ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

FläktGroup EQ 041-050 Air Handling Unit
FläktGroup

EPD HUB, HUB-3533
Published on 27.06.2025, last updated on 27.06.2025, valid until 27.06.2030

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.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	FläktGroup Sweden AB
Address	Fläktgatan 1, 553 02, Jönköping, SE
Contact details	info.se@flaktgroup.com
Website	https://www.flaktgroup.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, B4, B6, and modules C1-C4, D
EPD author	Zulnasree Binadam
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	FläktGroup EQ 041-050 Air Handling Unit
Additional labels	EQ 041-050 Air Handling Unit with rotary heat exchanger
Product reference	
Place(s) of raw material origin	Europe, Asia
Place of production	Jönköping, Sweden
Place(s) of installation and use	Malmö, Sweden
Period for data	Calendar year 2024
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	-
A1-A3 Specific data (%)	69,5

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit of EQ 041 air handling unit
Declared unit mass	1411 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	5,81E+03
GWP-total, A1-A3 ($kgCO_2e$)	5,75E+03
Secondary material, inputs (%)	20,9
Secondary material, outputs (%)	78,9
Total energy use, A1-A3 (kWh)	24000
Net freshwater use, A1-A3 (m^3)	85,6

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

ABOUT FLÄKTGROUP
FläktGroup is a leader in air technology, delivering best in class, innovative and energy-efficient solutions to ensure comfort, safety, and performance, whilst reducing customer's carbon footprint. FläktGroup's premier brands, have been setting technological standards for more than 100 years and can fulfil the most demanding customer requirements.
Headquartered in Germany, FläktGroup operates all over the world with production sites across Europe, Asia, and the USA.

FOR WELLBEING, SAFETY, AND ENVIRONMENT
Today we spend more than 90% of our time indoors and the air we breathe has a big impact on our performance, wellbeing, and comfort. Our buildings need mechanical ventilation and air treatment to deliver safe and comfortable building spaces.

At the same time buildings account for up to 40% of the energy consumption where ventilation systems play a big part. The challenge is to lower the energy consumption and here FläktGroup is one of the key drivers providing superior quality products whilst protecting the environment.

OUR PURPOSE
Our purpose is simple: we care for your air whilst protecting the environment.
BEING AN EMPLOYER OF CHOICE
As we aim to be an employer of choice, this comes with a responsibility.

We need to act and care as responsible Corporate Citizen for our people, our community, and our shared environment. We also must deliver sustainable solutions to help our customers to fulfil or exceed environmental demands and legislation.

FläktGroup is committed to deliver smart energy efficient ventilation solutions that make buildings sustainable, comfortable, healthy, and safe. FläktGroup delivers on this commitment while creating an environment of equality, respect, and fairness and by adhering to the highest level of ethical and compliance standards. FläktGroup's roadmap is aligned with the UN sustainability goals and the European Green Deal objectives and is translated into annual investments that support our objectives.

PRODUCT DESCRIPTION

eQ 041-050 is part of our standardized range of air handling units in compact casing that are part of the eQ family. The eQ has energy efficient components such as ECBluefin, EC-motors, ReCooler HP and integrated controls - ISYteq 4.0. It offers a fully packaged air handling unit loaded with features needed to be the right choice concerning functionality and giving you low installation and operating costs. Optional heating and cooling coils are placed in a coil block after the supply air fan. Dampers and silencers are also available.

eQ units are Eurovents certified and under relevant directives and standards like Ecodesign, Machine directive, EN13053 and EN1886
An air handling unit (AHU) function is to supply a high indoor environmental quality by controlling the supply of fresh and well/tempered air.

eQ AHU is suitable for many different applications like offices, hotels, restaurants, hospitals, pharmaceutical facilities, industrial applications, and educational buildings.

Fläktgroup develops AHUs towards energy efficient, smart and connected solutions.

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	93	Europe, Asia
Minerals	1,8	Europe
Fossil materials	5,2	Europe
Bio-based materials		

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	
Biogenic carbon content in packaging, kg C	18,29

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit of EQ air handling unit
Mass per declared unit	1411 kg
Functional unit	The functional unit is defined as replacing utilized air in a building by outdoor air with a transfer of 12600 m3 air per hour with an filtration efficiency EPM1 60% for 25 years.
Reference service life	25 years

The reference service life of the product is depending on the conditions of use.

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	MND	MND	MND	x	MND	x	MND	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 = MND. 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 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.

The process begins with the delivery of metal coils, transported by truck from the steel manufacturer. These coils enter the Pre-Production Area, where materials for each specific product grade are prepared. Coils are cut to the appropriate lengths, ensuring maximum material utilization and significantly reducing waste compared to using sheet metal. A dedicated laser cutter then processes the material with high precision, enabling the creation of custom-designed parts. Additional processing steps like punching and bending with press brakes follow as required.

Next is the Pre-Assembly of Components. Here, various elements of the final product—such as sound attenuators, fan walls, air rays, droplet separators, and filter frames—are manufactured and assembled. The exact steps vary depending on the component, but they are all built in-house to meet specific design requirements.

The process continues in the Panel Production phase, where format sheets are punched, bent, and then insulated. These panels form the structural elements of the final unit.

Following this is the First Step Assembly, where the top and bottom sections are joined with the load-bearing base that includes the side panels. Additional elements like handles, hinges, and windows are installed depending on the configuration.

The Rotor Group is treated as its own component group. This includes specialized machinery used to wind the rotor material. The Plate Heat Exchanger is also assembled in-house from individual elements into complete units.

While the first step assembly is ongoing, the Control Group simultaneously assembles the control systems. This includes wiring, parametric

programming, and function testing, all mounted onto a steel base plate.

The production losses of steel is included, which is approximately 30%, the spill is 100% recycled through a collaboration with our recycling company. We also have approximately 1% spill of wood when creating pallets, which is included. The reference here is our recycling company. The waste is transported to a local recycling company which is 3 km from the production facility.

The Logistics Team then collects all manufactured components and transports them to the Final Assembly area. Here, all parts are assembled into complete units using hand tools.

The process concludes with EOL (End-of-Line) Testing, where the complete Air Handling Unit (AHU) undergoes thorough functionality tests to ensure proper operation.

Throughout all stages, the Quality Department works in parallel to ensure that every component and assembly step meets our standards for performance and reliability.

The final stage is the packaging of the product, where packaging film, wooden pallets, PET bands and styrofoam bricks are used.
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 transportation (A4) is calculated to be from Jönköping where the factory is located to Stockholm, Sweden, the transportation method is by truck and the distance is 329 km. It is assumed that a truck that uses diesel is used on site to transport the unit on the manufacturing site. A5 covers the spills of packaging material. The recycling percentages come from our recycling company. 98% of metal goes to recycling and 2% goes to landfill. 98% of wood goes to incineration and 2% goes to recycling. For plastic 99% is recycled and 1% incinerated. Material loss of the air handling unit during the installation phase is estimated to be zero.

PRODUCT USE AND MAINTENANCE (B1-B7)

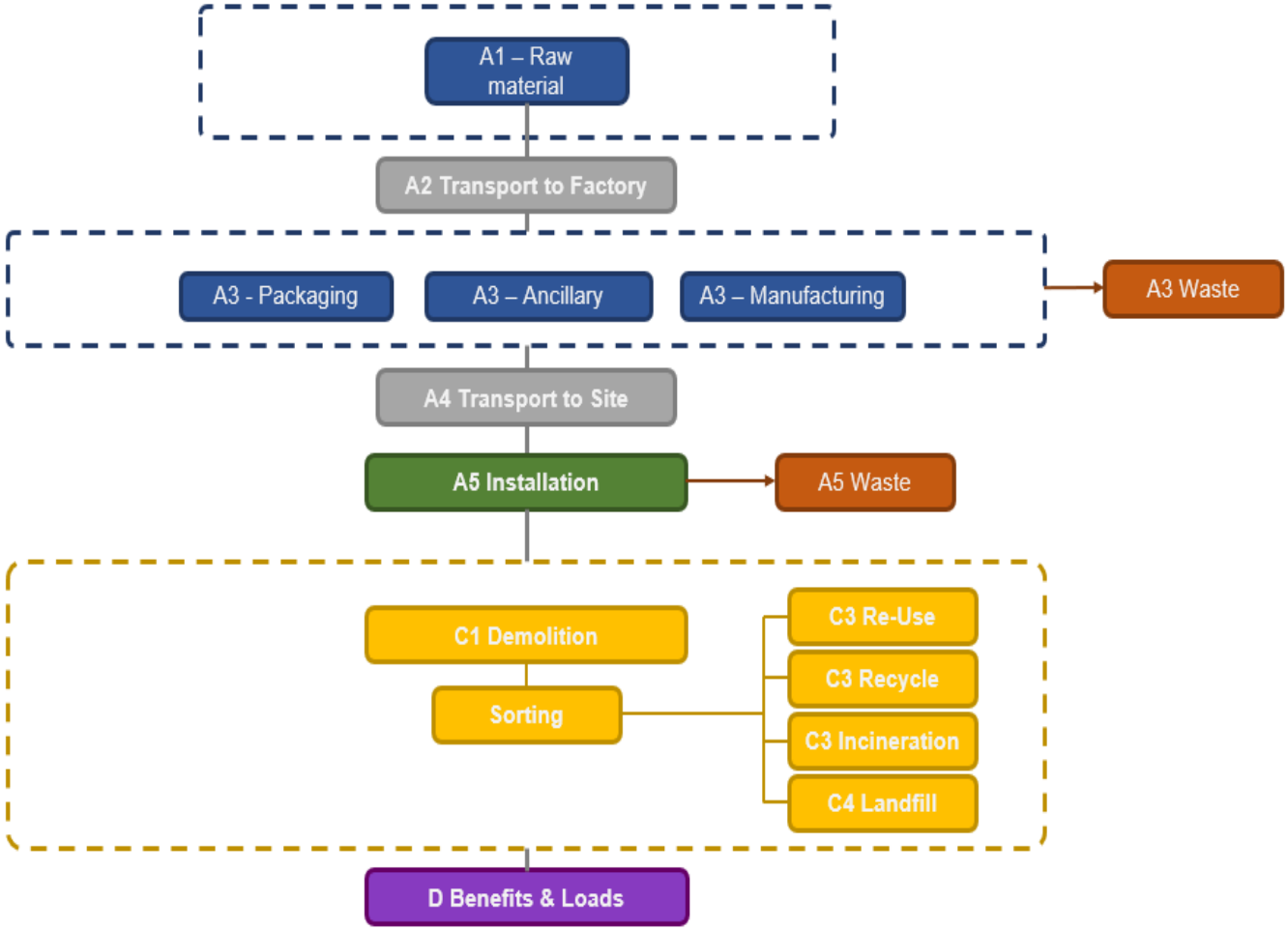
Replacement (B4) is calculated with a filter change of twice a year which is assumed to be manually installed. The transportation of the filters is assumed to be directly from supplier to customer which is calculated from the supplier to Stockholm, Sweden. The used filters are assumed to be disposed according to Swedish disposing standards and is assumed to be transported 50km to the local recycling station. The operational energy use (B6) is calculated based on the scenario of Sweden, Malmö. With a yearly average temperature of 9.1 degrees Celsius and moisture of 83.8%. The operational use is also based on 5 days a week, 12 hours a day with 65% air flow. It is calculated with Supply air fan + Exhaust air fan * 25. Which comes out to 160675 kWh during its lifetime. This is calculated using the RSL of 25 years using the c-PCR for ventilation units' recommendation from Eurovent.

The use stage results are only applicable to the described scenario and should not be compared with results from other product EPD's, in a context where other scenarios can be relevant.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The air handling unit is assumed to be dismantled with electrical tools, and these are then transported 50km to the local recycling site by truck (C2). 50km is used because the real-life scenario is unknown and very dependent on which city that the unit is placed in. At the recycling site the product is dismantled into different categories where each raw material is divided into each category such as different kinds of metals and plastics, depending on material the average recovery of material differs. (C3). The remaining that is not recycled is then taken to landfill for disposal (C4). The recycling percentages come from different sources where for steel 85% goes to recycling and 15% goes to landfill. The source used for this is https://worldsteel.org/wp-content/uploads/Life-cycle-inventory-LCI-study-2020-data-release.pdf). The aluminium used in the product has a 90% recycling rate and 10% goes to landfill. For the PVC used in the product, 34% goes to recycling, 41% goes to incineration and 25% goes to landfills. For the copper used 60% goes to recycling and 40% goes to landfills. For plastic for instance HDPE 24% goes to recycling, 49% incineration and 27% goes to landfill. The recycled materials are then credited in module D. This is the most likely scenario for the handling of the product at its end of life.

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.

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	No allocation
Packaging material	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

The allocation that has been made has been for ancillary materials, where the total used water for instance has been divided by the total weight of manufactured product multiplied by the declared product.

This has been done as well for energy and heat.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	

This EPD is product and factory specific.

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

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	5,59E+03	1,75E+02	-1,22E+01	5,75E+03	1,45E+02	1,50E+02	MND	MND	MND	4,76E+03	MND	5,29E+04	MND	0,00E+00	1,69E+01	1,07E+02	5,93E+01	-2,43E+03
GWP – fossil	kg CO_2e	5,58E+03	1,75E+02	5,19E+01	5,81E+03	1,45E+02	2,26E+01	MND	MND	MND	4,99E+03	MND	5,26E+04	MND	0,00E+00	1,69E+01	1,07E+02	5,85E+01	-2,40E+03
GWP – biogenic	kg CO_2e	3,35E+00	3,46E-02	-6,43E+01	-6,09E+01	2,81E-02	1,28E+02	MND	MND	MND	-2,37E+02	MND	1,18E+02	MND	0,00E+00	3,28E-03	-6,84E-02	7,64E-01	-4,08E+00
GWP – LULUC	kg CO_2e	3,05E+00	6,09E-02	1,87E-01	3,29E+00	4,85E-02	2,13E-03	MND	MND	MND	3,95E+00	MND	1,61E+02	MND	0,00E+00	5,67E-03	3,26E-02	7,91E-03	-2,35E+01
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	8,42E-05	3,48E-06	1,94E-06	8,96E-05	2,89E-06	2,76E-07	MND	MND	MND	1,81E-05	MND	9,70E-04	MND	0,00E+00	3,38E-07	3,83E-07	1,52E-07	-1,41E-05
Acidification potential	mol H^+e	2,16E+03	3,64E-01	4,02E-01	2,16E+03	2,84E-01	6,81E-02	MND	MND	MND	1,39E+01	MND	3,09E+02	MND	0,00E+00	3,31E-02	3,31E-01	5,79E-02	-1,63E+01
EP-freshwater[2)]	kg Pe	4,69E+01	1,17E-02	2,26E-02	4,69E+01	9,44E-03	-8,19E-03	MND	MND	MND	2,84E-02	MND	4,90E+01	MND	0,00E+00	1,10E-03	1,66E-02	2,92E-03	-2,01E+00
EP-marine	kg Ne	2,18E+02	8,61E-02	1,25E-01	2,18E+02	6,69E-02	2,89E-02	MND	MND	MND	3,06E+00	MND	4,85E+01	MND	0,00E+00	7,81E-03	9,23E-02	8,83E-02	-2,71E+00
EP-terrestrial	mol Ne	2,38E+03	9,31E-01	1,00E+00	2,39E+03	7,22E-01	3,09E-01	MND	MND	MND	4,93E+01	MND	4,35E+02	MND	0,00E+00	8,43E-02	9,04E-01	1,95E-01	-3,05E+01
POCP ("smog")[3)]	kg NMVOCe	8,86E+02	5,95E-01	2,84E-01	8,87E+02	4,79E-01	1,07E-01	MND	MND	MND	1,18E+01	MND	1,43E+02	MND	0,00E+00	5,60E-02	2,60E-01	6,06E-02	-9,72E+00
ADP-minerals & metals[4)]	kg Sbe	2,36E-01	5,94E-04	2,37E-03	2,39E-01	4,75E-04	1,01E-05	MND	MND	MND	1,61E-03	MND	7,10E-01	MND	0,00E+00	5,54E-05	1,79E-03	3,49E-05	-1,14E-01
ADP-fossil resources	MJ	6,79E+04	2,44E+03	4,79E+03	7,52E+04	2,02E+03	2,33E+02	MND	MND	MND	7,52E+04	MND	1,22E+06	MND	0,00E+00	2,36E+02	3,63E+02	1,39E+02	-2,26E+04
Water use[5)]	m^3e depr.	1,63E+03	1,21E+01	5,84E+01	1,70E+03	9,83E+00	2,03E+00	MND	MND	MND	2,55E+03	MND	3,34E+04	MND	0,00E+00	1,15E+00	1,41E+01	5,91E+00	-1,22E+03

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

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	7,01E+00	1,12E-05	4,22E-06	7,01E+00	8,98E-06	1,35E-06	MND	MND	MND	2,17E-06	MND	1,10E-03	MND	0,00E+00	1,05E-06	4,46E-06	1,25E-06	-2,11E-04
Ionizing radiation[6]	kBq U235e	2,64E+02	3,66E+00	3,01E+02	5,69E+02	3,09E+00	1,21E-01	MND	MND	MND	1,00E+00	MND	3,38E+04	MND	0,00E+00	3,60E-01	2,73E+00	4,12E-01	-4,85E+01
Ecotoxicity (freshwater)	CTUe	3,77E+04	3,52E+02	4,36E+02	3,85E+04	2,90E+02	1,95E+01	MND	MND	MND	9,54E+01	MND	1,86E+05	MND	0,00E+00	3,38E+01	4,84E+02	2,57E+03	-3,95E+04
Human toxicity, cancer	CTUh	2,87E+01	2,81E-08	4,16E-08	2,87E+01	2,25E-08	9,34E-09	MND	MND	MND	6,98E-09	MND	1,78E-05	MND	0,00E+00	2,63E-09	3,06E-08	2,39E-08	-2,02E-06
Human tox. non-cancer	CTUh	4,07E+01	1,46E-06	2,24E-06	4,07E+01	1,18E-06	1,29E-07	MND	MND	MND	3,32E-07	MND	9,22E-04	MND	0,00E+00	1,38E-07	1,74E-06	1,04E-06	-3,65E-05
SQP[7]	-	5,70E+03	1,29E+03	1,64E+03	8,63E+03	1,04E+03	2,22E+01	MND	MND	MND	2,42E+02	MND	2,72E+05	MND	0,00E+00	1,22E+02	6,67E+02	1,59E+02	-6,68E+03

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	4,56E+03	4,76E+01	2,41E+03	7,02E+03	3,95E+01	-6,95E+02	MND	MND	MND	1,12E+04	MND	3,36E+05	MND	0,00E+00	4,62E+00	6,32E+01	7,72E+00	-9,21E+03
Renew. PER as material	MJ	3,03E+00	0,00E+00	5,86E+02	5,89E+02	0,00E+00	-5,86E+02	MND	MND	MND	0,00E+00	MND	0,00E+00	MND	0,00E+00	0,00E+00	-2,27E+00	-7,60E-01	0,00E+00
Total use of renew. PER	MJ	4,56E+03	4,76E+01	2,99E+03	7,60E+03	3,95E+01	-1,28E+03	MND	MND	MND	1,12E+04	MND	3,36E+05	MND	0,00E+00	4,62E+00	6,09E+01	6,96E+00	-9,21E+03
Non-re. PER as energy	MJ	7,21E+04	2,44E+03	4,72E+03	7,93E+04	2,02E+03	1,28E+02	MND	MND	MND	6,12E+04	MND	1,22E+06	MND	0,00E+00	2,36E+02	-8,02E+02	-8,53E+02	-2,26E+04
Non-re. PER as material	MJ	5,10E+02	0,00E+00	9,86E+01	6,09E+02	0,00E+00	-9,86E+01	MND	MND	MND	0,00E+00	MND	0,00E+00	MND	0,00E+00	0,00E+00	-3,76E+02	-1,35E+02	6,71E+01
Total use of non-re. PER	MJ	7,26E+04	2,44E+03	4,82E+03	7,99E+04	2,02E+03	2,89E+01	MND	MND	MND	6,12E+04	MND	1,22E+06	MND	0,00E+00	2,36E+02	-1,18E+03	-9,88E+02	-2,26E+04
Secondary materials	kg	2,95E+02	1,11E+00	1,16E+00	2,97E+02	8,86E-01	1,09E-01	MND	MND	MND	4,07E+02	MND	2,02E+02	MND	0,00E+00	1,03E-01	4,33E-01	8,25E-01	8,77E+02
Renew. secondary fuels	MJ	2,15E+00	1,21E-02	7,71E-02	2,24E+00	9,00E-03	3,18E-04	MND	MND	MND	3,14E-03	MND	1,62E+00	MND	0,00E+00	1,05E-03	2,00E-02	8,93E-03	-1,88E-01
Non-ren. secondary fuels	MJ	2,76E-02	0,00E+00	0,00E+00	2,76E-02	0,00E+00	0,00E+00	MND	MND	MND	0,00E+00	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	8,33E+01	3,39E-01	1,96E+00	8,56E+01	2,77E-01	2,22E-02	MND	MND	MND	6,91E+01	MND	1,06E+03	MND	0,00E+00	3,23E-02	3,37E-01	3,47E-02	-2,51E+01

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	5,10E+02	3,34E+00	4,24E+00	5,17E+02	2,63E+00	5,57E-01	MND	MND	MND	8,43E-01	MND	3,10E+03	MND	0,00E+00	3,07E-01	4,41E+00	3,29E+00	-7,42E+02
Non-hazardous waste	kg	5,07E+03	7,65E+01	1,97E+03	7,11E+03	6,19E+01	5,12E+01	MND	MND	MND	1,38E+02	MND	2,40E+05	MND	0,00E+00	7,23E+00	1,18E+02	2,45E+02	-4,87E+03
Radioactive waste	kg	3,24E+00	9,15E-04	6,88E-02	3,31E+00	7,72E-04	2,99E-05	MND	MND	MND	1,54E+00	MND	8,68E+00	MND	0,00E+00	9,01E-05	6,99E-04	1,02E-04	-8,96E-03

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	5,68E+01	0,00E+00	0,00E+00	5,68E+01	0,00E+00	0,00E+00	MND	MND	MND	0,00E+00	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	2,03E+03	0,00E+00	2,47E+02	2,28E+03	0,00E+00	3,80E+00	MND	MND	MND	0,00E+00	MND	0,00E+00	MND	0,00E+00	0,00E+00	1,11E+03	0,00E+00	0,00E+00
Materials for energy rec	kg	1,27E+00	0,00E+00	1,72E-01	1,44E+00	0,00E+00	0,00E+00	MND	MND	MND	1,53E+01	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	4,46E-02	0,00E+00	9,87E+00	9,92E+00	0,00E+00	7,67E+02	MND	MND	MND	0,00E+00	MND	0,00E+00	MND	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	6,51E+00	6,51E+00	0,00E+00	1,16E+02	MND	MND	MND	0,00E+00	MND	0,00E+00	MND	0,00E+00	0,00E+00	1,53E+02	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	1,15E+00	1,15E+00	0,00E+00	6,51E+02	MND	MND	MND	0,00E+00	MND	0,00E+00	MND	0,00E+00	0,00E+00	2,11E+02	0,00E+00	0,00E+00

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, low voltage, residual mix (Reference product: electricity, low voltage)
Electricity CO2e / kWh	0,0642
District heating data source and quality	District heat, Jönköping, Sweden, 2023
District heating CO2e / kWh	0,0187

Transport scenario documentation A4

Scenario parameter	Value
Fuel and vehicle type. Eg, electric truck, diesel powered truck	-
Average transport distance, km	-
Capacity utilization (including empty return) %	-
Bulk density of transported products	-
Volume capacity utilization factor	

Installation scenario documentation A5

Scenario information	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	-
Water use / m³	-
Other resource use / kg	-
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	-
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	Wood: 42 kg Plastic: 2.517 kg Steel: 0.48 kg
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	% are for recycling, incineration w. energy recovery, landfill respectively. Wood: 2%, 98%, 0% Plastic: 99%, 1%, 0% Steel: 98%, 0%, 2%
Direct emissions to ambient air, soil and water / kg	Machine operation, diesel, 16,945 kg C02e

Use stages scenario documentation - B4 Replacement

Scenario information	Value
Replacement cycle / Number per RSL or year	2 times per year
Energy input during replacement, e.g., crane activity, energy carrier type, e.g., electricity and amount (if applicable and relevant) / kWh	
Exchange of worn parts during the product's life cycle, e.g., zinc galvanized steel sheet (specify materials) / kg	Filter used in HVAC applications

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	Electricity, low voltage, residual mix (Reference product: electricity, low voltage)
Power output of equipment / kW	-
Characteristic performance, e.g., energy efficiency, emissions, variation of performance with capacity utilization, etc.	65% air flow rate
Further assumptions for scenario development, e.g., frequency and period of use, number of occupants	5 days a week, 12 hours a day, for 25 years

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	-
Collection process – kg collected with mixed waste	-
Recovery process – kg for re-use	-
Recovery process – kg for recycling	1114.01
Recovery process – kg for energy recovery	39.948
Disposal (total) – kg for final deposition	252.8176
Scenario assumptions e.g. transportation	Transported 50 km by truck to local recycling station

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
27.06.2025

ANNEX I: EQ 041 AND EQ 050 WEIGHTS

PRODUCT	EQ 041	EQ 050
WEIGHT IN KG	1411	1812