

Owner: Geovent
No.: MD-25014-EN
Issued: 12-03-2025
Valid to: 12-03-2030

3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration

Geovent
Hovedgaden 86
8831 Løgstrup
Danmark



VAT no. 54 22 26 10

Programme

EPD Danmark
www.epddanmark.dk



- ☐ Industry EPD
☒ Product EPD

Declared product(s)

1 declared product (Roof mounted Air Handling Unit - GRTU 3800+)

Number of declared datasets/product variations: 3

Scenario 1: Basic GRTU 3800+
Scenario 2: GRTU 3800+ with Diffuser set
Scenario 3: GRTU 3800+ with additional accessories

Production site

Hovedgaden 86
8831 Løgstrup
Danmark

Use of Guarantees of Origin

- ☒ No certificates used
☐ Electricity covered by GoO
☐ Biogas covered by GoO

Declared/ functional unit

1 piece of unit

Year of production site data (A3)

2024

EPD version

1

Issued:

12-03-2025

Valid to:

12-03-2030

Basis of calculation

This EPD is developed and verified in accordance with the European standard EN 15804+A2.

Comparability

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity

This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use

The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type

- ☐ Cradle-to-gate with modules C1-C4 and D
☐ Cradle-to-gate with options, modules C1-C4 and D
☒ Cradle-to-grave and module D
☐ Cradle-to-gate
☐ Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

- ☐ internal ☒ external

Third-party verifier:

Stefan Emil Danielsson

Stefan Emil Danielsson

Martha Katrine Sørensen

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)

Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Product information

Product description

Roof mounted Air Handling Unit - GRTU 3800+

The GRTU 3800+ is a roof-mounted ventilation unit designed for air handling and heat recovery in industrial and commercial applications. It includes a rotary heat exchanger, filters, and EC fans to meet high air exchange demands with low energy consumption. The GRTU 3800+ is suitable for use in environments such as industrial facilities, garages, etc. It operates using dual EC fans, each powered by a 1,5 kW motor, ensuring smooth, adjustable airflow with a maximum capacity of 4,500 m³/h.

The housing is constructed from galvanized steel with 50mm insulation, enhancing thermal efficiency and noise reduction. The GRTU 3800+ includes EU7 air filters on both intake and exhaust, maintaining high indoor air quality by filtering out contaminants before air exchange.

The unit is equipped with the OJ Air2 control system for automated operation. Features include a master controller with a programmable weekly schedule, remote monitoring via web access, and filter change alerts. Installation options allow for flexibility on flat or sloped roofs, and the modular design with a rail system facilitates easy inspection and maintenance.

Technical Specifications:

Model: GRTU 3800+

Power Supply: 3x400V, 50 Hz, 8,0 A

Fan Power: 2 x 1500 W

Maximum Airflow Capacity: 4500 m³/h

Filter: EU7 (dimensions: 565 x 1137 x 24 mm)

Housing: Galvanized steel with 50 mm insulation

Noise Levels: 72 dB(A) intake, 70 dB(A) exhaust at 2100 rpm

Dimensions WxHxD (mm): 1999x1245x1400

Weight (GRTU3800+, excluding packaging): 385 kg

Standard Filter Class: EU7

The GRTU 3800+ is typically sold in three main variations: the basic GRTU 3800+, the basic model with an included diffuser set, and the basic model with additional accessories. The main product materials are shown in the table below.

Material	Weight-% of declared material per scenario		
	S1	S2	S3
Aluminium	11,5	9,8	14,5
Steel	79,8	80,6	77,1
Electronics	1,6	1,3	1,5
Zinc coating	2,1	1,8	2,0
Plastic	0,5	0,4	0,6
Rubber	0,0	0,0	0,0
Copper	0,0	0,0	0,0
Nickel	0,0	0,0	0,0
Cardboard	0,1	0,1	0,1
Textile	0,1	0,1	0,1
Other	4,3	5,8	4,2
Total %	100	100	100

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the table below.

Material	Weight (kg)	Weight-% of packaging per scenario		
		S1	S2	S3
Wooden pallet	40,0	10,4	8,8	8,7
Plastic	1,5	0,4	0,3	0,3
Paper	0,5	0,1	0,1	0,1
Total	42	10,9	9,2	9,1

Representativity

This declaration, including data collection, the modelled foreground system, and results, represents the production of a ventilation unit at the manufacturing site in Løgstrup, Denmark. Product-specific data are based on average values collected from August to November 2024. Background data are sourced from the Ecoinvent

3.10 database and are less than 10 years old. In general, the background datasets used are of high quality, with most being only a few years old.

Hazardous substances

Geovent GRTU3800+, diffuser and accessories do not contain substances listed on the "Candidate List of Substances of Very High Concern for authorization".

(<http://echa.europa.eu/candidate-list-table>)

Products use

The GRTU 3800+ is used to provide continuous, automated ventilation with heat recovery to reduce external heating or cooling needs. The rotary heat exchanger recovers up to 84% of the heat from extracted air, improving energy efficiency. Control is managed through a handheld terminal with options for airflow adjustment, scheduling, and temperature control when heating is connected.

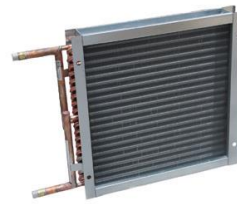
The diffuser accessory is designed to enhance indoor air distribution. The diffuser disperses the supply air evenly across the space, helping to reduce drafts and create a more balanced airflow pattern. This feature improves overall thermal comfort and air quality by minimizing concentrated airflow and maintaining consistent temperatures throughout the room. The diffuser can be used in various applications to ensure effective air mixing and distribution, contributing to a stable indoor environment.

Additional accessories:

A 2-way valve R212 + motor TR24SR is used for a 25 kW water heater.



A water heater of 25 kW is used for heating/re-circulation.



Essential characteristics

The manufacturer declares that the Roof Top Unit, model GRTU 3800+, complies with the following directives and standards:

Directive 2006/42/EC of the European Parliament and the Council of 17 May 2006 regarding machinery and amendments to Directive 95/16/EC.

EN ISO 14121-1:2007	Risk Assessment - Part 1
EN ISO 12100-1:2005	Basic concepts and general principles of design
EN ISO 12100-1	2009 design and shaping Part 1: Basic terminology and methodology
EN ISO 12100-2:2005	Basic concepts and general principles of design
EN ISO 12100-2:2009	Design and shaping Part 2: Technical principles

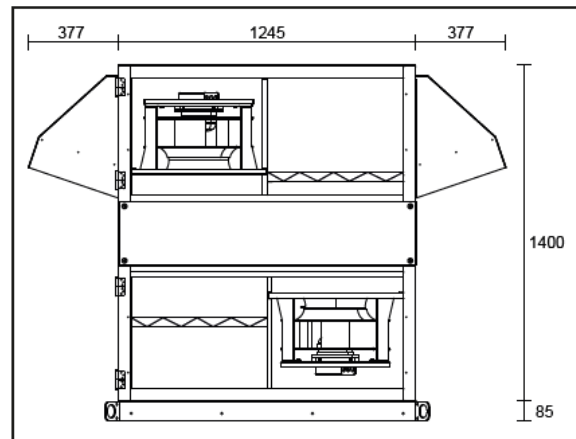
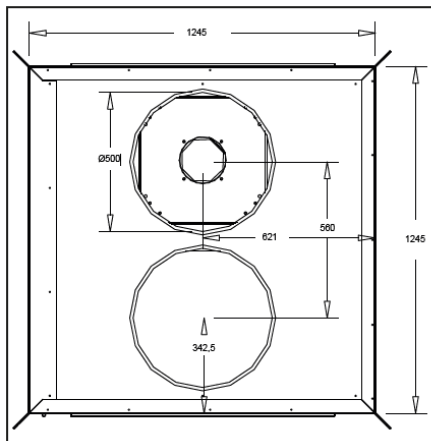
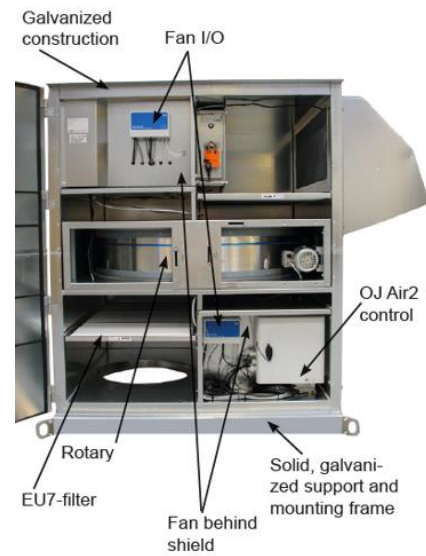
Further technical information can be obtained by contacting the manufacturer or on the manufacturer's website:

<https://www.geovent.dk/>

Reference Service Life (RSL)

The GRTU 3800+ is designed for a reference life of 20 years under standard operating conditions. This estimate is based on its robust construction and regular maintenance as recommended by the manufacturer. The reference life expectancy aligns with typical industrial ventilation units, based on BUILD Report 2021:32 by the Department of the Built Environment (Aalborg University).

Picture of product(s)



LCA background

Declared unit

The LCI and LCIA results in EPD relate to 1 pcs of product per scenario, maintained for 20 years, excluding packaging weight.

Name	S1	S2	S3	Unit
Declared unit	1	1	1	pcs
Weight (kg)	385	457	462	kg/pcs
Conversion factor to 1 kg.	0,0026	0,0022	0,0022	-

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804+A2 and NPCR 030 version 1.1 - Part B for ventilation components. This EPD follows additional requirements for construction products

considered as Electronic or Electric Equipment (EEE).

Energy modelling principles

Foreground system:

Information about the energy mix in the foreground system:

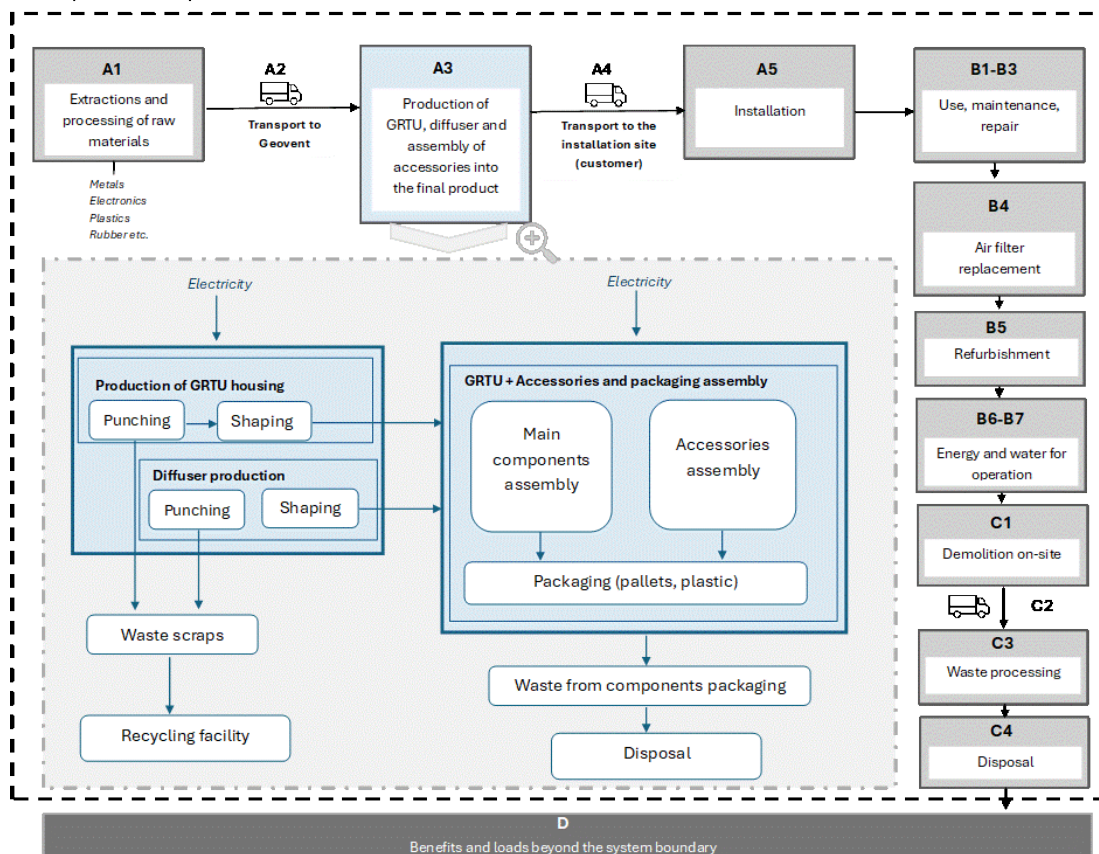
Dataset	EF	Unit
Electricity, medium voltage, residual mix (DK)	0,55	kg CO ₂ e/kWh
Ecoinvent, Denmark		Valid for year 2022

Background system:

Upstream processes are modelled using residual electricity mix for Denmark. Downstream processes are modelled using consumption electricity mix for Denmark.

Flow diagram

LCA System boundary



System boundary

This EPD is based on a cradle-to-grave LCA, in which 100 weight-% have been accounted for.

The general rules for the exclusion of inputs and outputs follow the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes. In addition, the exclusion of inputs and outputs follow the minimum requirements of the c-PCR, where the scope of the materials included in the product and packaging in the declared unit shall be the same as in traded products specified in the EPD.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, components and energy, transport to the production site, packaging and waste processing up to the “end-of-waste” state or final disposal. The LCA results are declared in disaggregated form for the product stage, meaning that all modules are declared separately.

A1: Steel, aluminium, screws, sealant/rubber, plastics, and wood pallets are supplied by external manufacturers. Filters, dampers, motors/electronics, water heaters, sensors, cables, and similar components are provided as complete units, with the individual sub-materials within these components accounted for separately in the model.

A2: The transport is accounted for each component from the supplier to the Geovent production site in Løgstrup, Denmark. Transportation details can be found in the table below.

A3: At the production site, GRTU 3800+ housings and diffuser sets are manufactured from steel sheet rolls. The process involves shaping, cutting, and pressing the steel sheets to achieve the required forms. Metal scraps generated during production are collected and sold to company in

Denmark that remelts the steel. Therefore, 100% of the burden is given to the main product.

All components are manually assembled on-site. The final product is packaged in plastic wrap, including stickers and manuals, and is transported on wooden pallets. Packaging materials and pallets are managed by the customer after delivery.

Construction process stage (A4-A5) includes:

A4: The product is transported to customers in Denmark with a yearly average distance of 129 km.

A5: Installation on the construction site is performed manually.

Use stage (B1-B7) includes:

B1: There are no direct emissions of any kind during normal use of the declared products.

B2: Filters for the ventilation unit are assumed to be replaced once per year throughout its life cycle. These filters are manufactured for use in Europe and disposed of as municipal solid waste in Denmark after use. For units installed outdoors, annual cleaning is assumed, with water and detergent produced, used, and disposed of in Denmark. Transport of filters and cleaning supplies is included in the assessment, assuming the same distance from the supplier to Geovent. Water discharges resulting from cleaning activities are modelled as municipal water treatment.

B3-B5: No data

B6: The electricity consumption of GRTU3800+ during their operational phase depends on the specific application, installation conditions, and customer requirements. For scenario 3, the additional equipment contributes to an increase in electricity consumption by 1-2%.

B7: The water consumption estimation for the water heating coil is based on a rough estimate from the company:

The water heating coil in the ventilation system holds 2 L of water and is connected to the building's closed-loop district heating system.

This system allows cooled water to be returned to the heating plant, reheated, and recirculated, ensuring minimal waste.

The coil uses hot water to warm the air, and as the water temperature decreases, a small amount of hot water is replenished. Assuming a temperature drop of 5% per hour, approximately 0,1 L of hot water is added every hour. For 12 hours of daily operation, this amounts to a daily hot water consumption of 1,2 L. Including the initial filling of the coil (2 L), a total of 3,2 L of water is used for the operation. No additional losses or maintenance-related water usage have been considered in this estimation.

End of Life (C1-C4) includes:

C1-C4: The ventilation units are assumed to be disposed of in Denmark. Dismantling is performed using hand tools, and units are transported 100 km to a local recycling facility (C2). The product is further dismantled in an industrial shredder, with an average material recovery rate (C3). Residual fluff from the shredded metal is sorted and sent to landfill (C4).

Re-use, recovery and recycling potential (D) include:

The recycled metals are credited as an avoided production of primary steel, aluminium, copper, and other metal components.

Life cycle module	Scenario assumptions	Road transport
A2	Based on distances between supplier locations and Geovent factory	transport, freight, lorry 3.5-7.5 metric tons, EURO6 , RER
A4	As in c-PCR-018: From the Geovent factory to different locations in Denmark (~130 km based on yearly average).	transport, freight, lorry 3.5-7.5 metric tons, EURO6 , RER
C2	100 km to the nearest waste processing centre	transport, freight, lorry 3.5-7.5 metric tons, EURO6 , RER

LCA results

GRTU 3800+

ENVIRONMENTAL IMPACTS PER DECLARED UNIT – S1																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	2,33E+03	3,16E+01	1,03E+02	0,00E+00	5,57E+02	0,00E+00	0,00E+00	0,00E+00	5,00E+04	0,00E+00	2,71E+01	2,20E+01	6,99E+01	0,00E+00	-1,16E+03
GWP-fossil	[kg CO ₂ eq.]	2,39E+03	3,16E+01	3,52E+01	0,00E+00	5,49E+02	0,00E+00	0,00E+00	0,00E+00	4,98E+04	0,00E+00	2,71E+01	2,20E+01	5,56E+01	0,00E+00	-1,16E+03
GWP-biogenic	[kg CO ₂ eq.]	-6,75E+01	0,00E+00	6,75E+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	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	[kg CO ₂ eq.]	2,17E+00	1,21E-02	5,52E-03	0,00E+00	7,44E+00	0,00E+00	0,00E+00	0,00E+00	2,11E+02	0,00E+00	2,41E-03	8,42E-03	1,43E+01	0,00E+00	-7,20E+00
ODP	[kg CFC 11 eq.]	4,05E-05	6,25E-07	4,78E-07	0,00E+00	1,74E-04	0,00E+00	0,00E+00	0,00E+00	1,06E-03	0,00E+00	4,11E-07	4,34E-07	3,58E-07	0,00E+00	-8,70E-06
AP	[mol H ⁺ eq.]	1,49E+01	6,39E-02	1,07E-01	0,00E+00	9,68E+00	0,00E+00	0,00E+00	0,00E+00	2,99E+02	0,00E+00	9,17E-02	4,44E-02	1,84E-01	0,00E+00	-5,88E+00
EP-freshwater	[kg P eq.]	9,97E-01	2,52E-03	1,46E-03	0,00E+00	2,40E-01	0,00E+00	0,00E+00	0,00E+00	3,66E+01	0,00E+00	7,95E-04	1,75E-03	3,70E-03	0,00E+00	-4,34E-01
EP-marine	[kg N eq.]	2,16E+00	1,40E-02	4,27E-02	0,00E+00	1,46E+00	0,00E+00	0,00E+00	0,00E+00	5,38E+01	0,00E+00	3,74E-02	9,75E-03	6,66E-02	0,00E+00	-1,12E+00
EP-terrestrial	[mol N eq.]	2,93E+01	1,51E-01	4,63E-01	0,00E+00	3,78E+01	0,00E+00	0,00E+00	0,00E+00	6,48E+02	0,00E+00	4,09E-01	1,05E-01	7,12E-01	0,00E+00	-1,16E+01
POCP	[kg NMVOC eq.]	7,57E+00	1,01E-01	1,64E-01	0,00E+00	1,92E+00	0,00E+00	0,00E+00	0,00E+00	1,62E+02	0,00E+00	1,45E-01	7,04E-02	2,18E-01	0,00E+00	-4,12E+00
ADPm ¹	[kg Sb eq.]	2,02E-01	1,41E-04	3,05E-05	0,00E+00	2,53E-02	0,00E+00	0,00E+00	0,00E+00	1,57E+00	0,00E+00	1,02E-05	9,77E-05	2,62E-04	0,00E+00	-6,01E-03
ADPf ¹	[MJ]	2,93E+04	4,40E+02	3,99E+02	0,00E+00	7,27E+03	0,00E+00	0,00E+00	0,00E+00	8,01E+05	0,00E+00	3,52E+02	3,06E+02	2,77E+02	0,00E+00	-1,22E+04
WDP ¹	[m ³ world eq. deprived]	4,88E+02	2,49E+00	2,77E+00	0,00E+00	1,12E+03	0,00E+00	0,00E+00	0,00E+00	8,98E+04	0,00E+00	8,91E-01	1,73E+00	1,54E+01	0,00E+00	-6,27E+02
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential															
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.															
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

ADDITIONAL ENVIRONMENTAL IMPACTS DECLARED UNIT – S1																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	2,22E-04	1,67E-06	1,58E-06	0,00E+00	1,01E-04	0,00E+00	0,00E+00	0,00E+00	1,96E-03	0,00E+00	1,35E-06	1,16E-06	4,38E-06	0,00E+00	-1,25E-04
IRP ²	[kBq U235 eq.]	2,02E+02	8,26E-01	2,97E-01	0,00E+00	5,74E+01	0,00E+00	0,00E+00	0,00E+00	1,78E+04	0,00E+00	1,63E-01	5,74E-01	8,76E-01	0,00E+00	-7,30E+01

ETP-fw ¹	[CTUe]	3,68E+04	1,45E+02	8,17E+01	0,00E+00	1,58E+04	0,00E+00	0,00E+00	0,00E+00	3,40E+05	0,00E+00	4,98E+01	1,01E+02	7,76E+02	0,00E+00	-2,62E+04
HTP-c ¹	[CTUh]	6,04E-05	2,42E-07	1,52E-07	0,00E+00	2,04E-05	0,00E+00	0,00E+00	0,00E+00	2,32E-04	0,00E+00	1,14E-07	1,68E-07	1,41E-07	0,00E+00	-7,70E-05
HTP-nc ¹	[CTUh]	9,51E-05	2,72E-07	1,76E-07	0,00E+00	1,15E-05	0,00E+00	0,00E+00	0,00E+00	1,66E-03	0,00E+00	6,04E-08	1,89E-07	3,88E-07	0,00E+00	-2,04E-05
SQP ¹	-	1,91E+04	1,84E+02	4,37E+01	0,00E+00	3,92E+03	0,00E+00	0,00E+00	0,00E+00	1,39E+06	0,00E+00	2,51E+01	1,28E+02	1,06E+02	0,00E+00	-6,80E+03
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)															
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.															
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															
	² 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.															

RESOURCE USE PER DECLARED UNIT – S1																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	2,81E+03	1,05E+01	-6,81E+02	0,00E+00	8,07E+02	0,00E+00	0,00E+00	0,00E+00	1,23E+06	0,00E+00	2,57E+00	7,32E+00	5,68E+00	0,00E+00	-4,03E+03
PERM	[MJ]	5,85E+02	0,00E+00	6,85E+02	0,00E+00	1,40E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,44E+00	0,00E+00	0,00E+00
PERT	[MJ]	3,40E+03	1,05E+01	4,42E+00	0,00E+00	9,47E+02	0,00E+00	0,00E+00	0,00E+00	1,23E+06	0,00E+00	2,57E+00	7,32E+00	1,41E+01	0,00E+00	-4,03E+03
PENRE	[MJ]	2,72E+04	4,40E+02	3,39E+02	0,00E+00	7,25E+03	0,00E+00	0,00E+00	0,00E+00	8,01E+05	0,00E+00	3,52E+02	3,06E+02	2,29E+02	0,00E+00	-1,20E+04
PENRM	[MJ]	2,11E+03	0,00E+00	5,97E+01	0,00E+00	2,86E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,80E+01	0,00E+00	-2,10E+02
PENRT	[MJ]	2,93E+04	4,40E+02	3,99E+02	0,00E+00	7,28E+03	0,00E+00	0,00E+00	0,00E+00	8,01E+05	0,00E+00	3,52E+02	3,06E+02	2,77E+02	0,00E+00	-1,22E+04
SM	[kg]	4,79E+01	2,41E-01	1,89E-01	0,00E+00	2,69E+01	0,00E+00	0,00E+00	0,00E+00	4,54E+02	0,00E+00	1,46E-01	1,67E-01	1,54E-01	0,00E+00	-1,26E+02
RSF	[MJ]	2,04E+01	2,60E-03	8,27E-04	0,00E+00	5,76E-02	0,00E+00	0,00E+00	0,00E+00	3,08E+00	0,00E+00	3,83E-04	1,81E-03	3,81E-03	0,00E+00	-1,02E-01
NRSF	[MJ]	2,01E-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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m³]	1,51E+01	6,89E-02	4,44E-02	0,00E+00	2,62E+01	0,00E+00	0,00E+00	0,00E+00	2,93E+03	0,00E+00	2,38E-02	4,79E-02	3,69E-01	0,00E+00	-1,14E+01
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water															
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.															

WASTE CATEGORIES AND OUTPUT FLOWS PER DECLARED UNIT – S1																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	2,46E+02	6,87E-01	8,39E-01	0,00E+00	6,93E+01	0,00E+00	0,00E+00	0,00E+00	4,89E+03	0,00E+00	3,94E-01	4,78E-01	4,41E+00	0,00E+00	-3,97E+02
NHWD	[kg]	4,97E+03	1,67E+01	5,23E+01	0,00E+00	1,33E+03	0,00E+00	0,00E+00	0,00E+00	1,78E+05	0,00E+00	5,43E+00	1,16E+01	7,11E+01	0,00E+00	-3,75E+03
RWD	[kg]	1,95E-01	4,89E-05	1,94E-05	0,00E+00	3,90E-03	0,00E+00	0,00E+00	0,00E+00	7,58E-01	0,00E+00	1,13E-05	3,40E-05	5,37E-05	0,00E+00	-4,14E-03
CRU	[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	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	2,99E+00	4,07E-03	1,99E-02	0,00E+00	4,93E-01	0,00E+00	0,00E+00	0,00E+00	3,25E+02	0,00E+00	1,06E-03	2,83E-03	4,48E+01	0,00E+00	-4,97E-01
MER	[kg]	2,25E-03	1,17E-05	2,02E-05	0,00E+00	7,27E-03	0,00E+00	0,00E+00	0,00E+00	3,13E-02	0,00E+00	4,83E-06	8,13E-06	1,04E-05	0,00E+00	-2,84E-03
EEE	[MJ]	8,47E+01	1,21E-01	4,00E-02	0,00E+00	8,43E+00	0,00E+00	0,00E+00	0,00E+00	9,67E+03	0,00E+00	1,92E-02	8,38E-02	2,82E+00	0,00E+00	0,00E+00
EET	[MJ]	2,47E+01	7,45E-01	8,85E-02	0,00E+00	3,70E+01	0,00E+00	0,00E+00	0,00E+00	3,73E+02	0,00E+00	8,51E-03	5,18E-01	1,01E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy															
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,00000000000112.															

BIOGENIC CARBON CONTENT PER DECLARED UNIT – S1		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0
Biogenic carbon content in accompanying packaging	[kg C]	1,84E+01
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

GRTU 3800+ with Diffuser

ENVIRONMENTAL IMPACTS PER DECLARED UNIT – S2																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	2,58E+03	3,69E+01	1,04E+02	0,00E+00	5,57E+02	0,00E+00	0,00E+00	0,00E+00	5,00E+04	0,00E+00	2,71E+01	3,90E+01	7,29E+01	0,00E+00	-1,29E+03
GWP-fossil	[kg CO ₂ eq.]	2,67E+03	3,69E+01	3,61E+01	0,00E+00	5,49E+02	0,00E+00	0,00E+00	0,00E+00	4,98E+04	0,00E+00	2,71E+01	3,90E+01	5,86E+01	0,00E+00	-1,29E+03
GWP-biogenic	[kg CO ₂ eq.]	-6,75E+01	0,00E+00	6,75E+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	0,00E+00	0,00E+00	0,00E+00	0,00E+00

GWP-luluc	[kg CO ₂ eq.]	-1,91E+01	1,41E-02	5,54E-03	0,00E+00	7,44E+00	0,00E+00	0,00E+00	0,00E+00	2,11E+02	0,00E+00	2,41E-03	1,49E-02	1,43E+01	0,00E+00	-7,39E+00
ODP	[kg CFC 11 eq.]	4,74E-05	7,28E-07	4,78E-07	0,00E+00	1,74E-04	0,00E+00	0,00E+00	0,00E+00	1,06E-03	0,00E+00	4,11E-07	7,70E-07	3,98E-07	0,00E+00	-9,62E-06
AP	[mol H ⁺ eq.]	2,17E+01	7,45E-02	1,07E-01	0,00E+00	9,68E+00	0,00E+00	0,00E+00	0,00E+00	2,99E+02	0,00E+00	9,17E-02	7,88E-02	2,07E-01	0,00E+00	-6,42E+00
EP-freshwater	[kg P eq.]	1,10E+00	2,94E-03	1,46E-03	0,00E+00	2,40E-01	0,00E+00	0,00E+00	0,00E+00	3,66E+01	0,00E+00	7,95E-04	3,11E-03	3,81E-03	0,00E+00	-4,86E-01
EP-marine	[kg N eq.]	2,58E+00	1,64E-02	4,28E-02	0,00E+00	1,46E+00	0,00E+00	0,00E+00	0,00E+00	5,38E+01	0,00E+00	3,74E-02	1,73E-02	7,74E-02	0,00E+00	-1,25E+00
EP-terrestrial	[mol N eq.]	5,64E+01	1,77E-01	4,64E-01	0,00E+00	3,78E+01	0,00E+00	0,00E+00	0,00E+00	6,48E+02	0,00E+00	4,09E-01	1,87E-01	8,28E-01	0,00E+00	-1,29E+01
POCP	[kg NMVOC eq.]	8,51E+00	1,18E-01	1,64E-01	0,00E+00	1,92E+00	0,00E+00	0,00E+00	0,00E+00	1,62E+02	0,00E+00	1,45E-01	1,25E-01	2,53E-01	0,00E+00	-4,57E+00
ADPm ¹	[kg Sb eq.]	2,26E-01	1,64E-04	3,11E-05	0,00E+00	2,53E-02	0,00E+00	0,00E+00	0,00E+00	1,57E+00	0,00E+00	1,02E-05	1,73E-04	2,65E-04	0,00E+00	-6,77E-03
ADPf ¹	[MJ]	3,29E+04	5,13E+02	3,99E+02	0,00E+00	7,27E+03	0,00E+00	0,00E+00	0,00E+00	8,01E+05	0,00E+00	3,52E+02	5,43E+02	3,11E+02	0,00E+00	-1,36E+04
WDP ¹	[m ³ world eq. deprived]	5,93E+02	2,90E+00	2,80E+00	0,00E+00	1,12E+03	0,00E+00	0,00E+00	0,00E+00	8,98E+04	0,00E+00	8,91E-01	3,07E+00	1,56E+01	0,00E+00	-6,86E+02
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10² or 195, while 1,12E-11 is the same as 1,12*10⁻¹¹ or 0,0000000000112.															
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

ADDITIONAL ENVIRONMENTAL IMPACTS DECLARED UNIT – S2																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	2,95E-04	1,95E-06	1,59E-06	0,00E+00	1,01E-04	0,00E+00	0,00E+00	0,00E+00	1,96E-03	0,00E+00	1,35E-06	2,06E-06	5,05E-06	0,00E+00	-1,39E-04
IRP ²	[kBq U235 eq.]	2,30E+02	9,63E-01	2,98E-01	0,00E+00	5,74E+01	0,00E+00	0,00E+00	0,00E+00	1,78E+04	0,00E+00	1,63E-01	1,02E+00	9,02E-01	0,00E+00	-7,97E+01
ETP-fw ¹	[CTUe]	4,55E+04	1,69E+02	8,21E+01	0,00E+00	1,58E+04	0,00E+00	0,00E+00	0,00E+00	3,40E+05	0,00E+00	4,98E+01	1,79E+02	7,83E+02	0,00E+00	-3,01E+04
HTP-c ¹	[CTUh]	7,06E-05	2,82E-07	1,52E-07	0,00E+00	2,04E-05	0,00E+00	0,00E+00	0,00E+00	2,32E-04	0,00E+00	1,14E-07	2,98E-07	1,52E-07	0,00E+00	-8,86E-05
HTP-nc ¹	[CTUh]	1,03E-04	3,17E-07	1,78E-07	0,00E+00	1,15E-05	0,00E+00	0,00E+00	0,00E+00	1,66E-03	0,00E+00	6,04E-08	3,35E-07	3,96E-07	0,00E+00	-2,30E-05
SQP ¹	-	2,07E+04	2,15E+02	4,39E+01	0,00E+00	3,92E+03	0,00E+00	0,00E+00	0,00E+00	1,39E+06	0,00E+00	2,51E+01	2,27E+02	1,12E+02	0,00E+00	-7,66E+03
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless) The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10² or 195, while 1,12E-11 is the same as 1,12*10⁻¹¹ or 0,0000000000112.															
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

² 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.

RESOURCE USE PER DECLARED UNIT – S2

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	3,16E+03	1,23E+01	-6,81E+02	0,00E+00	8,07E+02	0,00E+00	0,00E+00	0,00E+00	1,23E+06	0,00E+00	2,57E+00	1,30E+01	6,05E+00	0,00E+00	-4,30E+03
PERM	[MJ]	5,85E+02	0,00E+00	6,85E+02	0,00E+00	1,40E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,44E+00	0,00E+00	0,00E+00
PERT	[MJ]	3,75E+03	1,23E+01	4,48E+00	0,00E+00	9,47E+02	0,00E+00	0,00E+00	0,00E+00	1,23E+06	0,00E+00	2,57E+00	1,30E+01	1,45E+01	0,00E+00	-4,30E+03
PENRE	[MJ]	3,05E+04	5,13E+02	3,28E+02	0,00E+00	7,25E+03	0,00E+00	0,00E+00	0,00E+00	8,01E+05	0,00E+00	3,52E+02	5,43E+02	2,63E+02	0,00E+00	-1,34E+04
PENRM	[MJ]	2,42E+03	0,00E+00	7,07E+01	0,00E+00	2,86E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,80E+01	0,00E+00	-2,10E+02
PENRT	[MJ]	3,29E+04	5,13E+02	3,99E+02	0,00E+00	7,28E+03	0,00E+00	0,00E+00	0,00E+00	8,01E+05	0,00E+00	3,52E+02	5,43E+02	3,11E+02	0,00E+00	-1,36E+04
SM	[kg]	5,61E+01	2,81E-01	1,91E-01	0,00E+00	2,69E+01	0,00E+00	0,00E+00	0,00E+00	4,54E+02	0,00E+00	1,46E-01	2,97E-01	1,69E-01	0,00E+00	-1,46E+02
RSF	[MJ]	2,06E+01	3,03E-03	8,33E-04	0,00E+00	5,76E-02	0,00E+00	0,00E+00	0,00E+00	3,08E+00	0,00E+00	3,83E-04	3,21E-03	3,93E-03	0,00E+00	-1,15E-01
NRSF	[MJ]	2,11E-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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m³]	1,76E+01	8,04E-02	4,47E-02	0,00E+00	2,62E+01	0,00E+00	0,00E+00	0,00E+00	2,93E+03	0,00E+00	2,38E-02	8,50E-02	3,72E-01	0,00E+00	-1,24E+01
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water															
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.															

WASTE CATEGORIES AND OUTPUT FLOWS PER DECLARED UNIT – S2

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	2,73E+02	8,01E-01	8,67E-01	0,00E+00	6,93E+01	0,00E+00	0,00E+00	0,00E+00	4,89E+03	0,00E+00	3,94E-01	8,48E-01	4,46E+00	0,00E+00	-4,42E+02
NHWD	[kg]	5,55E+03	1,94E+01	5,27E+01	0,00E+00	1,33E+03	0,00E+00	0,00E+00	0,00E+00	1,78E+05	0,00E+00	5,43E+00	2,06E+01	7,25E+01	0,00E+00	-4,26E+03
RWD	[kg]	2,09E-01	5,70E-05	1,95E-05	0,00E+00	3,90E-03	0,00E+00	0,00E+00	0,00E+00	7,58E-01	0,00E+00	1,13E-05	6,03E-05	5,54E-05	0,00E+00	-4,56E-03
CRU	[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	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	3,90E+00	4,75E-03	1,99E-02	0,00E+00	4,93E-01	0,00E+00	0,00E+00	0,00E+00	3,25E+02	0,00E+00	1,06E-03	5,02E-03	4,79E+01	0,00E+00	-5,40E-01
MER	[kg]	2,72E-03	1,36E-05	2,05E-05	0,00E+00	7,27E-03	0,00E+00	0,00E+00	0,00E+00	3,13E-02	0,00E+00	4,83E-06	1,44E-05	1,10E-05	0,00E+00	-3,26E-03
EEE	[MJ]	8,90E+01	1,41E-01	4,01E-02	0,00E+00	8,43E+00	0,00E+00	0,00E+00	0,00E+00	9,67E+03	0,00E+00	1,92E-02	1,49E-01	2,86E+00	0,00E+00	0,00E+00

EET	[MJ]	3,77E+01	8,69E-01	8,89E-02	0,00E+00	3,70E+01	0,00E+00	0,00E+00	0,00E+00	3,73E+02	0,00E+00	8,51E-03	9,19E-01	1,04E+00	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy															
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,00000000000112.															

BIOGENIC CARBON CONTENT PER DECLARED UNIT – S2		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0
Biogenic carbon content in accompanying packaging	[kg C]	1,84E+01
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

GRTU 3800+ with additional accessories

ENVIRONMENTAL IMPACTS PER DECLARED UNIT – S3																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	2,72E+03	3,33E+01	1,05E+02	0,00E+00	5,57E+02	0,00E+00	0,00E+00	0,00E+00	5,10E+04	0,00E+00	2,71E+01	3,49E+01	6,81E+01	0,00E+00	-1,29E+03
GWP-fossil	[kg CO ₂ eq.]	2,64E+03	3,33E+01	3,77E+01	0,00E+00	5,49E+02	0,00E+00	0,00E+00	0,00E+00	5,08E+04	0,00E+00	2,71E+01	3,49E+01	5,38E+01	0,00E+00	-1,28E+03
GWP-biogenic	[kg CO ₂ eq.]	-6,75E+01	0,00E+00	6,75E+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	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	[kg CO ₂ eq.]	1,50E+02	1,28E-02	4,63E-03	0,00E+00	7,44E+00	0,00E+00	0,00E+00	0,00E+00	2,16E+02	0,00E+00	2,41E-03	1,34E-02	1,43E+01	0,00E+00	-9,31E+00
ODP	[kg CFC 11 eq.]	4,21E-05	6,58E-07	4,31E-07	0,00E+00	1,74E-04	0,00E+00	0,00E+00	0,00E+00	1,09E-03	0,00E+00	4,11E-07	6,89E-07	3,34E-07	0,00E+00	-9,70E-06
AP	[mol H ⁺ eq.]	1,67E+01	6,73E-02	1,03E-01	0,00E+00	9,68E+00	0,00E+00	0,00E+00	0,00E+00	3,05E+02	0,00E+00	9,17E-02	7,05E-02	1,76E-01	0,00E+00	-6,75E+00
EP-freshwater	[kg P eq.]	1,09E+00	2,66E-03	1,28E-03	0,00E+00	2,40E-01	0,00E+00	0,00E+00	0,00E+00	3,73E+01	0,00E+00	7,95E-04	2,78E-03	3,01E-03	0,00E+00	-4,73E-01
EP-marine	[kg N eq.]	2,42E+00	1,48E-02	4,20E-02	0,00E+00	1,46E+00	0,00E+00	0,00E+00	0,00E+00	5,49E+01	0,00E+00	3,74E-02	1,55E-02	6,63E-02	0,00E+00	-1,25E+00
EP-terrestrial	[mol N eq.]	3,14E+01	1,60E-01	4,55E-01	0,00E+00	3,78E+01	0,00E+00	0,00E+00	0,00E+00	6,60E+02	0,00E+00	4,09E-01	1,67E-01	7,05E-01	0,00E+00	-1,29E+01
POCP	[kg NMVOC eq.]	8,45E+00	1,07E-01	1,57E-01	0,00E+00	1,92E+00	0,00E+00	0,00E+00	0,00E+00	1,65E+02	0,00E+00	1,45E-01	1,12E-01	2,15E-01	0,00E+00	-4,58E+00
ADPm ¹	[kg Sb eq.]	2,05E-01	1,48E-04	2,05E-05	0,00E+00	2,53E-02	0,00E+00	0,00E+00	0,00E+00	1,60E+00	0,00E+00	1,02E-05	1,55E-04	1,86E-04	0,00E+00	-6,28E-03
ADPf ¹	[MJ]	3,18E+04	4,64E+02	3,66E+02	0,00E+00	7,27E+03	0,00E+00	0,00E+00	0,00E+00	8,17E+05	0,00E+00	3,52E+02	4,86E+02	2,61E+02	0,00E+00	-1,34E+04
WDP ¹	[m ³ world eq.]	5,53E+02	2,62E+00	2,70E+00	0,00E+00	1,12E+03	0,00E+00	0,00E+00	0,00E+00	9,16E+04	0,00E+00	8,90E-01	2,75E+00	1,51E+01	0,00E+00	-7,17E+02

	deprived]															
Caption	GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential															
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.															
Disclaimer	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															

ADDITIONAL ENVIRONMENTAL IMPACTS DECLARED UNIT – S3																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	2,42E-04	1,76E-06	1,46E-06	0,00E+00	1,01E-04	0,00E+00	0,00E+00	0,00E+00	2,00E-03	0,00E+00	1,35E-06	1,84E-06	4,36E-06	0,00E+00	-1,39E-04
IRP ²	[kBq U235 eq.]	2,09E+02	8,71E-01	2,36E-01	0,00E+00	5,74E+01	0,00E+00	0,00E+00	0,00E+00	1,81E+04	0,00E+00	1,63E-01	9,12E-01	7,03E-01	0,00E+00	-8,40E+01
ETP-fw ¹	[CTUe]	3,83E+04	1,53E+02	7,20E+01	0,00E+00	1,58E+04	0,00E+00	0,00E+00	0,00E+00	3,46E+05	0,00E+00	4,98E+01	1,60E+02	7,70E+02	0,00E+00	-2,70E+04
HTP-c ¹	[CTUh]	6,28E-05	2,55E-07	1,35E-07	0,00E+00	2,04E-05	0,00E+00	0,00E+00	0,00E+00	2,37E-04	0,00E+00	1,14E-07	2,67E-07	1,28E-07	0,00E+00	-7,88E-05
HTP-nc ¹	[CTUh]	9,82E-05	2,86E-07	1,63E-07	0,00E+00	1,15E-05	0,00E+00	0,00E+00	0,00E+00	1,70E-03	0,00E+00	6,04E-08	3,00E-07	3,35E-07	0,00E+00	-2,17E-05
SQP ¹	-	1,96E+04	1,94E+02	3,01E+01	0,00E+00	3,92E+03	0,00E+00	0,00E+00	0,00E+00	1,42E+06	0,00E+00	2,51E+01	2,03E+02	9,38E+01	0,00E+00	-7,21E+03
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)															
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.															
Disclaimers	¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.															
	² 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.															

RESOURCE USE PER DECLARED UNIT – S3																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	3,07E+03	1,11E+01	-6,82E+02	0,00E+00	8,07E+02	0,00E+00	0,00E+00	0,00E+00	1,26E+06	0,00E+00	2,57E+00	1,16E+01	-2,94E+00	0,00E+00	-4,84E+03
PERM	[MJ]	5,85E+02	0,00E+00	6,85E+02	0,00E+00	1,40E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,42E+01	0,00E+00	0,00E+00
PERT	[MJ]	3,66E+03	1,11E+01	3,69E+00	0,00E+00	9,47E+02	0,00E+00	0,00E+00	0,00E+00	1,26E+06	0,00E+00	2,57E+00	1,16E+01	1,13E+01	0,00E+00	-4,84E+03
PENRE	[MJ]	2,96E+04	4,64E+02	2,44E+02	0,00E+00	7,25E+03	0,00E+00	0,00E+00	0,00E+00	8,17E+05	0,00E+00	3,52E+02	4,86E+02	2,06E+02	0,00E+00	-1,32E+04

PENRM	[MJ]	2,20E+03	0,00E+00	1,22E+02	0,00E+00	2,86E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,50E+01	0,00E+00	-2,10E+02
PENRT	[MJ]	3,18E+04	4,64E+02	3,66E+02	0,00E+00	7,28E+03	0,00E+00	0,00E+00	0,00E+00	8,17E+05	0,00E+00	3,52E+02	4,86E+02	2,62E+02	0,00E+00	-1,34E+04
SM	[kg]	5,20E+01	2,54E-01	1,74E-01	0,00E+00	2,69E+01	0,00E+00	0,00E+00	0,00E+00	4,63E+02	0,00E+00	1,46E-01	2,66E-01	1,43E-01	0,00E+00	-1,29E+02
RSF	[MJ]	2,05E+01	2,74E-03	6,39E-04	0,00E+00	5,76E-02	0,00E+00	0,00E+00	0,00E+00	3,14E+00	0,00E+00	3,82E-04	2,87E-03	3,48E-03	0,00E+00	-1,08E-01
NRSF	[MJ]	2,01E-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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m³]	1,66E+01	7,26E-02	4,01E-02	0,00E+00	2,62E+01	0,00E+00	0,00E+00	0,00E+00	2,99E+03	0,00E+00	2,38E-02	7,61E-02	3,58E-01	0,00E+00	-1,34E+01
Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water															
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.															

WASTE CATEGORIES AND OUTPUT FLOWS PER DECLARED UNIT – S3																
Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	2,97E+02	7,24E-01	8,47E-01	0,00E+00	6,93E+01	0,00E+00	0,00E+00	0,00E+00	4,98E+03	0,00E+00	3,94E-01	7,59E-01	4,19E+00	0,00E+00	-4,38E+02
NHWD	[kg]	5,44E+03	1,76E+01	5,29E+01	0,00E+00	1,33E+03	0,00E+00	0,00E+00	0,00E+00	1,82E+05	0,00E+00	5,42E+00	1,84E+01	6,48E+01	0,00E+00	-3,95E+03
RWD	[kg]	1,96E-01	5,16E-05	1,59E-05	0,00E+00	3,90E-03	0,00E+00	0,00E+00	0,00E+00	7,73E-01	0,00E+00	1,13E-05	5,40E-05	4,33E-05	0,00E+00	-4,65E-03
CRU	[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	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	3,47E+00	4,29E-03	1,96E-02	0,00E+00	4,93E-01	0,00E+00	0,00E+00	0,00E+00	3,31E+02	0,00E+00	1,06E-03	4,49E-03	3,68E+01	0,00E+00	-5,70E-01
MER	[kg]	2,41E-03	1,23E-05	1,97E-05	0,00E+00	7,27E-03	0,00E+00	0,00E+00	0,00E+00	3,20E-02	0,00E+00	4,83E-06	1,29E-05	9,05E-06	0,00E+00	-2,91E-03
EEE	[MJ]	8,52E+01	1,27E-01	3,10E-02	0,00E+00	8,43E+00	0,00E+00	0,00E+00	0,00E+00	9,87E+03	0,00E+00	1,92E-02	1,33E-01	2,37E+00	0,00E+00	0,00E+00
EET	[MJ]	2,95E+01	7,85E-01	3,26E-02	0,00E+00	3,70E+01	0,00E+00	0,00E+00	0,00E+00	3,80E+02	0,00E+00	8,50E-03	8,23E-01	8,55E-01	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy															
	The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112.															

BIOGENIC CARBON CONTENT PER DECLARED UNIT – S3		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0
Biogenic carbon content in accompanying packaging	[kg C]	1,84E+01
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Additional information

LCA interpretation

The results of the EPD refers to the functional unit of 1 piece of unit. The calculated environmental impacts show that module B6 is the largest contributor to all environmental impact categories. In particular, the electricity consumption during operational use is the process with the highest contribution, as this EPD focuses on the entire service life of the product, which is 20 years, meaning the electricity consumption in module B6 encompasses 20 years of daily use.

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit	tkm per scenario		
			S1	S2	S3
Fuel type	Diesel EURO6	-	55.43	64.62	58.60
Vehicle type	Truck	-			
Transport distance	129,77	km			

Installation of the product in the building (A5)

Scenario information	Value	Unit
Ancillary materials	Screws: 0,08 Sealant: 0,2	kg
Water use	0	m ³
Other resource use	0	kg
Energy type and consumption	Crane: 12,43 Screwdriver: 0,11	kWh
Waste materials	42 kg per scenario	kg
Transport of ancillary materials	50	km
Transport of packaging to waste processing	100	km

Reference service life

RSL information		Unit
Reference service Life	20	Years

Use (B1-B7)

B2 - Maintenance		
Maintenance process	Description or reference	Unit
Maintenance cycle	1	/year
Ancillary materials for maintenance (specify which)	Filter: 4,45kg Water: 2L Detergent: 0,02L Cotton cloth:200g	per cycle
Waste materials resulting from maintenance (specify which)	Waste filter: 4,45kg Wastewater 2,002 L Cotton cloth, 200g	Per cycle
Net freshwater consumption during maintenance	0,002	m ³ / cycle
Energy input during maintenance	0	kWh

B2 – Replacement of worn parts			Ecoinvent process
Filter	Amount		
Replacement cycle	1	/year	Assumption based on technical manual provided by Geovent
Energy input during replacement	0	kWh	Manual work

Exchange of worn parts during products life cycle	84,55	kg	Treatment of used air filter, central unit, 600 m3/h, (CH) Transforming activity
Transportation of replacement part to consumer	1613	km	The real distance from the supplier to Geovent (from Lithuania) transport, freight, lorry 3.5-7.5 metric ton, EURO6. RER
Transportation of used part to disposal facility	100	km	transport, freight, lorry 3.5-7.5 metric ton, EURO6. RER

B6 + B7 – Use of energy and water	S1	S2	S3	Unit
Ancillary materials specified by material	0	0	0	kg
Net freshwater consumption	0	0	0,0032	m ³
Wastewater treatment	0	0	0,0032	m ³
Type of energy carrier; electricity	44	44	44,88	kWh
Power output of equipment	2,2	2,2	25	kW

End of life (C1-C4)

Scenario information	Value			Unit
	S1	S2	S3	
Collected separately	385,17	455,70	407,95	kg
Collected with mixed waste (textile cloth for maintenance)	0	0	0	kg
For reuse	0	0	0	kg
For recycling	365,60	426,29	387,77	kg
For energy recovery	19,56	29,40	20,04	kg
For final disposal (landfill)	0	0	0	kg
Assumptions for scenario development	-	-	-	As appropriate

Re-use, recovery and recycling potential (D)

Electricity and heat production from incineration	S1	S2	S3
Total (MJ)	1.784	2.002	1.885
Electricity (kWh)	114	128	120
Heat (MJ)	1.374	1.542	1.451

Scenario information/Material	Treatment	Recycling/burning efficiency	S1	S2	S3	Unit
Credit for metals recycling						
Aluminium	Recycling	Aluminium recycling rate: 76%	-33,66	-33,97	-44,88	kg
Steel	Recycling	Steel recyclability rate: 100% Recycling input discount; 20%	-332,80	-383,98	-338,83	kg
Electronics	Recycling/Incineration	Incinerated with plastic	-6,00	-6,00	-6,00	kg
Zinc coating	Recycling		-8,00	-8,00	-8,00	kg
Copper	Recycling	Recycling rate: 71%	-0,09	-0,09	-0,09	kg
Nickel	Recycling	68%	-0,01	-0,01	-0,01	kg
Credit for heat and electricity production						
Cardboard	Incineration	LHV: 30 MJ/kg	-0,45	-0,45	-0,45	kg
Textile	Incineration	LHV: 33 MJ/kg	-4,31	-4,31	-4,31	kg
Wood	Incineration	LHV: 16 MJ/kg	-40	-40	-40	kg

Plastic	Incineration	LHV: 30 MJ/kg	-27,52	-31,51	-30,79	kg
Rubber	Incineration	LHV: 20 MJ/kg	-0,06	-0,06	-0,06	kg
Other	Incineration	LHV: 20 MJ/kg	-16,72	-26,57	-16,96	kg

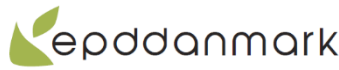
Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.

References

Publisher	 www.epddanmark.dk Template version 2024.1
Programme operator	Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	<i>Lea Rupcic LCA Specialist Sustainly ApS Borneovej 2, 2300 Copenhagen</i>
LCA software /background data	<i>LCA software: Sustainly LCIA method: EN 15804 reference package 3.1 LCA database: Ecoinvent 3.10</i>
3rd party verifier	Stefan Emil Danielsson Circonomy Consulting

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General Programme Instructions, version 2.0, spring 2020
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EN 15804

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NPCR 030 version 1.1

" Part B for ventilation components"

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ISO 14025

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ISO 14040

DS/EN ISO 14040:2008 – "Environmental management – Life cycle assessment – Principles and framework"

ISO 14044

DS/EN ISO 14044:2008 – "Environmental management – Life cycle assessment – Requirements and guidelines"