ND	ND	ND	ND	ND	1,12E+00	ND	0,00E+00	2,41E-06	3,42E-05	0,00E+00	1,00E-03
EP-marine	kg Ne	1,39E-02	1,67E-03	1,40E-03	1,69E-02	3,70E-04	1,59E-04	ND	ND	ND	ND	ND	3,20E+00	ND	0,00E+00	3,42E-05	7,17E-04	0,00E+00	1,14E-03
EP-terrestrial	mol Ne	1,55E-01	1,85E-02	1,10E-02	1,84E-01	4,03E-03	4,10E-04	ND	ND	ND	ND	ND	7,41E+01	ND	0,00E+00	3,73E-04	7,26E-03	0,00E+00	9,60E-03
POCP (“smog”) ³⁾	kg NMVOCe	7,60E-02	5,94E-03	3,95E-03	8,59E-02	1,65E-03	1,53E-04	ND	ND	ND	ND	ND	9,05E+00	ND	0,00E+00	1,51E-04	1,89E-03	0,00E+00	3,51E-03
ADP-minerals & metals ⁴⁾	kg Sbe	1,94E-03	1,67E-06	4,29E-06	1,94E-03	9,10E-07	1,28E-07	ND	ND	ND	ND	ND	9,34E-03	ND	0,00E+00	9,28E-08	2,25E-06	0,00E+00	-1,41E-06
ADP-fossil resources	MJ	3,22E+02	9,70E+00	2,85E+01	3,60E+02	4,74E+00	2,39E-01	ND	ND	ND	ND	ND	9,90E+04	ND	0,00E+00	4,44E-01	1,67E+00	0,00E+00	-1,05E+01
Water use ⁵⁾	m ³ e depr.	3,86E+00	4,41E-02	4,05E-01	4,31E+00	2,34E-02	1,01E-02	ND	ND	ND	ND	ND	2,88E+04	ND	0,00E+00	2,14E-03	3,00E-01	0,00E+00	3,88E-01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	8,87E-07	5,90E-08	9,89E-08	1,04E-06	3,26E-08	4,10E-09	ND	ND	ND	ND	ND	1,32E-04	ND	0,00E+00	2,84E-09	1,15E-08	0,00E+00	9,40E-08
Ionizing radiation ⁶⁾	kBq 11235a	9,28E-01	7,70E-03	1,04E+00	1,98E+00	4,12E-03	1,07E-03	ND	ND	ND	ND	ND	4,16E+03	ND	0,00E+00	3,76E-04	4,86E-03	0,00E+00	-8,92E-01
Ecotoxicity (freshwater)	CTUe	1,51E+02	1,25E+00	4,21E+00	1,56E+02	6,69E-01	2,25E+00	ND	ND	ND	ND	ND	3,56E+04	ND	0,00E+00	6,58E-02	8,94E+00	0,00E+00	1,17E+01
Human toxicity, cancer	CTUh	2,44E-08	1,21E-10	1,05E-09	2,56E-08	5,39E-11	2,90E-11	ND	ND	ND	ND	ND	6,00E-07	ND	0,00E+00	5,18E-12	5,73E-10	0,00E+00	1,24E-09
Human tox. non-cancer	CTUh	4,98E-07	5,56E-09	1,84E-08	5,22E-07	3,06E-09	1,49E-09	ND	ND	ND	ND	ND	2,28E-05	ND	0,00E+00	2,84E-10	1,68E-08	0,00E+00	2,12E-08
SQP ⁷⁾	-	5,96E+01	8,12E+00	9,51E+01	1,63E+02	4,76E+00	2,42E-01	ND	ND	ND	ND	ND	3,08E+03	ND	0,00E+00	3,74E-01	1,09E+00	0,00E+00	-1,73E+01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	1,90E+01	1,22E-01	6,45E+00	2,56E+01	6,49E-02	-1,28E+01	ND	ND	ND	ND	ND	1,93E+04	ND	0,00E+00	6,09E-03	1,14E-01	0,00E+00	-1,24E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,12E+01	1,12E+01	0,00E+00	-1,12E+01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,24E+00
Total use of renew. PER	MJ	1,90E+01	1,22E-01	1,77E+01	3,68E+01	6,49E-02	-2,40E+01	ND	ND	ND	ND	ND	1,93E+04	ND	0,00E+00	6,09E-03	1,14E-01	0,00E+00	-1,11E+01
Non-re. PER as energy	MJ	2,67E+02	9,70E+00	2,83E+01	3,05E+02	4,74E+00	2,39E-01	ND	ND	ND	ND	ND	1,03E+05	ND	0,00E+00	4,44E-01	-1,23E+02	0,00E+00	-1,35E+02
Non-re. PER as material	MJ	1,06E+02	0,00E+00	3,44E-01	1,06E+02	0,00E+00	-3,44E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	-1,06E+02	0,00E+00	1,24E+02
Total use of non-re. PER	MJ	3,73E+02	9,70E+00	2,86E+01	4,12E+02	4,74E+00	-1,05E-01	ND	ND	ND	ND	ND	1,03E+05	ND	0,00E+00	4,44E-01	-2,29E+02	0,00E+00	-1,05E+01
Secondary materials	kg	2,80E-01	4,22E-03	3,17E-01	6,01E-01	2,02E-03	3,38E-04	ND	ND	ND	ND	ND	7,21E-01	ND	0,00E+00	1,93E-04	1,91E-03	0,00E+00	-6,62E-01
Renew. secondary fuels	MJ	1,13E-02	4,47E-05	2,23E-01	2,35E-01	2,56E-05	1,99E-06	ND	ND	ND	ND	ND	3,74E-03	ND	0,00E+00	2,46E-06	5,38E-05	0,00E+00	-8,29E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	1,96E-01	1,29E-03	8,85E-03	2,07E-01	7,00E-04	-6,39E-04	ND	ND	ND	ND	ND	9,01E+01	ND	0,00E+00	6,29E-05	3,52E-03	0,00E+00	4,10E-03

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,22E+00	1,58E-02	4,58E-02	2,28E+00	8,02E-03	3,01E-03	ND	ND	ND	ND	ND	1,76E+02	ND	0,00E+00	7,61E-04	1,68E-01	0,00E+00	3,40E-01
Non-hazardous waste	kg	8,84E+01	2,80E-01	1,22E+00	9,00E+01	1,48E-01	1,22E+00	ND	ND	ND	ND	ND	3,47E+03	ND	0,00E+00	1,42E-02	3,73E+00	0,00E+00	1,46E+01
Radioactive waste	kg	4,71E-04	1,88E-06	2,47E-04	7,20E-04	1,01E-06	2,66E-07	ND	ND	ND	ND	ND	1,37E+00	ND	0,00E+00	9,20E-08	1,23E-06	0,00E+00	-1,96E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,46E-01	ND	ND	ND	ND	ND	4,56E-08	ND	0,00E+00	0,00E+00	1,12E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	2,39E-16	ND	0,00E+00	0,00E+00	3,30E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,65E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	7,75E+01	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	2,49E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,17E+01	0,00E+00	0,00E+00
Exported energy –	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,40E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	6,58E+01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	1,80E+01	6,88E-01	7,99E-01	1,95E+01	3,25E-01	1,05E-01	ND	ND	ND	ND	ND	3,23E+03	ND	0,00E+00	3,08E-02	8,68E+00	0,00E+00	8,68E+00
Ozone depletion Pot.	kg CFC ₁₁ e	3,23E-07	8,09E-09	2,74E-08	3,59E-07	3,85E-09	1,91E-10	ND	ND	ND	ND	ND	1,34E-04	ND	0,00E+00	3,58E-10	1,91E-09	0,00E+00	-2,94E-08
Acidification	kg SO ₂ e	9,36E-02	4,83E-03	2,51E-03	1,01E-01	8,64E-04	9,16E-05	ND	ND	ND	ND	ND	2,18E+01	ND	0,00E+00	8,01E-05	1,22E-03	0,00E+00	3,60E-03
Eutrophication	kg PO ₄ ³ e	2,21E-02	7,21E-04	5,15E-03	2,80E-02	2,08E-04	8,76E-05	ND	ND	ND	ND	ND	4,67E+00	ND	0,00E+00	1,95E-05	3,42E-04	0,00E+00	1,05E-03
POCP (“smog”)	kg C ₂ H ₄ e	8,80E-03	2,96E-04	3,73E-04	9,47E-03	7,64E-05	2,82E-05	ND	ND	ND	ND	ND	8,84E-01	ND	0,00E+00	7,15E-06	8,38E-05	0,00E+00	7,43E-04
ADP-elements	kg Sbe	1,94E-03	1,63E-06	4,23E-06	1,94E-03	8,87E-07	1,24E-07	ND	ND	ND	ND	ND	9,35E-03	ND	0,00E+00	9,05E-08	2,17E-06	0,00E+00	-1,52E-06
ADP-fossil	MJ	3,54E+02	9,58E+00	9,72E+00	3,73E+02	4,67E+00	2,21E-01	ND	ND	ND	ND	ND	9,43E+04	ND	0,00E+00	4,38E-01	1,59E+00	0,00E+00	1,65E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ⁹⁾	kg CO ₂ e	1,69E+01	6,92E-01	7,51E-01	1,84E+01	3,27E-01	2,10E-02	ND	ND	ND	ND	ND	3,08E+03	ND	0,00E+00	3,10E-02	8,68E+00	0,00E+00	8,68E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO₂ is set to zero.

SCENARIO OF DIFFERENT B-MODULE: ECO 125S FLOW ROOF FAN'S AVERAGE POWER 28W

Impact category	Unit	B1	B2	B3	B4	B5	B6	B7
GWP – total ¹⁾	kg CO ₂ e	ND	ND	ND	ND	ND	1,60E+03	ND
GWP – fossil	kg CO ₂ e	ND	ND	ND	ND	ND	1,04E+03	ND
GWP – biogenic	kg CO ₂ e	ND	ND	ND	ND	ND	5,65E+02	ND
GWP – LULUC	kg CO ₂ e	ND	ND	ND	ND	ND	1,86E-01	ND

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, nuclear, pressure water reactor (Reference product: electricity, high voltage)
Electricity CO2e / kWh	0,0071 CO2e / kWh
District heating data source and quality	Heat production, light fuel oil, at boiler 100kW condensing, non-modulating (Reference product: heat, central or small-scale, other than natural gas)
District heating CO2e / kWh	0,0969 CO2e / kWh

Transport scenario documentation A4

Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	Market for transport, freight, lorry >32 metric ton, EURO5 and Transport, freight, sea, container ship
Average transport distance, km	553km
Capacity utilization (including empty return) %	50
Bulk density of transported products	-
Volume capacity utilization factor	1

Installation scenario documentation A5

Scenario information	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	-
Water use / m ³	-
Other resource use / kg	-
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	0,018kWh
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	Paperboard 0,532kg, EUR-Flat pallet/Wood 0,354kg
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	Cardboard: 82% recycling, 9% incineration, 9% landfill Wood: 31% recycling, 31% incineration, 38% landfill
Direct emissions to ambient air, soil and water / kg	-
Energy input during repair, e.g., crane activity, energy carrier type, e.g., electricity, and amount / kWh/RSL, kWh/cycle	-

Use stages scenario documentation - B6-B7 Use of energy and use of water

Scenario information	Value
Ancillary materials specified by material / kg or units as appropriate	-
Net fresh water consumption / m ³	-
Type of energy carrier, e.g., electricity, natural gas, district heating / kWh	Type of energy carrier is electricity in all datapoints; Electricity, Finland, 2022 (One Click LCA) 11809kWh, Electricity Poland 842kWh, Electricity, Russia, 2022 (One Click LCA) 641kWh, Electricity Sweden 550kWh, Electricity, Hungary, 2022 (One Click LCA) 419kWh, Electricity, Ukraine, 2022 (One Click LCA) 280kWh
Power output of equipment / kW	83W
Characteristic performance, e.g., energy efficiency, emissions, variation of performance with capacity utilization, etc.	The rotation speed of the roof fan adjusts automatically according to demand. For the representative product, a B-module scenario has also been calculated using average power 28W.
Further assumptions for scenario development, e.g., frequency and period of use, number of occupants	Finland: 81,21%*83W*24h*365d*20years Poland: 5,79%*83W*24h*365d*20years Russia:

	4,41%*83W*24h*365d*20years Sweden: 3,78%*83W*24h*365d*20years Hungary: 2,88%*83W*24h*365d*20years Ukraine: 1,93%*83W*24h*365d*20years
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End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	-
Collection process – kg collected with mixed waste	4,708kg
Recovery process – kg for re-use	-
Recovery process – kg for recycling	1,230kg
Recovery process – kg for energy recovery	3,300kg
Disposal (total) – kg for final deposition	0,178kg
Scenario assumptions e.g. transportation	Transported 50km by lorry “Market for transport, freight, lorry >32 metric ton, EURO5

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

Imane Uald Lamkaddam as an authorized verifier for EPD Hub Limited
24.10.2025



APPENDIX

PRODUCT PORTFOLIO INCLUDED IN SCOPE

The following list of products are included in the scope of declaration.

Product number	Product name
350281, 350282, 350284, 350286, 350287, 350288, 350289	ECo 110S FLOW Roof Fan 300 X 300
350201, 350202, 350204, 350206, 350207, 350208, 350209	ECo 125S FLOW Roof Fan 300 X 300
350211, 350212, 350214, 350216, 350217, 350218, 3502129	ECo 160S FLOW Roof Fan 300 X 300
737532, 737537	ECo 110S/Ø110 Roof Fan 300 x 300
737332, 737332	Eco 110S Roof Fan
737501, 737502, 737504, 737506, 737507, 737508, 737509	E220S/Ø160 Roof Fan 300 x 300