EPD Hub

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

P- and C-series Roof Fans 83W-88W
VILPE Oy

EPD HUB, HUB-4129
Published on 10.10.2025, last updated on 10.10.2025, valid until 10.10.2030

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.

One Click LCA   Created with One Click LCA

VILPE®

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	EN 15804:2012+A2:2019/AC:2021 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: ☐ Internal verification ☑ 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	P- and C-Series Roof Fans 83W-88W
Additional labels	-
Product reference	-
Place(s) of raw material origin	Finland, EU, Turkey, Taiwan, 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 (%)	-7,7% / +15%
A1-A3 Specific data (%)	9,56

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 product
Declared unit mass	6,302 kg
GWP-fossil, A1-A3 (kgCO_2e)	2,30E+01
GWP-total, A1-A3 (kgCO_2e)	1,83E+01
Secondary material, inputs (%)	25,2
Secondary material, outputs (%)	94,6
Total energy use, A1-A3 (kWh)	138
Net freshwater use, A1-A3 (m^3)	0,31

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 P-series roof fans can be led watertightly with a pass-through set through a roof. VILPE pass-through sets can be installed on any roofs with the most common pitches. The pass-through set is always selected according to the roofing material of the roof. All the roof fans in the P-series are compatible with all pass-through set types. Using P-series XL roof fans and XL exhaust ventilation pipes requires an XL pass-through.

C-series roof fans are used, like the P-series products, in solutions where the duct is to be routed through the roof and a cone. The difference is that the C-series roof fans are installed on top of a sheet metal cone made by a sheet metal worker for the roof. The top of the cone must be Ø 170 mm, 230 mm, or 315 mm, depending on the size of the extractor or exhaust duct.

ECo 110P/500 FLOW Roof Fan: Energy-efficient roof fan for radon ventilation. Can be controlled with, for example, the ECo Controller, ECO Potentiometer, and home automation systems via a 0–10 V signal. The fan is equipped with an external service switch. Also suitable as a fan for an eco-toilet. The product is equipped with a direct current (EC) motor. The radon fan is not suitable for indoor air ventilation. In addition to the fan, a VILPE roof pass-through, selected according to the roofing material, is required.

Dimensions: Duct size Ø 110 mm, external Ø 225 mm, height above roof approx. 500 mm.

ECo110P/700 FLOW Roof Fan:
Energy-efficient roof fan for radon ventilation. Can be controlled with, for example, the ECo Controller, ECO Potentiometer, and home automation systems via a 0–10 V signal. The fan is equipped with an external service switch. Also suitable as a fan for an eco-toilet. The product is equipped with a direct current (EC) motor. The radon fan is not suitable for indoor air ventilation. In addition to the fan, a VILPE roof pass-through, selected according to the roofing material, is required.
Dimensions: Duct size Ø 110 mm, external Ø 225 mm, height from roof surface approx. 700 mm.

ECo 125P/500 FLOW Roof Fan: 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, and home automation systems via a 0–10 V signal. The fan is equipped with an external service switch. The product is equipped with a direct current (EC) motor. In addition to the fan, a VILPE roof pass-through, selected according to the roofing material, is required.
Dimensions: Duct size Ø 125 mm, external Ø 225 mm, height above roof approx. 500 mm.

ECo 125P/700 FLOW Roof Fan: 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, and home automation systems via a 0–10 V signal. The fan is equipped with an external service switch. The product is equipped with a direct current (EC) motor. In addition to the fan, a VILPE roof pass-through, selected according to the roofing material, is required.

Dimensions: Duct size Ø 125 mm, external Ø 225 mm, height from roof surface approx. 700 mm.

ECo 160P/500 FLOW Roof Fan: 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, and home automation systems via a 0–10 V signal. The fan is equipped with an external service switch. The product has a direct current (EC) motor. In addition to the fan, a VILPE roof pass-through, selected according to the roofing material, is required.
Dimensions: Duct size Ø 160 mm, external Ø 225 mm, height above roof approx. 500 mm.

ECo160P/700 FLOW Roof Fan: 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, and home automation systems via a 0–10 V signal. The fan is equipped with an external service switch. The product has a direct current (EC) motor. In addition to the fan, a VILPE roof pass-through, selected according to the roofing material, is required.
Dimensions: Duct size Ø 160 mm, external Ø 225 mm, height from roof surface approx. 700 mm.

ECo160P/IS/700 FLOW XL Roof Fan: 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, and home automation systems via a 0–10 V signal. The roof fan is equipped with an XL-sized cowl and base, which allows for improved insulation around the ventilation duct. The fan also has an external service switch. The product is equipped with a direct current (EC) motor. In addition to the fan, a VILPE roof pass-through, selected according to the roofing material, is required.
Dimensions: Duct size Ø 160 mm, external Ø 305 mm, height from roof surface approx. 700 mm.

E220P/Ø160/500 Roof Fan: Insulated AC roof fan. Includes an inner pipe with a lip seal, made of galvanized steel sheet. Can be controlled, for example, with the VILPE Controller AC regulator. In addition to the fan, a VILPE roof pass-through, selected according to the roofing material, is required.
Dimensions: Duct size Ø 160 mm, external Ø 225 mm, height above roof approx. 500 mm.

E220P/Ø160/700 Roof Fan: Insulated AC roof fan. Includes an inner pipe with a lip seal, made of galvanized steel sheet. Can be controlled, for example, with the VILPE Controller AC regulator. In addition to the fan, a VILPE roof pass-through, selected according to the roofing material, is required.
Dimensions: Duct size Ø 160 mm, external Ø 225 mm, height from roof surface approx. 700 mm.

E220P/Ø160/700 XL Roof Fan: Insulated XL roof fan with an AC motor. Includes an inner pipe with a lip seal, made of galvanized steel sheet. Can be controlled, for example, with the VILPE Controller AC regulator. In addition to the fan, a VILPE XL roof pass-through, selected according to the roofing material, is required.
Dimensions: Duct size Ø 160 mm, external Ø 300 mm, height from roof surface approx. 700 mm.

ECo 110C/400 FLOW Roof Fan: Energy-efficient roof fan for radon ventilation. Can be controlled with, for example, the ECo Controller, ECo Potentiometer, and home automation systems via a 0–10 V signal. The fan is equipped with an external service switch. Also suitable 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. Installation is on a sheet-metal cone with an upper part of Ø 230 mm, made by a tinsmith.
Dimensions: Duct size Ø 110 mm, height above roof approx. 480 mm + cone height.

ECo 125C/400 FLOW Roof Fan: 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, and home automation systems via a 0–10 V signal. The fan is equipped with an external service switch. The inner pipe, with a lip seal, is made of galvanized steel sheet. Installation is on a sheet-metal cone with an upper part of Ø 230 mm, made by a tinsmith.
Dimensions: Duct size Ø 125 mm, height above roof approx. 480 mm + cone height.

ECo 160C/400 FLOW Roof Fan: 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, and home automation systems via a 0–10 V signal. The fan is equipped with an external service switch. The inner pipe, with a lip seal, is made of galvanized steel sheet. Installation is on a sheet-metal cone with a top diameter of Ø 230 mm, made by a tinsmith.
Dimensions: Duct size Ø 160 mm, height above roof approx. 480 mm + cone height.

Eco 160C/450 FLOW XL Roof Fan: Energy-efficient roof fan for mechanical exhaust ventilation or as a cooker hood fan. Larger XL model, which allows for more insulation around the duct. Can be controlled with, for example, the ECo Controller, ECo Ideal, and home automation systems via a 0–10 V signal. The fan is equipped with an external service switch. The inner pipe, with a lip seal, is made of galvanized steel sheet. Installation is on a sheet-metal cone with a top diameter of Ø 315 mm, made by a tinsmith.
Dimensions: Duct size Ø 160 mm, height above roof approx. 530 mm + cone height.

E220C/Ø160/450 XL Roof Fan: Insulated XL roof fan. Includes a galvanized steel inner pipe with a lip seal. Should be installed in a sheet metal cone with a Ø 315 mm opening, made by a tinsmith.
Dimensions: Duct size Ø 160 mm, height above roof approx 450 mm + cone height.

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	34,16 %	Finland, China
Minerals	-	
Fossil materials	65,84 %	Finland, EU, Turkey, China, Taiwan
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	1,267

Modules not declared = MND. Modules not relevant = MNR

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 product
Mass per declared unit	6,302 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

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 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 CO_2 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.

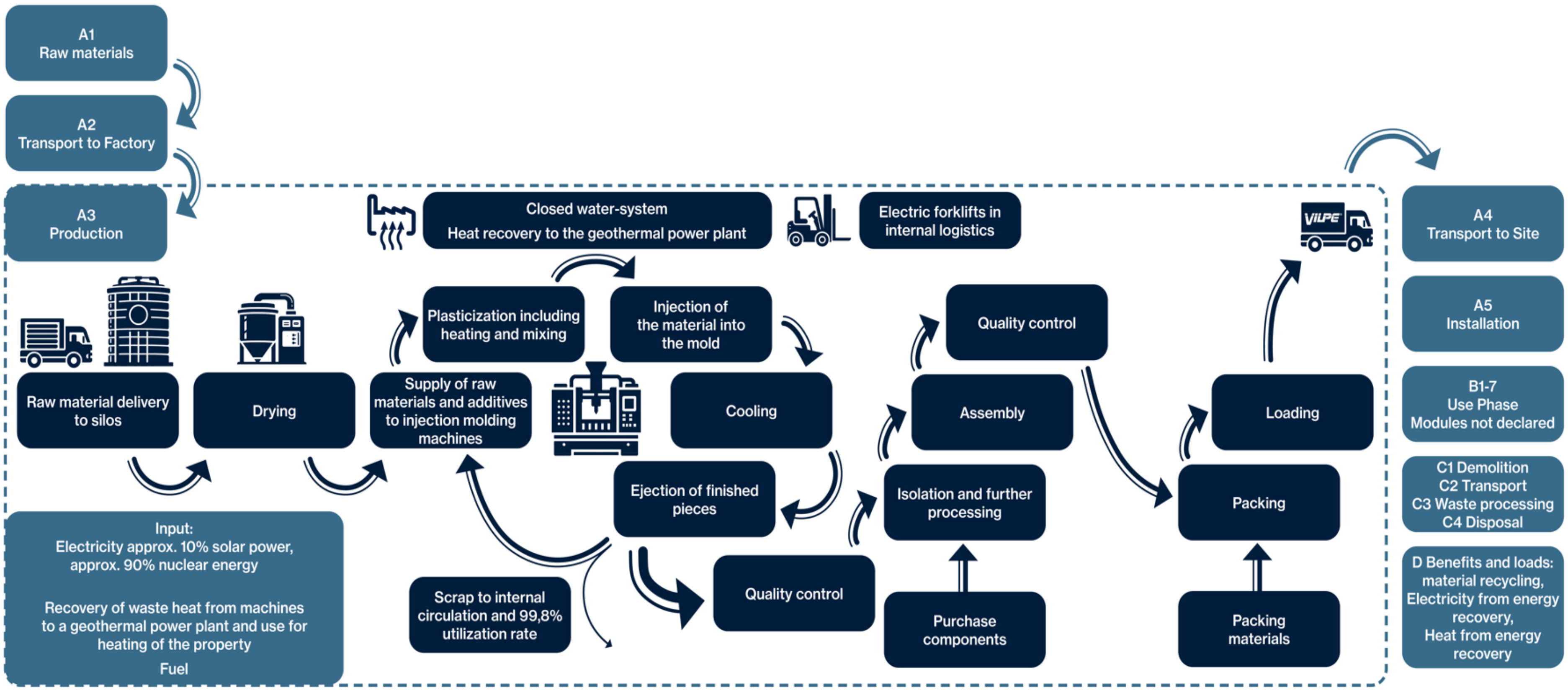
PRODUCT END OF LIFE (C1-C4, D)

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.

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 it 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 calculations made for the inspection of the range in GWP Fossil A1-A3 have been calculated per kilogram of product. After this, the results for the representative product have been calculated per single product.

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, %	-7,7% / +15%

The average has been calculated for 15 products, and to ensure the permissible range of variation, four products representing different size categories were selected for the calculation. The most representative product was chosen based on the highest sales volume. The products covered by the EPD represent two different product families, which 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_2e	1,87E+01	8,47E-01	-1,09E+00	1,84E+01	5,40E-01	8,47E+00	ND	ND	ND	ND	ND	4,76E+03	ND	0,00E+00	4,31E-02	1,05E+01	0,00E+00	9,27E+00
GWP – fossil	kg CO_2e	1,88E+01	8,47E-01	3,34E+00	2,30E+01	5,40E-01	7,99E-02	ND	ND	ND	ND	ND	3,08E+03	ND	0,00E+00	4,31E-02	1,05E+01	0,00E+00	8,70E+00
GWP – biogenic	kg CO_2e	-1,33E-01	1,28E-04	-4,49E+00	-4,62E+00	1,22E-04	8,39E+00	ND	ND	ND	ND	ND	1,68E+03	ND	0,00E+00	9,59E-06	1,62E-03	0,00E+00	5,76E-01
GWP – LULUC	kg CO_2e	1,49E-02	3,93E-04	6,00E-02	7,53E-02	2,42E-04	5,96E-05	ND	ND	ND	ND	ND	5,53E-01	ND	0,00E+00	1,92E-05	1,10E-04	0,00E+00	-3,32E-03
Ozone depletion pot.	kg CFC-$_{11}$e	3,01E-06	1,24E-08	1,06E-07	3,13E-06	7,97E-09	7,17E-10	ND	ND	ND	ND	ND	1,24E-04	ND	0,00E+00	6,20E-10	2,79E-09	0,00E+00	-5,08E-08
Acidification potential	mol H^+e	1,89E-01	6,69E-03	1,83E-02	2,14E-01	1,87E-03	4,41E-04	ND	ND	ND	ND	ND	2,91E+01	ND	0,00E+00	1,45E-04	2,15E-03	0,00E+00	-5,03E-03
EP-freshwater[2]	kg Pe	1,71E+00	5,91E-05	1,05E-03	1,71E+00	4,20E-05	1,92E-05	ND	ND	ND	ND	ND	1,12E+00	ND	0,00E+00	3,35E-06	4,84E-05	0,00E+00	-8,67E-04
EP-marine	kg Ne	1,81E-02	1,86E-03	6,34E-03	2,63E-02	6,12E-04	5,37E-04	ND	ND	ND	ND	ND	3,20E+00	ND	0,00E+00	4,74E-05	9,19E-04	0,00E+00	-8,33E-04
EP-terrestrial	mol Ne	5,26E-01	2,04E-02	4,78E-02	5,94E-01	6,66E-03	1,37E-03	ND	ND	ND	ND	ND	7,41E+01	ND	0,00E+00	5,16E-04	9,21E-03	0,00E+00	-8,62E-03
POCP (“smog”)[3])	kg NMVOCe	8,69E-02	6,74E-03	1,68E-02	1,10E-01	2,73E-03	5,42E-04	ND	ND	ND	ND	ND	9,05E+00	ND	0,00E+00	2,08E-04	2,40E-03	0,00E+00	-3,49E-03
ADP-minerals & metals[4])	kg Sbe	1,44E-02	2,10E-06	1,98E-05	1,44E-02	1,50E-06	5,69E-07	ND	ND	ND	ND	ND	9,34E-03	ND	0,00E+00	1,30E-07	3,57E-06	0,00E+00	-3,20E-06
ADP-fossil resources	MJ	3,75E+02	1,20E+01	1,42E+02	5,28E+02	7,83E+00	8,06E-01	ND	ND	ND	ND	ND	9,90E+04	ND	0,00E+00	6,15E-01	2,12E+00	0,00E+00	-3,53E+01
Water use[5]	m^3e depr.	5,30E+00	5,52E-02	1,86E+00	7,21E+00	3,86E-02	3,20E-02	ND	ND	ND	ND	ND	2,88E+04	ND	0,00E+00	2,95E-03	3,47E-01	0,00E+00	-6,93E-02

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	1,43E-06	7,44E-08	4,52E-07	1,96E-06	5,40E-08	1,76E-08	ND	ND	ND	ND	ND	1,32E-04	ND	0,00E+00	3,88E-09	1,59E-08	0,00E+00	-8,75E-08
Ionizing radiation[6)]	kBq U235e	1,15E+00	9,66E-03	5,46E+00	6,62E+00	6,81E-03	3,00E-03	ND	ND	ND	ND	ND	4,16E+03	ND	0,00E+00	5,18E-04	7,15E-03	0,00E+00	-9,40E-01
Ecotoxicity (freshwater)	CTUe	2,54E+02	1,57E+00	1,93E+01	2,75E+02	1,11E+00	1,09E+01	ND	ND	ND	ND	ND	3,56E+04	ND	0,00E+00	9,18E-02	9,70E+00	0,00E+00	-1,36E+00
Human toxicity, cancer	CTUh	2,69E-08	1,47E-10	3,24E-09	3,02E-08	8,91E-11	1,26E-10	ND	ND	ND	ND	ND	6,00E-07	ND	0,00E+00	7,21E-12	6,47E-10	0,00E+00	-5,82E-10
Human tox. non-cancer	CTUh	6,12E-07	7,02E-09	8,65E-08	7,05E-07	5,06E-09	6,23E-09	ND	ND	ND	ND	ND	2,28E-05	ND	0,00E+00	3,92E-10	2,15E-08	0,00E+00	3,61E-09
SQP[7)]	-	7,88E+01	1,04E+01	3,04E+02	3,93E+02	7,87E+00	7,42E-01	ND	ND	ND	ND	ND	3,08E+03	ND	0,00E+00	5,01E-01	1,62E+00	0,00E+00	-2,39E+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	2,21E+01	1,53E-01	1,79E+01	4,01E+01	1,07E-01	-4,60E+01	ND	ND	ND	ND	ND	1,93E+04	ND	0,00E+00	8,43E-03	1,63E-01	0,00E+00	-1,63E+01
Renew. PER as material	MJ	1,53E+00	0,00E+00	3,73E+01	3,88E+01	0,00E+00	-3,73E+01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	-1,53E+00	0,00E+00	4,56E+00
Total use of renew. PER	MJ	2,36E+01	1,53E-01	5,52E+01	7,90E+01	1,07E-01	-8,33E+01	ND	ND	ND	ND	ND	1,93E+04	ND	0,00E+00	8,43E-03	-1,37E+00	0,00E+00	-1,18E+01
Non-re. PER as energy	MJ	3,03E+02	1,20E+01	1,42E+02	4,57E+02	7,83E+00	8,06E-01	ND	ND	ND	ND	ND	1,03E+05	ND	0,00E+00	6,15E-01	-1,47E+02	0,00E+00	-1,84E+02
Non-re. PER as material	MJ	1,27E+02	0,00E+00	5,21E-01	1,28E+02	0,00E+00	-5,21E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	-1,27E+02	0,00E+00	1,49E+02
Total use of non-re. PER	MJ	4,31E+02	1,20E+01	1,42E+02	5,85E+02	7,83E+00	2,86E-01	ND	ND	ND	ND	ND	1,03E+05	ND	0,00E+00	6,15E-01	-2,74E+02	0,00E+00	-3,53E+01
Secondary materials	kg	1,59E+00	5,18E-03	1,48E+00	3,07E+00	3,33E-03	1,38E-03	ND	ND	ND	ND	ND	7,21E-01	ND	0,00E+00	2,69E-04	2,52E-03	0,00E+00	4,32E-01
Renew. secondary fuels	MJ	6,28E-02	5,68E-05	4,98E-01	5,61E-01	4,23E-05	7,90E-06	ND	ND	ND	ND	ND	3,74E-03	ND	0,00E+00	3,42E-06	6,89E-05	0,00E+00	-3,93E-03
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	2,71E-01	1,62E-03	4,04E-02	3,13E-01	1,16E-03	-8,94E-04	ND	ND	ND	ND	ND	9,01E+01	ND	0,00E+00	8,65E-05	4,02E-03	0,00E+00	-5,24E-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	2,09E+00	1,96E-02	2,03E-01	2,31E+00	1,33E-02	1,13E-02	ND	ND	ND	ND	ND	1,76E+02	ND	0,00E+00	1,06E-03	1,85E-01	0,00E+00	-1,19E-01
Non-hazardous waste	kg	9,80E+01	3,51E-01	5,53E+00	1,04E+02	2,45E-01	2,42E+00	ND	ND	ND	ND	ND	3,47E+03	ND	0,00E+00	1,97E-02	4,57E+00	0,00E+00	-3,69E+00
Radioactive waste	kg	5,57E-04	2,36E-06	1,29E-03	1,85E-03	1,67E-06	7,39E-07	ND	ND	ND	ND	ND	1,37E+00	ND	0,00E+00	1,27E-07	1,81E-06	0,00E+00	-2,02E-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	2,23E+00	ND	ND	ND	ND	ND	4,56E-08	ND	0,00E+00	0,00E+00	1,91E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	9,12E-03	0,00E+00	0,00E+00	9,12E-03	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	2,39E-16	ND	0,00E+00	0,00E+00	4,05E+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	1,56E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	9,29E+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	2,35E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	1,40E+01	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,32E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	7,89E+01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

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_2e	1,98E+01	8,42E-01	3,63E+00	2,43E+01	5,37E-01	4,58E-01	ND	ND	ND	ND	ND	3,23E+03	ND	0,00E+00	4,28E-02	1,05E+01	0,00E+00	8,70E+00
Ozone depletion Pot.	kg CFC_{11}e	2,14E-06	9,92E-09	1,29E-07	2,28E-06	6,36E-09	5,99E-10	ND	ND	ND	ND	ND	1,34E-04	ND	0,00E+00	4,95E-10	2,35E-09	0,00E+00	-4,24E-08
Acidification	kg SO_2e	1,43E-01	5,26E-03	1,10E-02	1,59E-01	1,43E-03	3,41E-04	ND	ND	ND	ND	ND	2,18E+01	ND	0,00E+00	1,11E-04	1,58E-03	0,00E+00	-4,16E-03
Eutrophication	kg PO_4^3e	3,39E-02	8,22E-04	1,02E-02	4,49E-02	3,45E-04	3,86E-04	ND	ND	ND	ND	ND	4,67E+00	ND	0,00E+00	2,70E-05	4,38E-04	0,00E+00	-8,50E-04
POCP (“smog”)	kg C_2H_4e	8,92E-03	3,33E-04	1,59E-03	1,08E-02	1,26E-04	1,23E-04	ND	ND	ND	ND	ND	8,84E-01	ND	0,00E+00	9,92E-06	1,06E-04	0,00E+00	-7,18E-04
ADP-elements	kg Sbe	1,44E-02	2,05E-06	1,96E-05	1,44E-02	1,47E-06	5,56E-07	ND	ND	ND	ND	ND	9,35E-03	ND	0,00E+00	1,27E-07	3,47E-06	0,00E+00	-3,20E-06
ADP-fossil	MJ	4,08E+02	1,18E+01	4,30E+01	4,63E+02	7,72E+00	7,58E-01	ND	ND	ND	ND	ND	9,43E+04	ND	0,00E+00	6,07E-01	2,00E+00	0,00E+00	-2,31E+01

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_2e	1,88E+01	8,47E-01	3,40E+00	2,30E+01	5,40E-01	7,99E-02	ND	ND	ND	ND	ND	3,08E+03	ND	0,00E+00	4,31E-02	1,05E+01	0,00E+00	8,69E+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 125P/700 FLOW ROOF FAN'S AVERAGE POWER 28W

Impact category	Unit	B1	B2	B3	B4	B5	B6	B7
GWP – total[1)]	kg CO_2e	ND	ND	ND	ND	ND	1,60E+03	ND
GWP – fossil	kg CO_2e	ND	ND	ND	ND	ND	1,04E+03	ND
GWP – biogenic	kg CO_2e	ND	ND	ND	ND	ND	5,65E+02	ND
GWP – LULUC	kg CO_2e	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 CO_2e / kWh	0,0071
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 CO_2e / kWh	0,0969

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	553
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	0,018 kWh
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	Paperboard 2,598kg, EUR-Flat pallet/Wood 0,331kg
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	-

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 / m³	-
Type of energy carrier, e.g., electricity, natural gas, district heating / kWh	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

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	-
Collection process – kg collected with mixed waste	6,302kg
Recovery process – kg for re-use	-
Recovery process – kg for recycling	2,020kg
Recovery process – kg for energy recovery	3,993kg
Disposal (total) – kg for final deposition	0,206kg
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
10.10.2025

VERIFIED ISO 14025

APPENDIX

PRODUCT PORTFOLIO INCLUDED IN SCOPE

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

Product number	Product name
350272, 350274, 350277	ECo 110P/500 FLOW Roof Fan
350261, 350262, 350264, 350266, 350267, 350268, 350269, 35026D	ECo110P/700 FLOW Roof Fan
350241, 350242, 350244, 350246, 350247, 350248, 350249, 35024B, 35024D	ECo 125P/500 FLOW Roof Fan
350181, 350182, 350184, 350186, 350187, 350188, 350189	ECo 125P/700 FLOW Roof Fan
350251, 350252, 350254, 350256, 350257, 350258, 350259, 35025B, 35025D	ECo 160P/500 FLOW Roof Fan
350191, 350192, 350194, 350196, 350197, 350198, 350199, 35019D	ECo160P/700 FLOW Roof Fan
350341, 350342, 350344, 350346, 350347, 350349	ECo160P/IS/700 FLOW XL Roof Fan

Product number	Product name
73471, 73472, 73474, 73476, 73477, 73478, 73479, 7347D	E220P/Ø160/500 Roof Fan
73462, 73464, 73466, 73467, 73469, 7346D	E220P/Ø160/700 Roof Fan
734512, 734514, 734516, 734517, 734519, 73451D	E220P/Ø160/700 XL Roof Fan
350561, 350562, 350564, 350567	ECo 110C/400 FLOW Roof Fan
350571, 350572, 350574, 350577	ECo 125C/400 FLOW Roof Fan
350581, 350582, 350584, 350587	ECo 160C/400 FLOW Roof Fan
350621, 350622, 350624, 350627, 350628, 350629	ECo 160C/450 FLOW XL Roof Fan
791351, 791352, 791354, 791357, 791359	E220C/Ø160/450 XL Roof Fan