

Cassette fan coils



Program operator, publisher:	Rakennustietosäätiö RTS sr, Rakennustieto EPD Malminkatu 16 A 00100 Helsinki https://cer.rts.fi/
Owner of the declaration:	Pemtrade Oy, PL 6, 15101 Lahti https://pemco.fi/
Name of the product:	Cassette fan coils with plastic front panel
Declaration number:	RTS_385_25
Issue date:	28.4.2025
Valid to:	28.4.2030
Scope of the declaration:	This environmental product declaration covers the environmental impacts of four cassette fan coils. The declaration has been prepared in accordance with EN 15804:2019 and ISO 14025 standards and the additional requirements stated in the Rakennustieto EPD - PCR (English version, 26.8.2020) and NPCR 030 version 1.1 part B for ventilation components. This declaration covers the life cycle stages from cradle-to-gate with options (A1-A3, A4-A5), module B6, modules C1-C4 and module D.
 	 Jukka Seppänen RTS EPD Committee Secretary  Laura Apilo Managing Director

Verified according to the requirements of EN 15804:2019 (product group rules)

Independent verification of the declaration and data, according to ISO14025:2010 is carried out by

☐ Internal

☒ External

Third party verifier:
Sigita Židonienė
Vesta Consulting UAB



GENERAL INFORMATION

Owner of the declaration

Pemtrade Oy
PL 6
FI-50101 Lahti
<https://pemco.fi/>

Author of the life cycle assessment and declaration



Etteplan Finland Oy
Laserkatu 6
FI-53850 Lappeenranta
<https://etteplan.com/>

1. Product name

Cassette fan coils, PMFC-10/14-EC-S-A5-2 (later PMFC 10/14-EC), PMFC-17/21-EC-S-A5-2 (later PMFC 17/21-EC) , PMFC-28/32-EC-S-A5-2 (later PMFC 28/32-EC) and PMFC-36/42-EC-S-A5-2 (later PMFC 36/42-EC)

2. Additional labels

<https://pemco.fi>

3. Places of production

Produced in Jiangsu, China.

4. Additional information

Pemtrade: Tomi Mäkelä. firstname.lastname@pemco.fi.

Etteplan Finland Oy: Heli Kumpulainen. firstname.lastname@etteplan.com.

5. Product Category Rules and the scope of the declaration

The declaration has been prepared in accordance with EN 15804:2019+A2 and ISO 14025 standards and the additional requirements stated in the Rakennustieto EPD - PCR version 260820 (English version, 26.8.2020) and Product category rules – NPCR 030 version 1.1- Part B for ventilation components. EPD of construction products may not be comparable if they do not comply with EN15804 and seen in a building context. Year 2023 is the reference year for primary data used in calculation.

6. Author of the life cycle assessment and declaration

Heli Kumpulainen at Etteplan Finland Oy, Laserkatu 6, 53850 Lappeenranta.

7. Verification

The declaration was verified by Sigita Židonienė from UAB Vesta Consulting to abovementioned standards and PCR rules. Third party verification on 08.04.2025. Verification is valid 08.04.2025-07.04.2030.

8. Declaration issue date and validity

Declaration issue date 08.04.2025. The declaration is valid 5 years, 08.04.2025-07.04.2030.

PRODUCT INFORMATION

9. Product description and uses

This declaration is made for cassette fan coils, with trademark of PMFEC. Studied fan coils have four different product ranges: PMFC10/14-EC, PMFC 17/21-EC, PMFC 28/32-EC and PMFC 36/42-EC. The products consist of consist of steel frame, condensate drain basin and front panel with molded ABS, NBR-rubber insulation, heat exchanger (aluminium and copper), electronics (drain pump, electric motor, cables and control PCB), fan (PA), fine filter (PET and fleece) and filter (PE).

Products are used for cooling applications of various indoor spaces. Studied fan coils are water fan coils units, i.e., they have one heat exchanger through which chilled waters flow for cooling.

10. Product raw material composition

Cassette fan coil EC-model						
Product materials	Unit	PMFC 10/14-EC	PMFC 17/21-EC	PMFC 28/32-EC	PMFC 36/42-EC	Post-consumer recycled material for all
Copper	mass%	10.8 %	10.0 %	11.3 %	10.8 %	
Aluminum	mass%	6.6 %	6.1 %	6.9 %	6.6 %	
Sheet metal	mass%	49.2 %	52.8 %	48.7 %	51.4 %	8.4 %
Acrylonitrile butadiene styrene (ABS)	mass%	15.8 %	14.7 %	16.2 %	15.4 %	
Nitrile butadiene (NBR) rubber	mass%	3.8 %	3.5 %	4.0 %	3.8 %	
Polyamide (PA)	mass%	1.4 %	1.3 %	2.5 %	2.3 %	
Polyethylene (PE)	mass%	0.0 %	0.0 %	0.1 %	0.1 %	
Polyethylene terephthalate (PET) and fleece	mass%	1.0 %	0.9 %	1.4 %	1.3 %	
Electronics	mass%	11.3 %	10.5 %	8.8 %	8.3 %	
Total		100.0 %	100.0 %	100.0 %	100.0 %	
Weight	kg/DU	26	28	55	58	
Biogenic carbon content in product	kg C	0	0	0	0	

11. Packaging material composition

Cassette fan coil					
Packaging material	Unit	PMFC 10/14-EC	PMFC 17/21-EC	PMFC 28/32-EC	PMFC 36/42-EC
Cardboard	mass%	26.3 %	26.3 %	24.1 %	24.1 %
Plastic film	mass%	24.6 %	24.6 %	22.5 %	22.5 %
Plastic strap	mass%	12.3 %	12.3 %	11.2 %	11.2 %
Wood pallet	mass%	36.8 %	36.8 %	42.2 %	42.2 %
Total	kg/DU	11.4	11.4	12.5	12.5
Biogenic carbon content		27.3 %	27.3 %	28.7 %	28.7 %



12. Product raw material main composition

Cassette fan coil					
Raw material category	PMFC 10/14-EC	PMFC 17/21-EC	PMFC 28/32-EC	PMFC 36/42-EC	Material origin
	Amount, mass- %	Amount, mass- %	Amount, mass- %	Amount, mass- %	
Metals	76.3 %	78.0 %	74.6 %	75.9 %	China
Minerals	0.0 %	0.0 %	0.0 %	0.0 %	China
Fossil materials	23.7 %	22.0 %	25.4 %	24.1 %	China
Bio-based materials	0.0 %	0.0 %	0.0 %	0.0 %	China
TOTAL	100.0 %	100.0 %	100.0 %	100.0 %	

13. Product standards

Cassette fan coils are CE-marked.

14. Reference service life

The lifetime for cassette fan coils is considered to be 20 years.

15. Physical properties and dimensions

Parameter	PMFC 10/14-EC	PMFC 17/21-EC	PMFC 28/32-EC	PMFC 36/42-EC
Energy consumption, cooling, kW	0.031	0.051	0.078	0.104
Speed, W	22 (10)/ 24 (14)	42 (17)/ 51 (17)	44 (28)/ 48 (32)	84 (36)/ 102 (42)
Airflow, m ³ /hr	504	774	1 152	1 512
Product weight, kg	26.00	28.00	55.00	58.00
Dimensions	250 mm x650 mm x 650 mm	290 mm x650 mm x 650 mm	278 mm x690 mm x 1 112 mm	318 mm x690 mm x 1 112 mm



16. Key information of environmental information reported per kilogram of PMFC 10/14-EC

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Global warming potential – total (GWP-total)	kg CO ₂ eq./kg	9.03E+00	3.66E-01	4.68E+00	1.41E+01	1.55E-02	6.97E-01	1.25E+01	0.00E+00	2.75E-02	6.20E-01	6.69E-04	-2.15E+00
Depletion of abiotic resources – minerals and metals (ADP-M)	kg Sb eq./kg	1.43E-03	7.74E-09	2.21E-07	1.43E-03	1.23E-09	4.75E-09	2.16E-06	0.00E+00	2.27E-09	3.77E-08	4.45E-11	-4.28E-04
Depletion of abiotic resources – fossil fuels (ADP-F)	MJ net calorific value/kg	1.25E+02	4.37E+00	4.93E+01	1.79E+02	1.88E-01	6.17E-01	4.99E+02	0.00E+00	3.45E-01	2.67E+00	1.12E-02	-2.45E+01
Water use (WDP)	m ³ world eq. deprived /kg	2.37E+00	7.76E-04	1.48E+00	3.85E+00	2.19E-04	7.03E-02	1.87E+00	0.00E+00	4.04E-04	6.12E-02	8.39E-05	-3.18E-01
Biogenic carbon content in product	kg C/kg	N/A	N/A	0.00E+00	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Use of secondary material	kg/kg	4.13E-02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.26E-04	4.44E-01

17. Key information of environmental information reported per kilogram of PMFC 17/21-EC

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Global warming potential – total (GWP-total)	kg CO ₂ eq./kg	8.69E+00	3.58E-01	4.68E+00	1.37E+01	1.52E-02	6.47E-01	1.90E+01	0.00E+00	2.75E-02	5.97E-01	6.51E-04	-2.11E+00
Depletion of abiotic resources – minerals and metals (ADP-M)	kg Sb eq./kg	1.33E-03	7.58E-09	2.21E-07	1.33E-03	1.21E-09	4.41E-09	3.31E-06	0.00E+00	2.27E-09	3.93E-08	4.33E-11	-3.98E-04
Depletion of abiotic resources – fossil fuels (ADP-F)	MJ net calorific value/kg	1.20E+02	4.28E+00	4.93E+01	1.73E+02	1.84E-01	5.73E-01	7.62E+02	0.00E+00	3.45E-01	2.75E+00	1.09E-02	-2.37E+01
Water use (WDP)	m ³ world eq. deprived/kg	2.26E+00	7.61E-04	1.48E+00	3.74E+00	2.14E-04	6.53E-02	2.85E+00	0.00E+00	4.04E-04	5.77E-02	8.16E-05	-2.97E-01
Biogenic carbon content in product	kg C/kg	N/A	N/A	0.00E+00	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Use of secondary material	kg/kg	4.43E-02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.87E-04	4.70E-01



18. Key information of environmental information reported per kilogram of PMFC 28/32-EC

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Global warming potential – total (GWP-total)	kg CO ₂ eq./kg	7.62E+00	3.13E-01	4.67E+00	1.26E+01	1.32E-02	3.54E-01	1.48E+01	0.00E+00	2.75E-02	6.42E-01	6.87E-04	-2.05E+00
Depletion of abiotic resources – minerals and metals (ADP-M)	kg Sb eq./kg	9.60E-04	6.62E-09	2.21E-07	9.60E-04	1.05E-09	2.31E-09	2.57E-06	0.00E+00	2.27E-09	3.68E-08	4.56E-11	-4.25E-04
Depletion of abiotic resources – fossil fuels (ADP-F)	MJ net calorific value/kg	1.01E+02	3.74E+00	4.93E+01	1.54E+02	1.60E-01	3.05E-01	5.93E+02	0.00E+00	3.45E-01	2.63E+00	1.15E-02	-2.30E+01
Water use (WDP)	m ³ world eq. deprived/kg	1.84E+00	6.66E-04	1.48E+00	3.32E+00	1.87E-04	3.63E-02	2.22E+00	0.00E+00	4.04E-04	6.40E-02	8.63E-05	-3.06E-01
Biogenic carbon content in product	kg C/kg	N/A	N/A	0.00E+00	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Use of secondary material	kg/kg	4.09E-02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.19E-04	4.39E-01

19. Key information of environmental information reported per kilogram of PMFC 36/42-EC

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Global warming potential – total (GWP-total)	kg CO ₂ eq./kg	7.44E+00	3.10E-01	4.67E+00	1.24E+01	1.31E-02	3.35E-01	1.87E+01	0.00E+00	2.75E-02	6.24E-01	6.73E-04	-2.03E+00
Depletion of abiotic resources – minerals and metals (ADP-M)	kg Sb eq./kg	9.10E-04	6.56E-09	2.20E-07	9.10E-04	1.04E-09	2.19E-09	3.25E-06	0.00E+00	2.27E-09	3.80E-08	4.47E-11	-4.03E-04
Depletion of abiotic resources – fossil fuels (ADP-F)	MJ net calorific value/kg	9.77E+01	3.70E+00	4.93E+01	1.51E+02	1.59E-01	2.89E-01	7.50E+02	0.00E+00	3.45E-01	2.69E+00	1.12E-02	-2.25E+01
Water use (WDP)	m ³ world eq. deprived/kg	1.79E+00	6.60E-04	1.48E+00	3.27E+00	1.85E-04	3.44E-02	2.81E+00	0.00E+00	4.04E-04	6.13E-02	8.44E-05	-2.91E-01
Biogenic carbon content in product	kg C/kg	N/A	N/A	0.00E+00	0.00E+00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Use of secondary material	kg/kg	4.32E-02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.63E-04	4.58E-01

20. Substances under European Chemicals Agency's REAH, SVHC restrictions

The product is not known to include substances from ECHA's Candidate List of Substances of Very High Concern.

SCOPE OF THE LIFE CYCLE ASSESSMENT

The type of this declaration is cradle to gate with options, modules A4-A5, module B6, modules C1-C4, module D. Covered modules are marked with an X in the table below.

Product stage			Construction stage		Use stage							End of life stage				Supplementary information beyond the life cycle		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
☒	☒	☒	☒	☒	MND	MND	MND	MND	MND	☒	MND	☒	☒	☒	☒	☒	☒	☒
Raw material supply	Transport	Manufacturing	Transport	Construction	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

21. Declared unit and reference service life

The declared unit is 1 unit of cassette fan coil. The lifetime for cassette fan coils is considered to be 20 years.

Parameter	PMFC 10/14-EC	PMFC 17/21-EC	PMFC 28/32-EC	PMFC 36/42-EC	Unit
Declared unit	26.00	28.00	55.00	58.00	kg
Reference service life	20	20	20	20	years

22. System boundary

The system boundary is cradle to gate with options, module A4, modules C1-C4 and module D and includes the following life cycle stages:

- **A1: Raw material supply** includes raw material extraction and raw material processing to semi-finished product;
- **A2: Raw material transport** from suppliers to manufacturing;
- **A3: Manufacturing** includes direct emissions from the site and the production of energy, fuels, and packaging materials;
- **A4: Transport to construction:** Transport to the site
- **A5: Construction** – installation of the product into a building and waste treatment of used packaging materials;
- **B6: Use phase-** operational energy the energy consumption from the operation of the fan coil unit; Finnis average grid mix is applied for energy use. **Use scenario of B6:** 6 months/year cooling with full power during full reference service life
- **C1-C4 End of life:** Deconstruction (C1), transport of product to end of life (C2), end of life waste processing for recycling and energy recovery(C3) and the disposal of materials (C4), and;
- **D: Reuse, recycling and recovery potential** outside the system boundaries from material and energy substitution.

Scenario for B6

Information related to scenario	PMFC 10/14-EC	PMFC 17/21-EC	PMFC 28/32-EC	PMFC 36/42-EC	Unit
Ancillary materials specified by material	-	-	-	-	kg
Type of energy and consumption, FI electricity grid mix (Sphera)	2 716	4 464	6 832	9 110	kWh
Power output of equipment	0.031	0.051	0.078	0.104	kW
Energy efficiency	99	99	99	99	%
Frequency and period of use	24 hours for six months cooling	24 hours for six months cooling	24 hours for six months cooling	24 hours for six months cooling	-

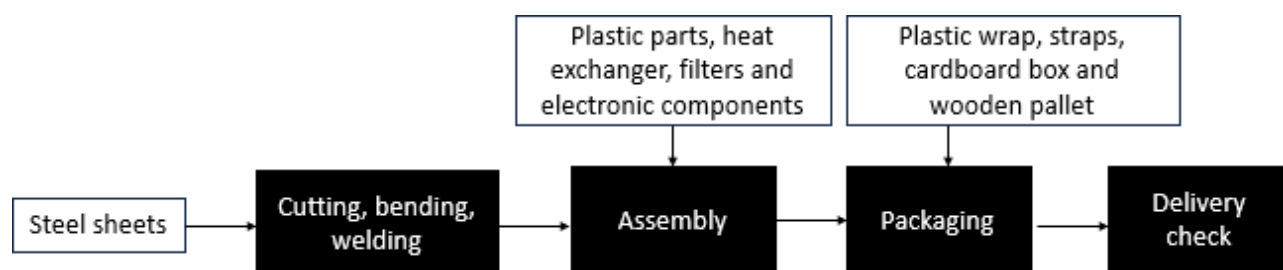
23. Cut-off criteria

Mass-based cut-off criteria is adhered to. The cut-off rule is reflected in the inputs of the product system studied separately for each module. Flows accounting less than 1% of the overall input mass or energy flows are excluded from the study if appropriate LCI data or even proxy data is not available. The sum of excluded flows should not exceed 5% of the total inflows (by mass or by energy). The flows knowingly excluded from the study are as follows:

- Capital equipment, infrastructure and employee commute are excluded.

24. Production process

The manufacturing process of the cassette fan coils includes cutting, bending and welding of steel sheets into frames and casing and assembly of other parts; heat exchanger, plastic parts, filters, and electronic components. Ready for delivery products are packaged with cardboard boxes, LDPE-wrap, PET-straps and wooden pallets and imported from China to Pemtrade at Lahti for delivery check.





LIFE CYCLE IMPACT ASSESSMENT

The results of the impact assessment are relative figures and do not predict the effects on the weighted values of the categories, the exceedance limits, safety margins and risks.

25. Core environmental impacts / 1 piece of PMFC 10/14-EC cassette fan coil – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Global warming potential – total (GWP-total)	kg CO ₂ eq.	2.35E+02	9.51E+00	1.22E+02	3.66E+02	4.03E-01	1.81E+01	3.24E+02	0.00E+00	7.14E-01	1.61E+01	1.74E-02	-5.58E+01
Global warming potential – fossil (GWP-fossil)	kg CO ₂ eq.	2.34E+02	9.50E+00	1.22E+02	3.65E+02	3.96E-01	1.81E+01	3.23E+02	0.00E+00	7.01E-01	1.61E+01	1.73E-02	-5.57E+01
Global warming potential – biogenic (GWP-biogenic)	kg CO ₂ eq.	2.03E-01	6.93E-03	1.18E-02	2.21E-01	1.06E-03	5.24E-03	1.25E+00	0.00E+00	1.95E-03	4.45E-02	5.29E-05	-4.87E-02
Global warming potential – land use and land use change (GWP-LULUC)	kg CO ₂ eq.	2.76E-01	6.03E-04	1.18E-01	3.94E-01	6.17E-03	1.62E-02	1.14E-01	0.00E+00	1.14E-02	1.32E-03	6.94E-05	-1.00E-01
Ozone depletion (ODP)	kg CFC-11 eq.	3.39E-06	7.12E-13	5.91E-10	3.39E-06	5.43E-14	4.24E-12	1.67E-09	0.00E+00	1.00E-13	9.70E-11	5.56E-14	-1.94E-11
Acidification (AP)	mol H ⁺ eq.	1.38E+00	1.62E-01	4.28E-01	1.97E+00	1.97E-03	8.16E-03	1.10E+00	0.00E+00	4.28E-03	2.15E-02	1.06E-04	-3.84E-01
Eutrophication – aquatic freshwater (EP-F)	kg P eq.	9.59E-02	2.43E-06	6.23E-05	9.59E-02	1.57E-06	8.80E-06	8.51E-04	0.00E+00	2.89E-06	1.97E-05	5.22E-06	-6.03E-05
Eutrophication – aquatic marine (EP-M)	kg N eq.	2.25E-01	6.87E-02	9.44E-02	3.88E-01	9.54E-04	3.37E-03	2.43E-01	0.00E+00	2.10E-03	7.53E-03	2.42E-05	-3.83E-02
Eutrophication – terrestrial (EP-T)	mole N eq.	2.39E+00	7.53E-01	1.03E+00	4.17E+00	1.06E-02	3.98E-02	2.58E+00	0.00E+00	2.33E-02	8.32E-02	2.65E-04	-3.95E-01
Photochemical ozone formation (POCP)	kg NMVOC eq.	7.45E-01	1.86E-01	2.80E-01	1.21E+00	1.93E-03	8.08E-03	7.44E-01	0.00E+00	4.18E-03	2.34E-02	7.66E-05	-1.33E-01
Depletion of abiotic resources – minerals and metals (ADP-M) ¹⁾	kg Sb eq.	3.72E-02	2.01E-07	5.73E-06	3.72E-02	3.20E-08	1.24E-07	5.63E-05	0.00E+00	5.90E-08	9.79E-07	1.16E-09	-1.11E-02
Depletion of abiotic resources – fossil fuels (ADP-F) ¹⁾	MJ net calorific value	3.26E+03	1.14E+02	1.28E+03	4.66E+03	4.88E+00	1.60E+01	1.30E+04	0.00E+00	8.98E+00	6.94E+01	2.90E-01	-6.36E+02
Water use (WDP) ¹⁾	m ³ world eq. deprived	6.16E+01	2.02E-02	3.84E+01	1.00E+02	5.70E-03	1.83E+00	4.86E+01	0.00E+00	1.05E-02	1.59E+00	2.18E-03	-8.27E+00
Disclaimer 1 – The results of the environmental impact indicators ADP-M, ADP-F and WDP shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.													

Reading example:

1.00E-03 = 0.001 and 1.00E+03 = 1000



26. Use of natural resources / 1 piece of PMFC 10/14-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	4.14E+02	5.82E-01	3.74E+02	7.89E+02	4.17E-01	4.01E+00	1.05E+04	0.00E+00	7.68E-01	4.63E+01	4.35E-02	-3.24E+02
Use of renewable primary energy resources used as raw materials (PERM)	MJ	8.98E+01	0.00E+00	0.00E+00	8.98E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT)	MJ	5.04E+02	5.82E-01	3.74E+02	8.78E+02	4.17E-01	4.01E+00	1.05E+04	0.00E+00	7.68E-01	4.63E+01	4.35E-02	-3.24E+02
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	2.92E+03	1.14E+02	1.28E+03	4.31E+03	4.88E+00	1.60E+01	1.30E+04	0.00E+00	8.98E+00	6.94E+01	1.36E-01	-6.36E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	3.41E+02	0.00E+00	0.00E+00	3.41E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E-01	0.00E+00
Total use of non-renewable primary energy resources (PENRT)	MJ	3.26E+03	1.14E+02	1.28E+03	4.66E+03	4.88E+00	1.60E+01	1.30E+04	0.00E+00	8.98E+00	6.94E+01	2.90E-01	-6.36E+02
Use of secondary materials (SM)	kg	1.07E+00	0.00E+00	0.00E+00	1.07E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E-02	1.15E+01
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (FW)	m³	3.81E+00	7.54E-04	9.17E-01	4.73E+00	4.64E-04	4.51E-02	1.18E+01	0.00E+00	8.56E-04	5.34E-02	6.56E-05	-3.40E-01

Disposed wastes / 1 piece of PMFC 10/14-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	3.86E+00	3.37E-09	7.92E-07	3.86E+00	1.86E-10	5.74E-09	1.57E-05	0.00E+00	3.43E-10	1.06E-07	7.05E-11	6.75E-06
Non-hazardous waste disposed (NHWD)	kg	1.46E+01	1.01E-02	5.96E-01	1.52E+01	7.92E-04	7.81E-01	1.21E+01	0.00E+00	1.46E-03	5.45E-01	1.39E+00	-1.11E+01
Radioactive waste disposed (RWD)	kg	1.52E-02	1.19E-04	3.11E-02	4.64E-02	8.83E-06	5.49E-04	3.50E+00	0.00E+00	1.63E-05	4.52E-03	4.02E-06	-3.97E-02

Output flows / 1 piece of PMFC 10/14-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	3.00E+00	0.00E+00	0.00E+00	0.00E+00	1.87E+01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.04E+00	0.00E+00	0.00E+00	0.00E+00	5.85E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.92E+01	0.00E+00	0.00E+00	0.00E+00	2.77E+01	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.27E+01	0.00E+00	0.00E+00	0.00E+00	5.04E+01	0.00E+00	0.00E+00



LIFE CYCLE IMPACT ASSESSMENT

The results of the impact assessment are relative figures and do not predict the effects on the weighted values of the categories, the exceedance limits, safety margins and risks.

27. Core environmental impacts / 1 piece of PMFC 17/21-EC cassette fan coil – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Global warming potential – total (GWP-total)	kg CO ₂ eq.	2.43E+02	1.00E+01	1.31E+02	3.84E+02	4.25E-01	1.81E+01	5.33E+02	0.00E+00	7.69E-01	1.67E+01	1.82E-02	-5.92E+01
Global warming potential – fossil (GWP-fossil)	kg CO ₂ eq.	2.43E+02	1.00E+01	1.31E+02	3.84E+02	4.17E-01	1.81E+01	5.31E+02	0.00E+00	7.55E-01	1.67E+01	1.81E-02	-5.91E+01
Global warming potential – biogenic (GWP-biogenic)	kg CO ₂ eq.	2.05E-01	7.30E-03	1.27E-02	2.25E-01	1.12E-03	5.24E-03	2.05E+00	0.00E+00	2.10E-03	5.03E-02	5.54E-05	-4.97E-02
Global warming potential – land use and land use change (GWP-LULUC)	kg CO ₂ eq.	2.79E-01	6.36E-04	1.27E-01	4.07E-01	6.50E-03	1.62E-02	1.88E-01	0.00E+00	1.22E-02	1.44E-03	7.30E-05	-1.02E-01
Ozone depletion (ODP)	kg CFC-11 eq.	3.39E-06	7.51E-13	6.37E-10	3.39E-06	5.72E-14	4.24E-12	2.74E-09	0.00E+00	1.08E-13	1.10E-10	5.82E-14	-2.18E-11
Acidification (AP)	mol H ⁺ eq.	1.40E+00	1.70E-01	4.61E-01	2.04E+00	2.08E-03	8.16E-03	1.80E+00	0.00E+00	4.61E-03	2.31E-02	1.11E-04	-3.92E-01
Eutrophication – aquatic freshwater (EP-F)	kg P eq.	9.59E-02	2.56E-06	6.71E-05	9.60E-02	1.65E-06	8.80E-06	1.40E-03	0.00E+00	3.11E-06	2.23E-05	5.22E-06	-6.29E-05
Eutrophication – aquatic marine (EP-M)	kg N eq.	2.30E-01	7.24E-02	1.02E-01	4.04E-01	1.00E-03	3.37E-03	4.00E-01	0.00E+00	2.26E-03	7.94E-03	2.54E-05	-4.03E-02
Eutrophication – terrestrial (EP-T)	mole N eq.	2.45E+00	7.93E-01	1.11E+00	4.35E+00	1.12E-02	3.98E-02	4.25E+00	0.00E+00	2.51E-02	8.75E-02	2.79E-04	-4.16E-01
Photochemical ozone formation (POCP)	kg NMVOC eq.	7.64E-01	1.96E-01	3.02E-01	1.26E+00	2.03E-03	8.08E-03	1.22E+00	0.00E+00	4.50E-03	2.50E-02	8.06E-05	-1.39E-01
Depletion of abiotic resources – minerals and metals (ADP-M) ¹⁾	kg Sb eq.	3.72E-02	2.12E-07	6.18E-06	3.72E-02	3.37E-08	1.24E-07	9.26E-05	0.00E+00	6.36E-08	1.10E-06	1.21E-09	-1.11E-02
Depletion of abiotic resources – fossil fuels (ADP-F) ¹⁾	MJ net calorific value	3.35E+03	1.20E+02	1.38E+03	4.85E+03	5.15E+00	1.60E+01	2.13E+04	0.00E+00	9.67E+00	7.70E+01	3.04E-01	-6.65E+02
Water use (WDP) ¹⁾	m ³ world eq. deprived	6.33E+01	2.13E-02	4.14E+01	1.05E+02	6.00E-03	1.83E+00	7.99E+01	0.00E+00	1.13E-02	1.62E+00	2.28E-03	-8.32E+00
Disclaimer 1 – The results of the environmental impact indicators ADP-M, ADP-F and WDP shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.													

Reading example:

1.00E-03 = 0.001

1.00E+03 = 1000



28. Use of natural resources / 1 piece of PMFC 17/21-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	4.23E+02	6.13E-01	4.03E+02	8.27E+02	4.39E-01	4.01E+00	1.73E+04	0.00E+00	8.27E-01	5.24E+01	4.55E-02	-3.26E+02
Use of renewable primary energy resources used as raw materials (PERM)	MJ	8.98E+01	0.00E+00	0.00E+00	8.98E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT)	MJ	5.13E+02	6.13E-01	4.03E+02	9.17E+02	4.39E-01	4.01E+00	1.73E+04	0.00E+00	8.27E-01	5.24E+01	4.55E-02	-3.26E+02
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	3.01E+03	1.20E+02	1.38E+03	4.51E+03	5.15E+00	1.60E+01	2.13E+04	0.00E+00	9.67E+00	7.70E+01	1.50E-01	-6.65E+02
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	3.41E+02	0.00E+00	0.00E+00	3.41E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E-01	0.00E+00
Total use of non-renewable primary energy resources (PENRT)	MJ	3.35E+03	1.20E+02	1.38E+03	4.85E+03	5.15E+00	1.60E+01	2.13E+04	0.00E+00	9.67E+00	7.70E+01	3.04E-01	-6.65E+02
Use of secondary materials (SM)	kg	1.24E+00	0.00E+00	0.00E+00	1.24E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.48E-02	1.32E+01
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (FW)	m ³	4.18E+00	7.96E-04	9.87E-01	5.17E+00	4.89E-04	4.51E-02	1.94E+01	0.00E+00	9.22E-04	5.60E-02	6.87E-05	-3.44E-01

29. Disposed wastes / 1 piece of PMFC 17/21-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	3.87E+00	3.55E-09	8.53E-07	3.87E+00	1.96E-10	5.74E-09	2.58E-05	0.00E+00	3.69E-10	1.20E-07	7.38E-11	6.75E-06
Non-hazardous waste disposed (NHWD)	kg	1.47E+01	1.06E-02	6.42E-01	1.53E+01	8.34E-04	7.81E-01	2.00E+01	0.00E+00	1.57E-03	5.46E-01	1.46E+00	-1.11E+01
Radioactive waste disposed (RWD)	kg	1.57E-02	1.26E-04	3.35E-02	4.93E-02	9.30E-06	5.49E-04	5.75E+00	0.00E+00	1.75E-05	5.07E-03	4.21E-06	-3.98E-02

30. Output flows / 1 piece of PMFC 17/21-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	3.00E+00	0.00E+00	0.00E+00	0.00E+00	2.14E+01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.40E+00	0.00E+00	0.00E+00	0.00E+00	5.85E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.92E+01	0.00E+00	0.00E+00	0.00E+00	2.77E+01	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.27E+01	0.00E+00	0.00E+00	0.00E+00	5.04E+01	0.00E+00	0.00E+00



LIFE CYCLE IMPACT ASSESSMENT

The results of the impact assessment are relative figures and do not predict the effects on the weighted values of the categories, the exceedance limits, safety margins and risks.

31. Core environmental impacts / 1 piece of PMFC 28/32-EC cassette fan coil – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Global warming potential – total (GWP-total)	kg CO ₂ eq.	4.19E+02	1.72E+01	2.57E+02	6.93E+02	7.27E-01	1.95E+01	8.15E+02	0.00E+00	1.51E+00	3.53E+01	3.78E-02	-1.13E+02
Global warming potential – fossil (GWP-fossil)	kg CO ₂ eq.	4.18E+02	1.72E+01	2.57E+02	6.92E+02	7.14E-01	1.94E+01	8.12E+02	0.00E+00	1.48E+00	3.52E+01	3.75E-02	-1.13E+02
Global warming potential – biogenic (GWP-biogenic)	kg CO ₂ eq.	3.60E-01	1.25E-02	2.49E-02	3.97E-01	1.91E-03	5.45E-03	3.14E+00	0.00E+00	4.13E-03	9.16E-02	1.15E-04	-9.20E-02
Global warming potential – land use and land use change (GWP-LULUC)	kg CO ₂ eq.	4.87E-01	1.09E-03	2.50E-01	7.37E-01	1.11E-02	1.64E-02	2.88E-01	0.00E+00	2.41E-02	2.77E-03	1.50E-04	-2.04E-01
Ozone depletion (ODP)	kg CFC-11 eq.	3.58E-06	1.29E-12	1.25E-09	3.58E-06	9.79E-14	4.51E-12	4.20E-09	0.00E+00	2.12E-13	2.00E-10	1.21E-13	-3.21E-11
Acidification (AP)	mol H ⁺ eq.	2.26E+00	2.92E-01	9.04E-01	3.46E+00	3.55E-03	8.91E-03	2.76E+00	0.00E+00	9.06E-03	4.68E-02	2.29E-04	-7.86E-01
Eutrophication – aquatic freshwater (EP-F)	kg P eq.	1.03E-01	4.40E-06	1.32E-04	1.03E-01	2.83E-06	8.97E-06	2.14E-03	0.00E+00	6.11E-06	4.07E-05	1.18E-05	-9.71E-05
Eutrophication – aquatic marine (EP-M)	kg N eq.	3.61E-01	1.24E-01	1.99E-01	6.84E-01	1.72E-03	3.66E-03	6.11E-01	0.00E+00	4.43E-03	1.68E-02	5.23E-05	-7.47E-02
Eutrophication – terrestrial (EP-T)	mole N eq.	3.84E+00	1.36E+00	2.17E+00	7.37E+00	1.91E-02	4.32E-02	6.50E+00	0.00E+00	4.93E-02	1.85E-01	5.74E-04	-7.78E-01
Photochemical ozone formation (POCP)	kg NMVOC eq.	1.20E+00	3.36E-01	5.90E-01	2.12E+00	3.48E-03	8.84E-03	1.87E+00	0.00E+00	8.83E-03	5.14E-02	1.66E-04	-2.59E-01
Depletion of abiotic resources – minerals and metals (ADP-M) ¹⁾	kg Sb eq.	5.28E-02	3.64E-07	1.21E-05	5.28E-02	5.78E-08	1.27E-07	1.42E-04	0.00E+00	1.25E-07	2.02E-06	2.51E-09	-2.34E-02
Depletion of abiotic resources – fossil fuels (ADP-F) ¹⁾	MJ net calorific value	5.54E+03	2.06E+02	2.71E+03	8.45E+03	8.81E+00	1.68E+01	3.26E+04	0.00E+00	1.90E+01	1.45E+02	6.30E-01	-1.26E+03
Water use (WDP) ¹⁾	m ³ world eq. deprived	1.01E+02	3.66E-02	8.12E+01	1.83E+02	1.03E-02	1.99E+00	1.22E+02	0.00E+00	2.22E-02	3.52E+00	4.75E-03	-1.68E+01
Disclaimer 1 – The results of the environmental impact indicators ADP-M, ADP-F and WDP shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.													

Reading example:

1.00E-03 = 0.001 and 1.00E+03 = 1000



32. Use of natural resources / 1 piece of PMFC 28/32-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	7.37E+02	1.05E+00	7.91E+02	1.53E+03	7.52E-01	4.18E+00	2.64E+04	0.00E+00	1.62E+00	9.54E+01	9.45E-02	-5.72E+02
Use of renewable primary energy resources used as raw materials (PERM)	MJ	8.98E+01	0.00E+00	0.00E+00	8.98E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT)	MJ	8.27E+02	1.05E+00	7.91E+02	1.62E+03	7.52E-01	4.18E+00	2.64E+04	0.00E+00	1.62E+00	9.54E+01	9.45E-02	-5.72E+02
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	4.96E+03	2.06E+02	2.71E+03	7.88E+03	8.81E+00	1.68E+01	3.26E+04	0.00E+00	1.90E+01	1.45E+02	2.87E-01	-1.26E+03
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	5.73E+02	0.00E+00	0.00E+00	5.73E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.44E-01	0.00E+00
Total use of non-renewable primary energy resources (PENRT)	MJ	5.54E+03	2.06E+02	2.71E+03	8.45E+03	8.81E+00	1.68E+01	3.26E+04	0.00E+00	1.90E+01	1.45E+02	6.30E-01	-1.26E+03
Use of secondary materials (SM)	kg	2.25E+00	0.00E+00	0.00E+00	2.25E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.50E-02	2.41E+01
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (FW)	m ³	7.37E+00	1.37E-03	1.94E+00	9.31E+00	8.38E-04	4.90E-02	2.97E+01	0.00E+00	1.81E-03	1.15E-01	1.43E-04	-6.77E-01

33. Disposed wastes / 1 piece of PMFC 28/32-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	4.25E+00	6.09E-09	1.67E-06	4.25E+00	3.36E-10	6.08E-09	3.94E-05	0.00E+00	7.25E-10	2.19E-07	1.53E-10	1.44E-05
Non-hazardous waste disposed (NHWD)	kg	3.22E+01	1.82E-02	1.26E+00	3.34E+01	1.43E-03	9.62E-01	3.06E+01	0.00E+00	3.09E-03	1.16E+00	2.99E+00	-2.34E+01
Radioactive waste disposed (RWD)	kg	2.88E-02	2.16E-04	6.57E-02	9.47E-02	1.59E-05	5.75E-04	8.80E+00	0.00E+00	3.44E-05	9.37E-03	8.75E-06	-7.37E-02

34. Output flows / 1 piece of PMFC 28/32-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	3.00E+00	0.00E+00	0.00E+00	0.00E+00	4.04E+01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.45E+00	0.00E+00	0.00E+00	0.00E+00	1.31E+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	3.07E+01	0.00E+00	0.00E+00	0.00E+00	6.14E+01	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.54E+01	0.00E+00	0.00E+00	0.00E+00	1.13E+02	0.00E+00	0.00E+00



LIFE CYCLE IMPACT ASSESSMENT

The results of the impact assessment are relative figures and do not predict the effects on the weighted values of the categories, the exceedance limits, safety margins and risks.

35. Core environmental impacts / 1 piece of PMFC 36/42-EC cassette fan coil – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Global warming potential – total (GWP-total)	kg CO ₂ eq.	4.32E+02	1.80E+01	2.71E+02	7.20E+02	7.60E-01	1.95E+01	1.09E+03	0.00E+00	1.59E+00	3.62E+01	3.90E-02	-1.18E+02
Global warming potential – fossil (GWP-fossil)	kg CO ₂ eq.	4.31E+02	1.80E+01	2.71E+02	7.19E+02	7.46E-01	1.94E+01	1.08E+03	0.00E+00	1.56E+00	3.61E+01	3.88E-02	-1.18E+02
Global warming potential – biogenic (GWP-biogenic)	kg CO ₂ eq.	3.64E-01	1.31E-02	2.62E-02	4.03E-01	2.00E-03	5.45E-03	4.18E+00	0.00E+00	4.36E-03	1.00E-01	1.19E-04	-9.36E-02
Global warming potential – land use and land use change (GWP-LULUC)	kg CO ₂ eq.	4.91E-01	1.14E-03	2.63E-01	7.55E-01	1.16E-02	1.64E-02	3.84E-01	0.00E+00	2.54E-02	2.95E-03	1.55E-04	-2.06E-01
Ozone depletion (ODP)	kg CFC-11 eq.	3.58E-06	1.35E-12	1.32E-09	3.58E-06	1.02E-13	4.51E-12	5.59E-09	0.00E+00	2.23E-13	2.19E-10	1.25E-13	-3.57E-11
Acidification (AP)	mol H ⁺ eq.	2.30E+00	3.05E-01	9.53E-01	3.55E+00	3.71E-03	8.91E-03	3.67E+00	0.00E+00	9.55E-03	4.91E-02	2.37E-04	-7.98E-01
Eutrophication – aquatic freshwater (EP-F)	kg P eq.	1.03E-01	4.59E-06	1.39E-04	1.03E-01	2.95E-06	8.97E-06	2.85E-03	0.00E+00	6.45E-06	4.45E-05	1.18E-05	-1.01E-04
Eutrophication – aquatic marine (EP-M)	kg N eq.	3.69E-01	1.30E-01	2.09E-01	7.08E-01	1.80E-03	3.66E-03	8.15E-01	0.00E+00	4.67E-03	1.74E-02	5.41E-05	-7.76E-02
Eutrophication – terrestrial (EP-T)	mole N eq.	3.92E+00	1.42E+00	2.28E+00	7.63E+00	2.00E-02	4.32E-02	8.67E+00	0.00E+00	5.20E-02	1.92E-01	5.95E-04	-8.10E-01
Photochemical ozone formation (POCP)	kg NMVOC eq.	1.22E+00	3.51E-01	6.21E-01	2.19E+00	3.64E-03	8.84E-03	2.50E+00	0.00E+00	9.32E-03	5.37E-02	1.72E-04	-2.69E-01
Depletion of abiotic resources – minerals and metals (ADP-M) ¹⁾	kg Sb eq.	5.28E-02	3.80E-07	1.28E-05	5.28E-02	6.03E-08	1.27E-07	1.89E-04	0.00E+00	1.32E-07	2.21E-06	2.59E-09	-2.34E-02
Depletion of abiotic resources – fossil fuels (ADP-F) ¹⁾	MJ net calorific value	5.66E+03	2.15E+02	2.86E+03	8.74E+03	9.20E+00	1.68E+01	4.35E+04	0.00E+00	2.00E+01	1.56E+02	6.51E-01	-1.31E+03
Water use (WDP) ¹⁾	m ³ world eq. deprived	1.04E+02	3.83E-02	8.56E+01	1.89E+02	1.07E-02	1.99E+00	1.63E+02	0.00E+00	2.34E-02	3.55E+00	4.90E-03	-1.69E+01
Disclaimer 1 – The results of the environmental impact indicators ADP-M, ADP-F and WDP shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.													

Reading example:

1.00E-03 = 0.001

1.00E+03 = 1000

36. Use of natural resources / 1 piece of PMFC 36/42-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	7.51E+02	1.10E+00	8.34E+02	1.59E+03	7.85E-01	4.18E+00	3.52E+04	0.00E+00	1.71E+00	1.04E+02	9.76E-02	-5.75E+02
Use of renewable primary energy resources used as raw materials (PERM)	MJ	8.98E+01	0.00E+00	0.00E+00	8.98E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT)	MJ	8.41E+02	1.10E+00	8.34E+02	1.68E+03	7.85E-01	4.18E+00	3.52E+04	0.00E+00	1.71E+00	1.04E+02	9.76E-02	-5.75E+02
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	5.09E+03	2.15E+02	2.86E+03	8.16E+03	9.20E+00	1.68E+01	4.35E+04	0.00E+00	2.00E+01	1.56E+02	3.07E-01	-1.31E+03
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	5.73E+02	0.00E+00	0.00E+00	5.73E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.44E-01	0.00E+00
Total use of non-renewable primary energy resources (PENRT)	MJ	5.66E+03	2.15E+02	2.86E+03	8.74E+03	9.20E+00	1.68E+01	4.35E+04	0.00E+00	2.00E+01	1.56E+02	6.51E-01	-1.31E+03
Use of secondary materials (SM)	kg	2.50E+00	0.00E+00	0.00E+00	2.50E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.01E-02	2.66E+01
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (FW)	m ³	7.93E+00	1.43E-03	2.04E+00	9.97E+00	8.75E-04	4.90E-02	3.96E+01	0.00E+00	1.91E-03	1.19E-01	1.47E-04	-6.84E-01

37. Disposed wastes / 1 piece of PMFC 36/42-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	4.26E+00	6.36E-09	1.76E-06	4.26E+00	3.51E-10	6.08E-09	5.26E-05	0.00E+00	7.64E-10	2.40E-07	1.58E-10	1.44E-05
Non-hazardous waste disposed (NHWD)	kg	3.22E+01	1.90E-02	1.33E+00	3.36E+01	1.49E-03	9.62E-01	4.07E+01	0.00E+00	3.25E-03	1.16E+00	3.10E+00	-2.34E+01
Radioactive waste disposed (RWD)	kg	2.96E-02	2.25E-04	6.93E-02	9.91E-02	1.66E-05	5.75E-04	1.17E+01	0.00E+00	3.63E-05	1.02E-02	9.03E-06	-7.40E-02

38. Output flows / 1 piece of PMFC 36/42-EC cassette fan coil

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	3.00E+00	0.00E+00	0.00E+00	0.00E+00	4.34E+01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.45E+00	0.00E+00	0.00E+00	0.00E+00	1.31E+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	3.07E+01	0.00E+00	0.00E+00	0.00E+00	6.14E+01	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.54E+01	0.00E+00	0.00E+00	0.00E+00	1.13E+02	0.00E+00	0.00E+00

OTHER ENVIRONMENTAL INDICATORS

39. Biogenic carbon content / 1 piece of cassette fan coil

The biogenic carbon content of the cassette fan coils is zero.

Parameter	PMFC10/14-EC Quantity	PMFC 17/21-EC Quantity	PMFC 28/32-EC Quantity	PMFC 36/42-EC Quantity	Unit
Biogenic carbon content in product	0	0	0	0	kg C
Biogenic carbon content in packaging	27.3 %	27.3 %	28.7 %	28.7 %	kg C
Biogenic carbon content in packaging material	3.12	3.12	3.57	3.57	kg C

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

40. Energy in the manufacturing stage

Parameter	PMFC 10/14-EC Quantity	PMFC 17/21-EC Quantity	PMFC 28/32-EC Quantity	PMFC 36/42-EC Quantity	Unit	Data quality
Emission factor of electricity consumed in A3	0.78	0.78	0.78	0.78	g CO ₂ /kWh	Emissions from electricity production are calculated of China residual grid mix. Emissions from electricity production are calculated for the average consumption mix 2024, based on data from LCA for Experts Professional database 2024.

41. Transport to construction

Parameter	Quantity	Unit	Data description
Transport distance, road	110	km	Truck, Euro 5, 24.7t payload capacity; Diesel; 61% utilization rate. Commercial one-way transport of transportation.).
PMFC 10/14-EC Specific emission, truck	0.131	kg CO ₂ eq./tkm	Truck, Euro 5, 24.7t payload capacity; 61% utilization rate. Diesel and upstream emissions.
PMFC 17/21-EC Specific emission, truck	0.130	kg CO ₂ eq./tkm	
PMFC 28/32-EC Specific emission, truck	0.07	kg CO ₂ eq./tkm	
PMFC 32/42-EC Specific emission, truck	0.06	kg CO ₂ eq./tkm	

42. End-of-life stage description – module C

The materials in the cassette fan coils are assumed to be treated as follows: 98% of metal materials are directed into recycling and the 2% is directed to landfill, and 95% of fossil materials (mainly plastics and rubber) are directed into recycling and 5% is directed to landfill.

Parameter	Unit	PMFC 10/14-EC Quantity	PMFC 17/21-EC Quantity	PMFC 28/32-EC Quantity	PMFC 36/42-EC Quantity
Collection process	Collected separately, %	97 %	97 %	97 %	97 %
	Collected as mixed plastic waste, %	1 %	1 %	1 %	1 %
	Collected as mixed metallic waste, %	2 %	2 %	2 %	2 %
Recovery type	kg for reuse	0	0	0	0
	kg for recycling	19.45	21.41	40.44	43.38
	kg for energy recovery	5.85	5.85	13.06	13.06
Disposal type	kg for final disposal	0.70	0.74	1.50	1.56
Assumptions for scenario development	Transport by truck (Euro 5, 11.4t payload capacity, 53 % utilization rate). Distances: 50 km for materials to landfill and 200 km for materials to recycling.				

43. Benefits and loads beyond the system boundaries - module D

The benefits of recyclable and energy recovered waste generated in phase C3 are considered in phase D. The recycled steel used in products has been modelled to avoid the use of primary materials. The scrap content in the steel has been considered and only the quantity of primary steel in the product is considered to provide the benefit, i.e., avoiding of double counting.

44. Other technical information

Not specified.

45. Additional information

No information is available regarding emissions to soil, water or air.

46. LCA modelling software and data

LCA for Experts (Sphera) version 10.8. is used in LCA modelling. Primary data from 2023 is obtained from Pemtrade Oy. Secondary data from LCA for Experts (Sphera) Professional 2024 (version 2024.2) and Ecoinvent 3.10.1 (cut-off) databases are used in modelling. As principle, secondary data with maximum 10 years age was used in the modelling when available.



REFERENCES

Standards and PCR

EN 15804:2012 + A2:2019. Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products. EN 15804 reference package based on EF 3.1 has been used.

ISO 14025:2010. Environmental labels and declarations – Type III environmental declarations – Principles and procedures.

Rakennustieto EPD. The Building Information Foundation RTS (RTS EPD Product Category Rules). Rakennustietosäätiö RTS sr (RTS EPD PCR menetelmäohje 15804:2019)

The Norwegian EPD Foundation Product category rules, NPCR 030 version 1.1 part B for ventilation components.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

Modelling software & databases

Sphera LCA for Experts version 10.8

Sphera Professional database 2024.2

Ecoinvent 3.10.1 database (cut-off).