Owner: Function AS
No.:   MD-25057-EN
Issued: 18-12-2024
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3ʳᵈ PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**

FUNCTION

epddanmark

Owner of declaration
Function AS
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 FUNCTION

 epddanmark

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

Declared product(s)
The declared products include the following thermostats:

- Microtemp MTC4 hvit, svart matt and hvit matt
- ~~MCD4/OCD4 - Clock Thermostat with Dual Sensor~~
- ~~MCD5/OCD5 - Touch Thermostat~~
- Microtemp MWD5 hvit and svart matt
- Microtemp ETN5

Number of declared datasets/product variations: 5
Outlined products are not sold by Function AS

Production site
The data for the LCA are based on aggregated yearly averages for the manufacture of thermostats, assembled at the production facility of OJ Electronics A/S at Sønderborg in Denmark.

Use of Guarantees of Origin
☐ No certificates used
☒ Electricity covered by GoO
☐ Biogas covered by GoO

Declared/ functional unit
1 piece of thermostat

Year of production site data (A3)
2023

EPD version
1

Basis of calculation
This EPD is developed and verified in accordance with the European standard EN 15804+A2 and cPCR EN 50693:2019. This EPD follows additional requirements for construction products considered as Electronic or Electric Equipment.

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:

David Althoff Palm, Dalemarken AB
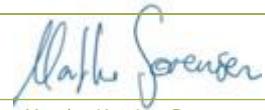
Martha Katrine Sørensen
EPD Danmark

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

The range of thermostats from Function AS is designed to provide precise temperature control and customizable heating schedules for electric underfloor heating systems. With user-friendly interfaces and advanced features, the thermostats offer effortless programming options, allowing the user to create the perfect ambiance for any space. See more on https://function.no/

The declared products are OJ Electronics A/S standard products, of which 3 are sold by Function AS. Private labels may vary with regard to included sensors, instruction manuals, packaging, and other extra accessories. The main product components of the declared products are shown in the table below.

Material	MICROTEMP MTC4	~~MCD4/OCD4~~	~~MCD5/OCD5~~	MICROTEMP MWD5	MICROTEMP ETN5 - DIN rail
	Weight% of declared product				
ABS	14	11	12	12	17
PC	11	15	15	15	0
POM	<1	<1	<1	<1	1
Rubber	0	0	0	0	1
Electronics	75	73	72	72	80
Battery	0	1	1	1	1
Sum	**100**	**100**	**100**	**100**	**100**

Product packaging:

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

Material	Weight% of packaging	Weight of packaging (g)
Plastic foil	0.3% -0.4%	0.2 - 0.3
Plastic strips	0.03% - 0.05%	0.02 - 0.03
Pallet	32% - 44%	22.0 - 34.4
Cardboard	56% - 68%	43.5 - 46.7

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of thermostats on the production site located in Denmark. Product specific data are based on product specific material composition and annual company data related to waste and energy consumption for the year 2023 collected during the reporting period in 2024.

Most background data are based on LCA for Experts MÆC database and are less than 5 years old. The used background datasets are of high quality, and the majority of the datasets are only a couple of years old. For the electronic components, background data were primarily sourced from the Ecoinvent database. However, for the printed circuit boards (PCBs), a dataset from the MLC database (LCA for Experts) was utilized due to the lack of a suitable dataset in Ecoinvent. It is important to note that the dataset used for the PCB does not account for the presence of lead, while the actual PCBs in Function AS thermostats do contain lead in compliance with regulatory exemptions. This discrepancy means that the dataset may not fully represent the technical characteristics and environmental impacts associated with the PCB in the products, potentially affecting the technical representativeness of the model for this component.

Hazardous substances

The declared products are RoHS compliant and also REACH compliant. Please note that the products contain electronic components with a content of SVHC above the threshold limit of 0,1% (w/w of the component), mainly lead in components that are not yet available with a lead content below 0,1% and are therefore compliant under exemption in RoHS. The products have been registered in the SCIP-database established under the European Waste Framework Directive - see SCIP numbers.
https://echa.europa.eu/da/scip-database

"Candidate List of Substances of Very High Concern for authorization".
(http://echa.europa.eu/candidate-list-table).

Product	SCIP number	Comment
Microtemp MTC4	d1b2989c-49b6-42d7-aa58-b6cb1f9e6d6d	-
~~MCD4/OCD4~~	c2b2aea3-db15-4861-944a-c63706c6aab4	-
~~MCD5/OCD5~~	0d1282b9-7e80-4167-b129-7468e04832ab	~~MCD5/OCD5~~ and Microtemp MWD5 are registered under same SCIP no. Since they contain same SVHC components
Microtemp MWD5	0d1282b9-7e80-4167-b129-7468e04832ab	
Microtemp ETN5	124fd030-9eea-43cb-93ce-5ecb20944709	-

Products use

Function AS thermostats offer precise control for electric underfloor heating systems. Users can set desired temperatures, and the thermostat regulates the heating elements to maintain these settings. The ~~MCD4/OCD4~~, ~~MCD5/OCD5~~, MICROTEMP MWD5 , and MICROTEMP ETN5 models feature programmable schedules. This allows users to set heating schedules that align with their daily routines, optimizing energy use and maintaining comfort levels.

The MICROTEMP MWD5 model is WiFi-enabled, providing remote access via smartphones or tablets. This enables users to adjust and monitor their heating systems from anywhere. These models also integrate with smart home systems, allowing for voice control through platforms such as Google Assistant and Amazon Alexa.

The thermostats are designed to be maintenance-free, ensuring long-term reliability and ease of use.

The   MICROTEMP MTC4, ~~MCD4/OCD4~~, ~~MCD5/OCD5~~,   and MICROTEMP MWD5 thermostats are designed to be wall-mounted in living spaces. This allows for easy access and control of the heating system. The MICROTEMP ETN5 thermostat is designed for integration into electrical panels using DIN rails. This is beneficial in commercial or large residential buildings where centralized control of the heating system is advantageous.

Function AS thermostats are suitable for both residential and commercial buildings, providing effective control of underfloor heating solutions.

They are especially useful in areas needing specific temperature management, such as bathrooms, kitchens, and other spaces where underfloor heating is advantageous.

Essential characteristics

The thermostats are covered by harmonised technical specification in the Low Voltage Directive, in the EMC Directive, in the ECO-Design Directive, in the RoHS Directive and in the Commission regulation (EU) 2015/1188 of 28 April 2015 and the (EU) 2015/863 Amending Annex II to Directive 2011/65/EU (RoHS)

Additionally, the following standards are used: EN 60730-1:2011 Automatic electrical controls for household and similar use, EN 60730-1:2016 Automatic electrical controls - Part 1: General requirements, EN 60730-2-9:2010 Automatic electrical controls for household and similar use - Part 2-9: Particular requirements for temperature sensing controls (harmonized standard), and EN IEC 60730-2-9:2019 Automatic electrical controls - Part 2-9: Particular requirements for temperature sensing controls

Furthermore, the manufacturer have an environmental certification according to ISO 14001:2015.

Declaration of performance according to EU regulation 305/2011 is available for all declared product variations.

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

https://ojelectronics.com/ or https://function.no/

Reference Service Life (RSL)

The Reference Service Life (RSL) of Function AS thermostats is determined primarily based on the LCABuild lifetime table, which provides standard service life values for various product categories. The thermostats are considered under the category of "Elektronik og svagstrøm" (electronics and low current devices), which specifies an RSL of 20 years. Consultations with major customers indicate that the thermostats often last longer than 15–20 years.

Picture of product(s)

Product ID and photo	Reference	Description
MICROTEMP MTC4 - Digital Thermostat	Reference product: MICROTEMP MTC4-1999-MHF5 MICROTEMP MTC4-1999-MHF4 MICROTEMP MTC4-1999-MHF7	Wall mounted, build-in room sensor, floor sensor comes with the product, no battery backup, 4 temperature changes per day, 1 language, LCD segment monochrome display, no galvanic insulation (security build into sensor)
MWD5 and OWD5 - WiFi Thermostat	Reference products: MWD5-1999-MHP1 OWD5-1999-MHP8	Wall mounted, build-in room sensor, floor sensor comes with the product, has battery backup, 12 languages, LCD graphic color touch display, has galvanic insulation in power supply, build-in wifi, can be controlled via app or voice control
MICROTEMP ETN5 - All-in-One DIN Rail Thermostat with Schedule	Reference product: MICROTEMP ETN5-1991-OJR1	Mounting in DIN-rail in electrical panel, no build-in sensors, can be connected to 2 sensors, 1 sensor comes with the product, build-in 6 event programme, battery backup, LCD display, galvanic insulation in power supply

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to the following thermostats by Function AS.

Name	MICROTEMP MTC4	~~MCD4/OCD4~~	~~MCD5/OCD5~~	MICROTEMP MWD5	MICROTEMP ETN5	Unit
Declared unit	1	~~1~~	~~1~~	1	1	Pc
Mass	192.0	~~152.4~~	~~149.2~~	150.2	169.2	g/pc
Conversion factor to 1 kg	5.208	~~6.562~~	~~6.702~~	6.658	5.910	kg

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804 A2:2019 and cPCR EN50693:2019.

Energy modelling principles

Foreground system:

The thermostat products are produced using energy covered by GO in Denmark, and this is modelled with the specific power source: Wind power from Denmark. Remaining energy processes are modelled using country specific residual grid mixes.

Information about the energy mix in the foreground system:

Flowdiagram

Dataset	EF	Unit
Residual grid mix, DK, 2022	505.03	g CO_2e/kWh
Residual grid mix, RER, 2022	503.92	g CO_2e/kWh
Electricity from wind power, DK, 2020	9.70	g CO_2e/kWh
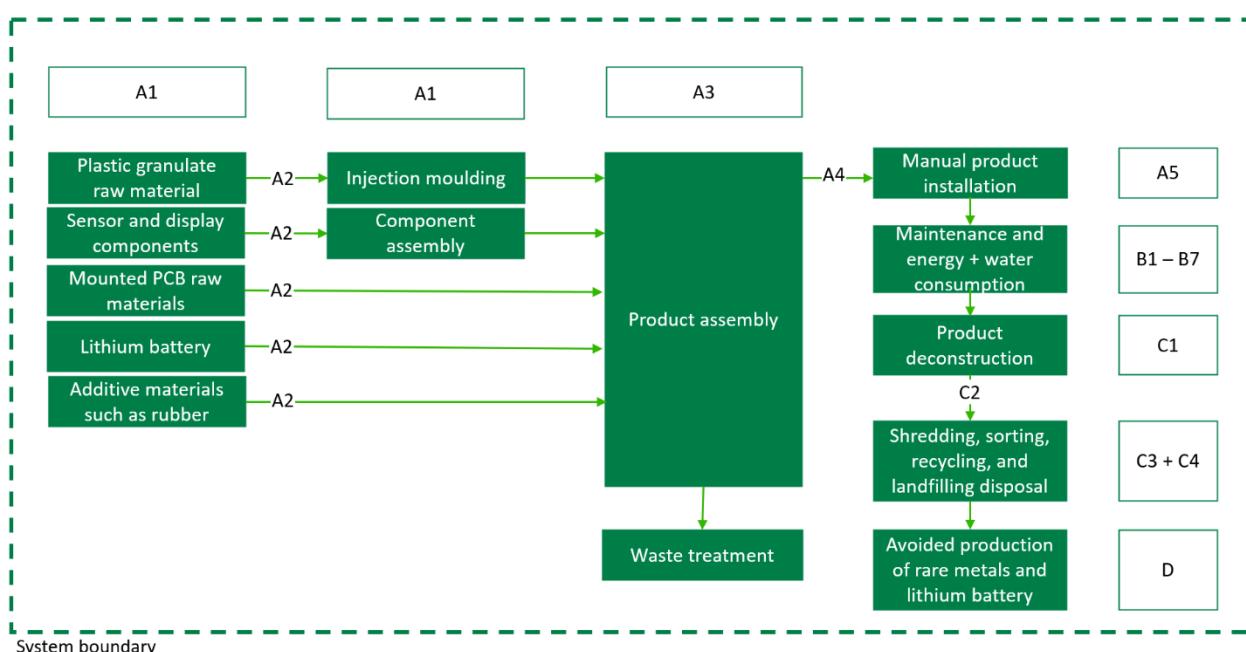
Background system:

Upstream processes are modelled using electric grid mix from the specific country. Downstream processes are modelled using the European residual grid mix, as the thermostat products are sold in Europe and thus also waste handled in Europe.

System boundary

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

The general rules for the exclusion of inputs and outputs follows 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.

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, products 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 aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

The production of the thermostats is equal for each respective model. The thermostats are assembled manually after receiving the semi-finished products by sub-manufactures, stored at EMS and transported to the manufacturer. The conveyor belt runs on electricity. All products then undergo quality inspection and are led to the packaging station, where they are placed in multiple cardboard boxes and packed on pallets with foil wrapped around. The amount of product in packaging depends on the weight of each product and order. For this model a standard average scenario have been used, with a unit box per thermostat, then 50 unit boxes are packed into a larger cardboard box, which is placed on pallets, that each contain between 640 and 1000 thermostats. The whole pallets is wrapped in plastic film and fastened with PET straps.

Construction process stage (A4-A5) includes:

The transport from the manufacturer to the construction site is included with a distance of 854 km based on an estimated weighted average distance to three of the largest thermostat customers from the manufacturer that is based in Europe.

The installation phase is purely manual labour. There are thus no additional ancillary materials used for installation as the production of screws, wall anchors, and connectors are already included in the product in module A3.

No materials from the product are wasted during installation, however the sales packaging is assumed to be incinerated with energy recovery. The benefits are credited in module D. The waste is sent to a waste treatment facility with a transport distance of 50 km.

Use stage (B1-B7) includes:

No environmental aspects and impacts are connected to the normal use of the products, and thus no environmental impacts are included in module B1.

The thermostats do not require any maintenance, repairs, replacement or refurbishment throughout their reference service life. Consequently, module B2–B5 incur no environmental impacts associated with repair activities.

Each thermostat consumes energy during the use stage of the product's life cycle. The energy consumption in this phase is associated with the operation of the thermostats. Based on the RSL, the energy consumption of the products over a 20-year period is calculated considering both standby and active energy usage, along with the proportion of time each mode is used.

No water, excipients or ancillary materials are consumed or required during the normal use phase of the thermostats.

End of Life (C1-C4) includes:

The product is assumed installed and demolished in Europe. The scenario used to model the end-of-life, is also based on the current typical/ average treatment of electronical components in Europe 2023.

Initially, the thermostats are detached from the system manually and while there might be use of screwdrivers and other basic tools for

disassembly, these have negligible effect as the time used is so short. Thus, no environmental impacts are associated with deconstruction.

Once removed, the thermostats are transported 50 km to a local recycling facility. Here the thermostats are sent to a metal shredding facility as part of the waste processing stage (Module C3). In accordance with the European Waste Electrical and Electronic Equipment (WEEE) Directive, implemented in the Danish Executive Order on the Marketing of Electrical and Electronic Equipment and the Management of Waste from Such Equipment (The Electronic Waste Order), equipment classified under Category 6 (small IT and telecommunication equipment) must meet the following minimum targets: 55% recycling and 75% recovery.

Thus, after shredding, 55% of the thermostats' material content is recovered and sent for material recycling. This includes valuable metals that can be processed and reused in manufacturing new products. These materials reach an "end-of-waste" state, meaning they are considered fully recovered and can substitute primary raw materials in the market.

The remaining 45% of materials, which cannot be recycled, are disposed of in landfills as fluff (Module C4) with a transport distance of 50 km.

The fluff includes both plastic and electronic components not suitable for- og lost in the recycling process.

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

Any declared benefits and loads from net flows leaving the product system that have not been allocated as co-products and that have passed the end-of-waste state are included in module D.

The benefits from recycling and energy recovery are calculated using current average substitution processes. For this purpose, we utilize a dataset called "electronic scrap" from the Ecoinvent database. This dataset represents the average environmental burdens and credits associated with processing mixed electronic waste. A recovery percentage of 75% is assumed according to the European Waste Electrical and Electronic Equipment (WEEE) Directive

The generated energy from incineration of sales packaging waste in A5 is assigned to module D. Electricity generated from waste incineration is credited for with the specific residual grid mix for Europe, while thermal heat is credited for as natural gas for Europe. There is no avoided impact of electricity production and/or thermal energy recovery from landfill gas.

LCA results

These are the LCA results for the five different Function AS thermostat products declared in this EPD.

Below are the LCA results for the **MICROTEMP MTC4** per piece.

ENVIRONMENTAL IMPACTS PER PC. MICROTEMP MTC4												
Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO_2 eq.]	1,47E+01	1,97E-02	1,08E-01	0,00E+00	3,06E+00	0,00E+00	0,00E+00	8,55E-04	8,27E-03	7,81E-04	1,33E-01
GWP-fossil	[kg CO_2 eq.]	1,47E+01	1,93E-02	2,20E-03	0,00E+00	3,03E+00	0,00E+00	0,00E+00	8,38E-04	8,20E-03	7,82E-04	1,33E-01
GWP-biogenic	[kg CO_2 eq.]	-8,47E-02	4,61E-05	1,06E-01	0,00E+00	2,72E-02	0,00E+00	0,00E+00	2,00E-06	7,22E-05	0,00E+00	-5,00E-05
GWP-luluc	[kg CO_2 eq.]	1,66E-02	3,25E-04	4,38E-06	0,00E+00	4,60E-04	0,00E+00	0,00E+00	1,41E-05	5,01E-06	4,66E-06	2,07E-05
ODP	[kg CFC 11 eq.]	5,18E-08	2,85E-15	8,93E-15	0,00E+00	6,87E-11	0,00E+00	0,00E+00	1,24E-16	1,81E-13	2,12E-15	2,98E-10
AP	[mol H^+ eq.]	4,35E-01	3,00E-05	1,82E-05	0,00E+00	5,85E-03	0,00E+00	0,00E+00	1,30E-06	1,58E-05	5,54E-06	6,91E-05
EP-freshwater	[kg P eq.]	4,86E-03	8,25E-08	3,39E-09	0,00E+00	1,26E-05	0,00E+00	0,00E+00	3,58E-09	3,40E-08	9,99E-09	2,69E-06
EP-marine	[kg N eq.]	2,50E-02	1,15E-05	6,69E-06	0,00E+00	1,46E-03	0,00E+00	0,00E+00	4,98E-07	3,98E-06	1,42E-06	3,52E-05
EP-terrestrial	[mol N eq.]	2,82E-01	1,35E-04	8,34E-05	0,00E+00	1,53E-02	0,00E+00	0,00E+00	5,85E-06	4,18E-05	1,57E-05	3,06E-04
POCP	[kg NMVOC eq.]	9,05E-02	2,98E-05	1,77E-05	0,00E+00	3,87E-03	0,00E+00	0,00E+00	1,29E-06	1,05E-05	4,35E-06	8,75E-05
ADPm[1]	[kg Sb eq.]	2,28E-03	1,68E-09	1,12E-10	0,00E+00	5,67E-07	0,00E+00	0,00E+00	7,31E-11	1,51E-09	5,07E-11	2,55E-08
ADPf[1]	[MJ]	2,22E+02	2,55E-01	2,27E-02	0,00E+00	6,36E+01	0,00E+00	0,00E+00	1,11E-02	1,70E-01	1,04E-02	-2,13E-01
WDP[1]	[m^3 world eq. deprived]	3,21E+00	2,99E-04	8,06E-03	0,00E+00	8,37E-01	0,00E+00	0,00E+00	1,30E-05	2,21E-03	8,97E-05	1,22E-02
Caption	GWP-total = Globale 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 = Acidifcation; 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 PER PC. MICROTEMP MTC4												
Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	1,35E-06	3,27E-10	1,03E-10	0,00E+00	4,89E-08	0,00E+00	0,00E+00	1,42E-11	1,33E-10	6,93E-11	6,06E-10
IRP[2]	[kBq U235 eq.]	1,08E+00	6,73E-05	1,59E-04	0,00E+00	1,67E+00	0,00E+00	0,00E+00	2,92E-06	4,40E-03	1,27E-05	-4,07E-03
ETP-fw[1]	[CTUe]	1,47E+02	1,89E-01	1,08E-02	0,00E+00	1,84E+01	0,00E+00	0,00E+00	8,21E-03	5,07E-02	7,26E-03	1,53E+00
HTP-c[1]	[CTUh]	6,23E-09	3,82E-12	5,68E-13	0,00E+00	1,03E-09	0,00E+00	0,00E+00	1,66E-13	2,77E-12	1,45E-13	1,63E-11
HTP-nc[1]	[CTUh]	2,67E-07	1,71E-10	1,31E-11	0,00E+00	1,59E-08	0,00E+00	0,00E+00	7,44E-12	4,37E-11	5,48E-12	2,71E-09
SQP[1]	-	1,56E+02	1,25E-01	7,41E-03	0,00E+00	2,68E+01	0,00E+00	0,00E+00	5,44E-03	7,19E-02	2,83E-03	1,95E-02
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 PC. MICROTEMP MTC4

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	5,14E+01	2,19E-02	3,24E+00	0,00E+00	4,59E+01	0,00E+00	0,00E+00	9,52E-04	1,21E-01	1,80E-03	-1,18E-01
PERM	[MJ]	1,62E+00	0,00E+00	-1,62E+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
PERT	[MJ]	5,30E+01	2,19E-02	5,70E-03	0,00E+00	4,59E+01	0,00E+00	0,00E+00	9,52E-04	1,21E-01	1,80E-03	-1,18E-01
PENRE	[MJ]	2,31E+02	2,55E-01	4,37E-02	0,00E+00	6,36E+01	0,00E+00	0,00E+00	1,11E-02	1,70E-01	1,04E-02	-2,13E-01
PENRM	[MJ]	1,65E+00	0,00E+00	-1,05E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	2,23E+02	2,55E-01	2,27E-02	0,00E+00	6,36E+01	0,00E+00	0,00E+00	1,11E-02	1,70E-01	1,04E-02	-2,13E-01
SM	[kg]	2,90E-02	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
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
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
FW	[m^3]	8,74E-02	2,44E-05	1,90E-04	0,00E+00	3,52E-02	0,00E+00	0,00E+00	1,06E-06	9,28E-05	2,74E-06	2,41E-04
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 PC. MICROTEMP MTC4

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	2,32E-06	9,75E-12	1,15E-11	0,00E+00	9,19E-08	0,00E+00	0,00E+00	4,23E-13	2,42E-10	2,58E-12	-2,52E-10
NHWD	[kg]	2,82E-01	4,16E-05	2,06E-03	0,00E+00	5,24E-02	0,00E+00	0,00E+00	1,81E-06	1,38E-04	5,18E-02	-1,93E-04
RWD	[kg]	5,01E-03	4,64E-07	1,01E-06	0,00E+00	1,02E-02	0,00E+00	0,00E+00	2,01E-08	2,67E-05	1,10E-07	-2,76E-05
CRU	[kg]	1,57E-03	0,00E+00	2,11E-02	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]	9,30E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,40E-01	0,00E+00	0,00E+00
MER	[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
EEE	[MJ]	2,32E-02	0,00E+00	9,88E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	9,17E-02	0,00E+00	1,79E-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
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 PC. MICROTEMP MTC4

Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0,00E+00
Biogenic carbon content in accompanying packaging	[kg C]	2,89E-02
Note		1 kg biogenic carbon is equivalent to 44/12 kg of CO_2

Below are the LCA results for the ~~MCD4/OCD4~~ per piece.

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
ENVIRONMENTAL IMPACTS PER PC. ~~MCD4/OCD4~~												
GWP-total	[kg CO_2 eq.]	1,39E+01	1,68E-02	1,11E-01	0,00E+00	1,73E+00	0,00E+00	0,00E+00	6,78E-04	6,57E-03	6,32E-04	9,93E-02
GWP-fossil	[kg CO_2 eq.]	1,40E+01	1,65E-02	2,27E-03	0,00E+00	1,72E+00	0,00E+00	0,00E+00	6,65E-04	6,51E-03	6,32E-04	9,93E-02
GWP-biogenic	[kg CO_2 eq.]	-8,79E-02	3,94E-05	1,09E-01	0,00E+00	1,54E-02	0,00E+00	0,00E+00	1,59E-06	5,73E-05	0,00E+00	-6,24E-05
GWP-luluc	[kg CO_2 eq.]	1,45E-02	2,78E-04	4,57E-06	0,00E+00	2,61E-04	0,00E+00	0,00E+00	1,12E-05	4,03E-06	3,77E-06	1,58E-05
ODP	[kg CFC 11 eq.]	3,90E-08	2,43E-15	9,32E-15	0,00E+00	3,89E-11	0,00E+00	0,00E+00	9,81E-17	1,43E-13	1,71E-15	2,35E-10
AP	[mol H^+ eq.]	2,58E-01	2,57E-05	1,91E-05	0,00E+00	3,32E-03	0,00E+00	0,00E+00	1,04E-06	1,25E-05	4,48E-06	4,89E-05
EP-freshwater	[kg P eq.]	2,87E-03	7,06E-08	3,54E-09	0,00E+00	7,12E-06	0,00E+00	0,00E+00	2,84E-09	2,70E-08	8,09E-09	2,11E-06
EP-marine	[kg N eq.]	2,19E-02	9,80E-06	6,99E-06	0,00E+00	8,28E-04	0,00E+00	0,00E+00	3,95E-07	3,16E-06	1,15E-06	2,60E-05
EP-terrestrial	[mol N eq.]	2,12E-01	1,15E-04	8,71E-05	0,00E+00	8,67E-03	0,00E+00	0,00E+00	4,64E-06	3,32E-05	1,27E-05	2,23E-04
POCP	[kg NMVOC eq.]	6,50E-02	2,55E-05	1,85E-05	0,00E+00	2,19E-03	0,00E+00	0,00E+00	1,03E-06	8,35E-06	3,52E-06	6,42E-05
ADPm[1]	[kg Sb eq.]	1,93E-03	1,44E-09	1,16E-10	0,00E+00	3,21E-07	0,00E+00	0,00E+00	5,80E-11	1,20E-09	4,10E-11	1,96E-08
ADPf[1]	[MJ]	2,06E+02	2,18E-01	2,37E-02	0,00E+00	3,60E+01	0,00E+00	0,00E+00	8,77E-03	1,35E-01	8,38E-03	-2,62E-01
WDP[1]	[m^3 world eq. deprived]	2,71E+00	2,56E-04	8,42E-03	0,00E+00	4,75E-01	0,00E+00	0,00E+00	1,03E-05	1,75E-03	7,25E-05	9,01E-03
Caption	GWP-total = Globale 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 = Acidifcation; 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.											

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
ADDITIONAL ENVIRONMENTAL IMPACTS PER PC. ~~MCD4/OCD4~~												
PM	[Disease incidence]	1,15E-06	2,79E-10	1,07E-10	0,00E+00	2,77E-08	0,00E+00	0,00E+00	1,13E-11	1,05E-10	5,60E-11	4,32E-10
IRP[2]	[kBq U235 eq.]	9,81E-01	5,75E-05	1,66E-04	0,00E+00	9,48E-01	0,00E+00	0,00E+00	2,32E-06	3,49E-03	1,03E-05	-4,37E-03
ETP-fw[1]	[CTUe]	1,16E+02	1,62E-01	1,13E-02	0,00E+00	1,04E+01	0,00E+00	0,00E+00	6,51E-03	4,02E-02	5,87E-03	1,19E+00
HTP-c[1]	[CTUh]	5,40E-09	3,26E-12	5,93E-13	0,00E+00	5,86E-10	0,00E+00	0,00E+00	1,32E-13	2,20E-12	1,18E-13	1,17E-11
HTP-nc[1]	[CTUh]	2,84E-07	1,46E-10	1,37E-11	0,00E+00	8,99E-09	0,00E+00	0,00E+00	5,90E-12	3,47E-11	4,43E-12	2,11E-09
SQP[1]	-	1,30E+02	1,07E-01	7,73E-03	0,00E+00	1,52E+01	0,00E+00	0,00E+00	4,32E-03	5,71E-02	2,29E-03	-3,30E-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 PC. ~~MCD4/OCD4~~

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	4,64E+01	1,87E-02	3,35E+00	0,00E+00	2,60E+01	0,00E+00	0,00E+00	7,56E-04	9,61E-02	1,46E-03	-1,25E-01
PERM	[MJ]	1,67E+00	0,00E+00	-1,67E+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
PERT	[MJ]	4,81E+01	1,87E-02	5,96E-03	0,00E+00	2,60E+01	0,00E+00	0,00E+00	7,56E-04	9,61E-02	1,46E-03	-1,25E-01
PENRE	[MJ]	2,15E+02	2,18E-01	4,47E-02	0,00E+00	3,60E+01	0,00E+00	0,00E+00	8,77E-03	1,35E-01	8,38E-03	-2,62E-01
PENRM	[MJ]	1,29E+00	0,00E+00	-1,05E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	2,07E+02	2,18E-01	2,37E-02	0,00E+00	3,60E+01	0,00E+00	0,00E+00	8,77E-03	1,35E-01	8,38E-03	-2,62E-01
SM	[kg]	2,74E-02	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
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
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
FW	[m^3]	7,70E-02	2,09E-05	1,98E-04	0,00E+00	1,99E-02	0,00E+00	0,00E+00	8,42E-07	7,36E-05	2,21E-06	1,65E-04
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: $1,95 \cdot 10^2$ or 195, while 1,12E-11 is the same as $1,12 \cdot 10^{-11}$ or 0,0000000000112.										

WASTE CATEGORIES AND OUTPUT FLOWS PER PC. ~~MCD4/OCD4~~

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	2,28E-06	8,33E-12	1,21E-11	0,00E+00	5,21E-08	0,00E+00	0,00E+00	3,36E-13	1,92E-10	2,09E-12	-2,63E-10
NHWD	[kg]	3,09E-01	3,55E-05	2,15E-03	0,00E+00	2,97E-02	0,00E+00	0,00E+00	1,43E-06	1,10E-04	4,19E-02	-2,02E-04
RWD	[kg]	5,58E-03	3,96E-07	1,06E-06	0,00E+00	5,76E-03	0,00E+00	0,00E+00	1,60E-08	2,12E-05	8,85E-08	-2,88E-05
CRU	[kg]	1,25E-03	0,00E+00	2,11E-02	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]	7,38E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,11E-01	0,00E+00	0,00E+00
MER	[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
EEE	[MJ]	1,84E-02	0,00E+00	1,03E-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
EET	[MJ]	7,28E-02	0,00E+00	1,87E-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
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: $1,95 \cdot 10^2$ or 195, while 1,12E-11 is the same as $1,12 \cdot 10^{-11}$ or 0,0000000000112.										

BIOGENIC CARBON CONTENT PER PC. ~~MCD4/OCD4~~

Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0,00E+00
Biogenic carbon content in accompanying packaging	[kg C]	2,98E-02
Note		1 kg biogenic carbon is equivalent to 44/12 kg of CO_2

Below are the LCA results for the ~~MCD5/OCD5~~ per piece

ENVIRONMENTAL IMPACTS PER PC. ~~MCD5/OCD5~~												
Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO_2 eq.]	1,33E+01	1,66E-02	1,11E-01	0,00E+00	3,26E+00	0,00E+00	0,00E+00	6,64E-04	6,44E-03	6,50E-04	9,44E-02
GWP-fossil	[kg CO_2 eq.]	1,34E+01	1,63E-02	2,27E-03	0,00E+00	3,23E+00	0,00E+00	0,00E+00	6,52E-04	6,38E-03	6,50E-04	9,45E-02
GWP-biogenic	[kg CO_2 eq.]	-8,93E-02	3,89E-05	1,09E-01	0,00E+00	2,91E-02	0,00E+00	0,00E+00	1,56E-06	5,61E-05	0,00E+00	-6,37E-05
GWP-luluc	[kg CO_2 eq.]	1,35E-02	2,74E-04	4,57E-06	0,00E+00	4,91E-04	0,00E+00	0,00E+00	1,10E-05	4,10E-06	3,88E-06	1,51E-05
ODP	[kg CFC 11 eq.]	3,54E-08	2,40E-15	9,32E-15	0,00E+00	7,32E-11	0,00E+00	0,00E+00	9,61E-17	1,40E-13	1,76E-15	2,26E-10
AP	[mol H^+ eq.]	2,54E-01	2,53E-05	1,91E-05	0,00E+00	6,25E-03	0,00E+00	0,00E+00	1,01E-06	1,23E-05	4,61E-06	4,60E-05
EP-freshwater	[kg P eq.]	2,73E-03	6,95E-08	3,54E-09	0,00E+00	1,34E-05	0,00E+00	0,00E+00	2,78E-09	2,65E-08	8,35E-09	2,03E-06
EP-marine	[kg N eq.]	2,08E-02	9,66E-06	6,99E-06	0,00E+00	1,56E-03	0,00E+00	0,00E+00	3,87E-07	3,10E-06	1,18E-06	2,47E-05
EP-terrestrial	[mol N eq.]	2,08E-01	1,14E-04	8,71E-05	0,00E+00	1,63E-02	0,00E+00	0,00E+00	4,55E-06	3,26E-05	1,30E-05	2,11E-04
POCP	[kg NMVOC eq.]	6,37E-02	2,51E-05	1,85E-05	0,00E+00	4,12E-03	0,00E+00	0,00E+00	1,01E-06	8,19E-06	3,62E-06	6,08E-05
ADPm[1]	[kg Sb eq.]	1,88E-03	1,42E-09	1,16E-10	0,00E+00	6,05E-07	0,00E+00	0,00E+00	5,68E-11	1,18E-09	4,22E-11	1,88E-08
ADPf[1]	[MJ]	1,98E+02	2,15E-01	2,37E-02	0,00E+00	6,78E+01	0,00E+00	0,00E+00	8,59E-03	1,32E-01	8,62E-03	-2,67E-01
WDP[1]	[m^3 world eq. deprived]	2,61E+00	2,52E-04	8,42E-03	0,00E+00	8,93E-01	0,00E+00	0,00E+00	1,01E-05	1,71E-03	7,46E-05	8,56E-03
Caption	GWP-total = Globale 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 = Acidifcation; 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 PER PC. ~~MCD5/OCD5~~												
Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	1,12E-06	2,75E-10	1,07E-10	0,00E+00	5,22E-08	0,00E+00	0,00E+00	1,10E-11	1,03E-10	5,76E-11	4,07E-10
IRP[2]	[kBq U235 eq.]	9,27E-01	5,67E-05	1,66E-04	0,00E+00	1,79E+00	0,00E+00	0,00E+00	2,27E-06	3,42E-03	1,06E-05	-4,39E-03
ETP-fw[1]	[CTUe]	1,12E+02	1,59E-01	1,13E-02	0,00E+00	1,97E+01	0,00E+00	0,00E+00	6,38E-03	3,95E-02	6,04E-03	1,14E+00
HTP-c[1]	[CTUh]	5,08E-09	3,22E-12	5,93E-13	0,00E+00	1,10E-09	0,00E+00	0,00E+00	1,29E-13	2,15E-12	1,21E-13	1,11E-11
HTP-nc[1]	[CTUh]	2,59E-07	1,44E-10	1,37E-11	0,00E+00	1,69E-08	0,00E+00	0,00E+00	5,78E-12	3,41E-11	4,56E-12	2,02E-09
SQP[1]	-	1,26E+02	1,06E-01	7,73E-03	0,00E+00	2,86E+01	0,00E+00	0,00E+00	4,23E-03	5,60E-02	2,35E-03	-6,20E-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 PC. ~~MCD5/OCD5~~

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	4,48E+01	1,85E-02	3,35E+00	0,00E+00	4,90E+01	0,00E+00	0,00E+00	7,40E-04	9,41E-02	1,50E-03	-1,25E-01
PERM	[MJ]	1,67E+00	0,00E+00	-1,67E+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
PERT	[MJ]	4,64E+01	1,85E-02	5,96E-03	0,00E+00	4,90E+01	0,00E+00	0,00E+00	7,40E-04	9,41E-02	1,50E-03	-1,25E-01
PENRE	[MJ]	2,07E+02	2,15E-01	4,47E-02	0,00E+00	6,78E+01	0,00E+00	0,00E+00	8,59E-03	1,32E-01	8,62E-03	-2,67E-01
PENRM	[MJ]	1,34E+00	0,00E+00	-1,05E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,99E+02	2,15E-01	2,37E-02	0,00E+00	6,78E+01	0,00E+00	0,00E+00	8,59E-03	1,32E-01	8,62E-03	-2,67E-01
SM	[kg]	2,73E-02	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
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
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
FW	[m³]	7,42E-02	2,06E-05	1,98E-04	0,00E+00	3,75E-02	0,00E+00	0,00E+00	8,24E-07	7,21E-05	2,28E-06	1,55E-04
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 PC. ~~MCD5/OCD5~~

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	2,24E-06	8,21E-12	1,21E-11	0,00E+00	9,80E-08	0,00E+00	0,00E+00	3,29E-13	1,88E-10	2,15E-12	-2,63E-10
NHWD	[kg]	2,99E-01	3,50E-05	2,15E-03	0,00E+00	5,59E-02	0,00E+00	0,00E+00	1,40E-06	1,08E-04	4,31E-02	-2,02E-04
RWD	[kg]	5,40E-03	3,91E-07	1,06E-06	0,00E+00	1,08E-02	0,00E+00	0,00E+00	1,56E-08	2,08E-05	9,11E-08	-2,88E-05
CRU	[kg]	1,22E-03	0,00E+00	2,11E-02	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]	7,23E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,06E-01	0,00E+00	0,00E+00
MER	[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
EEE	[MJ]	1,81E-02	0,00E+00	1,03E-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
EET	[MJ]	7,12E-02	0,00E+00	1,87E-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
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 PC. ~~MCD5/OCD5~~

Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0,00E+00
Biogenic carbon content in accompanying packaging	[kg C]	2,98E-02
Note		1 kg biogenic carbon is equivalent to 44/12 kg of CO_2

Below are the LCA results for the **MICROTEMP MWD5** per piece.

ENVIRONMENTAL IMPACTS PER PC. MICROTEMP MWD5												
Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
GWP-total	[kg CO_2 eq.]	1,35E+01	1,67E-02	1,11E-01	0,00E+00	4,03E+00	0,00E+00	0,00E+00	6,68E-04	6,48E-03	6,50E-04	9,55E-02
GWP-fossil	[kg CO_2 eq.]	1,36E+01	1,63E-02	2,27E-03	0,00E+00	3,99E+00	0,00E+00	0,00E+00	6,56E-04	6,42E-03	6,51E-04	9,56E-02
GWP-biogenic	[kg CO_2 eq.]	-8,91E-02	3,91E-05	1,09E-01	0,00E+00	3,59E-02	0,00E+00	0,00E+00	1,57E-06	5,65E-05	0,00E+00	-6,34E-05
GWP-luluc	[kg CO_2 eq.]	1,37E-02	2,75E-04	4,57E-06	0,00E+00	6,06E-04	0,00E+00	0,00E+00	1,10E-05	4,11E-06	3,88E-06	1,53E-05
ODP	[kg CFC 11 eq.]	3,54E-08	2,41E-15	9,32E-15	0,00E+00	9,04E-11	0,00E+00	0,00E+00	9,67E-17	1,41E-13	1,76E-15	2,28E-10
AP	[mol H^+ eq.]	2,55E-01	2,54E-05	1,91E-05	0,00E+00	7,71E-03	0,00E+00	0,00E+00	1,02E-06	1,23E-05	4,61E-06	4,67E-05
EP-freshwater	[kg P eq.]	2,73E-03	6,99E-08	3,54E-09	0,00E+00	1,65E-05	0,00E+00	0,00E+00	2,80E-09	2,67E-08	8,35E-09	2,05E-06
EP-marine	[kg N eq.]	2,10E-02	9,70E-06	6,99E-06	0,00E+00	1,92E-03	0,00E+00	0,00E+00	3,89E-07	3,12E-06	1,18E-06	2,50E-05
EP-terrestrial	[mol N eq.]	2,10E-01	1,14E-04	8,71E-05	0,00E+00	2,01E-02	0,00E+00	0,00E+00	4,58E-06	3,28E-05	1,30E-05	2,14E-04
POCP	[kg NMVOC eq.]	6,43E-02	2,52E-05	1,85E-05	0,00E+00	5,09E-03	0,00E+00	0,00E+00	1,01E-06	8,24E-06	3,62E-06	6,16E-05
ADPm[1]	[kg Sb eq.]	1,90E-03	1,42E-09	1,16E-10	0,00E+00	7,47E-07	0,00E+00	0,00E+00	5,72E-11	1,18E-09	4,22E-11	1,90E-08
ADPf[1]	[MJ]	2,00E+02	2,15E-01	2,37E-02	0,00E+00	8,37E+01	0,00E+00	0,00E+00	8,65E-03	1,33E-01	8,63E-03	-2,66E-01
WDP[1]	[m^3 world eq. deprived]	2,63E+00	2,53E-04	8,42E-03	0,00E+00	1,10E+00	0,00E+00	0,00E+00	1,02E-05	1,73E-03	7,47E-05	8,66E-03
Caption	GWP-total = Globale 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 = Acidifcation; 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 PER PC. MICROTEMP MWD5												
Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
PM	[Disease incidence]	1,13E-06	2,76E-10	1,07E-10	0,00E+00	6,44E-08	0,00E+00	0,00E+00	1,11E-11	1,04E-10	5,77E-11	4,13E-10
IRP[2]	[kBq U235 eq.]	9,36E-01	5,69E-05	1,66E-04	0,00E+00	2,20E+00	0,00E+00	0,00E+00	2,28E-06	3,44E-03	1,06E-05	-4,38E-03
ETP-fw[1]	[CTUe]	1,13E+02	1,60E-01	1,13E-02	0,00E+00	2,43E+01	0,00E+00	0,00E+00	6,42E-03	3,97E-02	6,05E-03	1,16E+00
HTP-c[1]	[CTUh]	5,13E-09	3,23E-12	5,93E-13	0,00E+00	1,36E-09	0,00E+00	0,00E+00	1,30E-13	2,17E-12	1,21E-13	1,12E-11
HTP-nc[1]	[CTUh]	2,61E-07	1,45E-10	1,37E-11	0,00E+00	2,09E-08	0,00E+00	0,00E+00	5,82E-12	3,43E-11	4,56E-12	2,04E-09
SQP[1]	-	1,28E+02	1,06E-01	7,73E-03	0,00E+00	3,53E+01	0,00E+00	0,00E+00	4,25E-03	5,63E-02	2,35E-03	-5,56E-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 PC. MICROTEMP MWD5

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	4,54E+01	1,86E-02	3,35E+00	0,00E+00	6,05E+01	0,00E+00	0,00E+00	7,45E-04	9,47E-02	1,50E-03	-1,25E-01
PERM	[MJ]	1,67E+00	0,00E+00	-1,67E+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
PERT	[MJ]	4,71E+01	1,86E-02	5,96E-03	0,00E+00	6,05E+01	0,00E+00	0,00E+00	7,45E-04	9,47E-02	1,50E-03	-1,25E-01
PENRE	[MJ]	2,09E+02	2,15E-01	4,47E-02	0,00E+00	8,37E+01	0,00E+00	0,00E+00	8,65E-03	1,33E-01	8,63E-03	-2,66E-01
PENRM	[MJ]	1,34E+00	0,00E+00	-1,05E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	2,01E+02	2,15E-01	2,37E-02	0,00E+00	8,37E+01	0,00E+00	0,00E+00	8,65E-03	1,33E-01	8,63E-03	-2,66E-01
SM	[kg]	2,73E-02	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
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
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
FW	[m³]	7,51E-02	2,07E-05	1,98E-04	0,00E+00	4,63E-02	0,00E+00	0,00E+00	8,30E-07	7,26E-05	2,28E-06	1,57E-04
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 PC. MICROTEMP MWD5

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	2,27E-06	8,25E-12	1,21E-11	0,00E+00	1,21E-07	0,00E+00	0,00E+00	3,31E-13	1,89E-10	2,15E-12	-2,63E-10
NHWD	[kg]	3,04E-01	3,52E-05	2,15E-03	0,00E+00	6,90E-02	0,00E+00	0,00E+00	1,41E-06	1,08E-04	4,31E-02	-2,02E-04
RWD	[kg]	5,49E-03	3,93E-07	1,06E-06	0,00E+00	1,34E-02	0,00E+00	0,00E+00	1,58E-08	2,09E-05	9,12E-08	-2,88E-05
CRU	[kg]	1,23E-03	0,00E+00	2,11E-02	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]	7,28E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,07E-01	0,00E+00	0,00E+00
MER	[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
EEE	[MJ]	1,82E-02	0,00E+00	1,03E-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
EET	[MJ]	7,17E-02	0,00E+00	1,87E-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
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 PC. MICROTEMP MWD5

Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0,00E+00
Biogenic carbon content in accompanying packaging	[kg C]	2,98E-02
Note		1 kg biogenic carbon is equivalent to 44/12 kg of CO_2

Below are the LCA results for the **MICROTEMP ETN5 - DIN rail** per piece.

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
					ENVIRONMENTAL IMPACTS PER PC. MICROTEMP ETN5 - DIN rail							
GWP-total	[kg CO_2 eq.]	1,77E+01	1,88E-02	1,26E-01	0,00E+00	1,73E+00	0,00E+00	0,00E+00	7,53E-04	7,25E-03	5,39E-04	1,25E-01
GWP-fossil	[kg CO_2 eq.]	1,79E+01	1,85E-02	2,45E-03	0,00E+00	1,72E+00	0,00E+00	0,00E+00	7,39E-04	7,18E-03	5,39E-04	1,26E-01
GWP-biogenic	[kg CO_2 eq.]	-9,70E-02	4,41E-05	1,24E-01	0,00E+00	1,54E-02	0,00E+00	0,00E+00	1,77E-06	6,35E-05	0,00E+00	-5,10E-05
GWP-luluc	[kg CO_2 eq.]	1,74E-02	3,10E-06	4,33E-06	0,00E+00	2,61E-04	0,00E+00	0,00E+00	1,24E-05	3,69E-06	3,21E-06	1,96E-05
ODP	[kg CFC 11 eq.]	3,90E-08	2,72E-15	8,85E-15	0,00E+00	3,89E-11	0,00E+00	0,00E+00	1,09E-16	1,59E-13	1,46E-15	2,84E-10
AP	[mol H^+ eq.]	2,89E-01	2,87E-05	1,79E-05	0,00E+00	3,32E-03	0,00E+00	0,00E+00	1,15E-06	1,38E-05	3,82E-06	6,49E-05
EP-freshwater	[kg P eq.]	2,88E-03	7,89E-08	3,35E-09	0,00E+00	7,12E-06	0,00E+00	0,00E+00	3,16E-09	2,98E-08	6,77E-09	2,56E-06
EP-marine	[kg N eq.]	2,59E-02	1,10E-05	6,56E-06	0,00E+00	8,28E-04	0,00E+00	0,00E+00	4,39E-07	3,48E-06	9,81E-07	3,32E-05
EP-terrestrial	[mol N eq.]	2,55E-01	1,29E-04	8,19E-05	0,00E+00	8,67E-03	0,00E+00	0,00E+00	5,16E-06	3,65E-05	1,08E-05	2,89E-04
POCP	[kg NMVOC eq.]	7,71E-02	2,85E-05	1,74E-05	0,00E+00	2,19E-03	0,00E+00	0,00E+00	1,14E-06	9,20E-06	3,00E-06	8,26E-05
ADPm[1]	[kg Sb eq.]	2,50E-03	1,61E-09	1,10E-10	0,00E+00	3,21E-07	0,00E+00	0,00E+00	6,44E-11	1,33E-09	3,50E-11	2,42E-08
ADPf[1]	[MJ]	2,60E+02	2,43E-01	2,25E-02	0,00E+00	3,60E+01	0,00E+00	0,00E+00	9,74E-03	1,49E-01	7,15E-03	-2,17E-01
WDP[1]	[m^3 world eq. deprived]	3,41E+00	2,86E-04	7,97E-03	0,00E+00	4,75E-01	0,00E+00	0,00E+00	1,15E-05	1,94E-03	6,19E-05	1,15E-02
Caption	GWP-total = Globale 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 = Acidifcation; 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.											

Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
					ADDITIONAL ENVIRONMENTAL IMPACTS PER PC. MICROTEMP ETN5 - DIN rail							
PM	[Disease incidence]	1,46E-06	3,12E-10	1,01E-10	0,00E+00	2,77E-08	0,00E+00	0,00E+00	1,25E-11	1,16E-10	4,78E-11	5,70E-10
IRP[2]	[kBq U235 eq.]	1,20E+00	6,43E-05	1,57E-04	0,00E+00	9,48E-01	0,00E+00	0,00E+00	2,57E-06	3,88E-03	8,79E-06	-4,05E-03
ETP-fw[1]	[CTUe]	1,38E+02	1,81E-01	1,07E-02	0,00E+00	1,04E+01	0,00E+00	0,00E+00	7,23E-03	4,42E-02	5,00E-03	1,46E+00
HTP-c[1]	[CTUh]	6,37E-09	3,65E-12	5,67E-13	0,00E+00	5,86E-10	0,00E+00	0,00E+00	1,46E-13	2,43E-12	1,00E-13	1,53E-11
HTP-nc[1]	[CTUh]	3,31E-07	1,64E-10	1,36E-11	0,00E+00	8,99E-09	0,00E+00	0,00E+00	6,55E-12	3,82E-11	3,78E-12	2,58E-09
SQP[1]	-	1,50E+02	1,20E-01	7,32E-03	0,00E+00	1,52E+01	0,00E+00	0,00E+00	4,79E-03	6,31E-02	1,95E-03	1,57E-02
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.											

FUNCTION

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RESOURCE USE PER PC. MICROTEMP ETN5 - DIN rail											
Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	5,57E+01	2,10E-02	3,61E+00	0,00E+00	2,60E+01	0,00E+00	0,00E+00	8,39E-04	1,07E-01	1,24E-03	-1,18E-01
PERM	[MJ]	1,80E+00	0,00E+00	-1,80E+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
PERT	[MJ]	5,75E+01	2,10E-02	5,65E-02	0,00E+00	2,60E+01	0,00E+00	0,00E+00	8,39E-04	1,07E-01	1,24E-03	-1,18E-01
PENRE	[MJ]	2,70E+02	2,43E-01	5,55E-02	0,00E+00	3,60E+01	0,00E+00	0,00E+00	9,74E-03	1,49E-01	7,15E-03	-2,17E-01
PENRM	[MJ]	1,21E+00	0,00E+00	-1,65E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	2,62E+02	2,43E-01	2,25E-02	0,00E+00	3,60E+01	0,00E+00	0,00E+00	9,74E-03	1,49E-01	7,15E-03	-2,17E-01
SM	[kg]	4,00E-02	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
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
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
FW	[m³]	9,83E-02	2,33E-05	1,88E-04	0,00E+00	1,99E-02	0,00E+00	0,00E+00	9,35E-07	8,17E-05	1,89E-06	2,26E-04
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 PC. MICROTEMP ETN5 - DIN rail											
Parameter	Unit	A1-A3	A4	A5	B1-B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	3,31E-06	9,32E-12	1,14E-11	0,00E+00	5,21E-08	0,00E+00	0,00E+00	3,73E-13	2,13E-10	1,78E-12	-2,50E-10
NHWD	[kg]	4,24E-01	3,97E-05	2,05E-03	0,00E+00	2,97E-02	0,00E+00	0,00E+00	1,59E-06	1,22E-04	3,58E-02	-1,92E-04
RWD	[kg]	7,70E-03	4,43E-07	1,00E-06	0,00E+00	5,76E-03	0,00E+00	0,00E+00	1,77E-08	2,36E-05	7,55E-08	-2,73E-05
CRU	[kg]	1,38E-03	0,00E+00	3,30E-02	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]	8,19E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,33E-01	0,00E+00	0,00E+00
MER	[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
EEE	[MJ]	2,05E-02	0,00E+00	9,78E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	[MJ]	8,08E-02	0,00E+00	1,77E-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
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 PC. MICROTEMP ETN5 - DIN rail		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0,00E+00
Biogenic carbon content in accompanying packaging	[kg C]	3,38E-02
Note		1 kg biogenic carbon is equivalent to 44/12 kg of CO_2

Additional information

LCA interpretation

The results show that the production of PCB and other electronic components (A1) are the dominating process in most of the environmental impact categories. This stems especially from the rare metal content that is costly to produce and energy intensive to extract.

For the biogenic global warming potential impact category, the impact from A1, A3, and A5 is related to the production and waste handling of cardboard and wooden pallets for both the ingoing and outgoing packaging of the products, which contain biogenic carbon.

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Value	Unit
Fuel type	Diesel	-
Vehicle type	Truck, Euro 6, 26 - 28t gross weight / 18.4t payload capacity	-
Transport distance	854	km
Capacity utilisation (including empty runs)	55	%
Gross density of products transported	Not relevant	kg/m³
Capacity utilisation volume factor	0.61	-

Installation of the product in the building (A5)

Scenario information	Value	Unit
Ancillary materials	0	kg
Water use	0	m³
Other resource use	0	kg
Energy type and consumption	0	kWh
Waste materials: Cardboard	0.043 - 0.047	kg
Waste materials: Plastic	0.0002 - 0.0003	kg
Waste materials: Pallet	0.002 -0.003	kg
Output materials	0	kg
Direct emissions to air, soil or water	0	kg

Reference service life

RSL information		Unit
Reference service Life	20	Years
Declared product properties		Technical specifications and guidance can be obtained from direct contact to Function AS
Design application parameters		
Assumed quality of work		
Outdoor environment		
Indoor environment		
Usage conditions		
Maintenance		

Use (B1-B7)

Scenario information	MICROTEMP MTC4	MCD4/OCD4	MCD5/OCD5	MICROTEMP MWD5	MICROTEMP ETN5 - DIN rail	Unit
B1 – Use						
B2 - Maintenance						
Maintenance process	None required	None required	None required	None required	None required	-
Maintenance cycle	0	0	0	0	0	/year
Ancillary materials for maintenance (specify which)	0	0	0	0	0	kg/cycle
Waste materials resulting from maintenance (specify which)	0	0	0	0	0	kg
Net freshwater consumption during maintenance	0	0	0	0	0	m³
Energy input during maintenance	0	0	0	0	0	kWh
B3 – Repair						
Repair process	None required	None required	None required	None required	None required	-

Inspection process	None required	None required	None required	None required	None required	-
Repair cycle	0	0	0	0	0	/year
Ancillary materials (specify which)	0	0	0	0	0	kg/cycle
Waste materials (specify which)	0	0	0	0	0	kg
Net freshwater consumption during repair	0	0	0	0	0	m^3
Energy input during repair	0	0	0	0	0	kg/cycle
B4 – Replacement						
Replacement cycle	0	0	0	0	0	/year
Energy input during replacement	0	0	0	0	0	kWh
Exchange of worn parts during products life cycle	0	0	0	0	0	kg
B5 - Refurbishment						
Refurbishment process	None required	None required	None required	None required	None required	
Refurbishment cycle	0	0	0	0	0	/year
Energy input during refurbishment	0	0	0	0	0	kWh
Material input for refurbishment (specify which)	0	0	0	0	0	kg/cycle
Waste materials resulting from refurbishment	0	0	0	0	0	kg
Further assumptions for scenario development	-	-	-	-	-	As appropriate
B6 + B7 – Use of energy and water						
Ancillary materials specified by material	0	0	0	0	0	kg
Net freshwater consumption	0	0	0	0	0	m^3
Type of energy carrier (electricity)	131.4	74.5	140.2	173.0	74.5	kWh/RSL
Power output of equipment	0	0.5	1.0	1.15	0.5	W
Characteristic performance	The performance for each product varies. For more information visit https://function.no/ or https://ojelectronics.com/					
Further assumptions for scenario development	The energy consumption is based of 75% standby time and 25% active time					

End of life (C1-C4)

Scenario information	MICROTEMP MTC4	MCD4/OCD4	MCD5/OCD5	MICROTEMP MWD5	MICROTEMP ETN5 - DIN rail	Unit
Collected separately	192.0	152.4	149.2	150.2	169.2	g
Collected with mixed waste	0.0	0.0	0.0	0.0	0.0	g
For reuse	0.0	0.0	0.0	0.0	0.0	g
For recycling	78.7	62.0	59.6	60.1	74.9	g
For energy recovery	0.0	0.0	0.0	0.0	0.0	g
For final disposal	113.3	90.4	89.6	90.1	94.3	g
Assumptions for scenario development	Whole thermostats are sent to a shredding metal facility where 55% of the thermostats are recycled and 75% is recovered and credited after recycling. The remaining materials are landfilled.					

Re-use, recovery and recycling potential (D)

Scenario information/Materiel	MICROTEMP MTC4	MCD4/OCD4	MCD5/OCD5	MICROTEMP MWD5	MICROTEMP ETN5 - DIN rail	Unit
Electronic parts	59.029	46.530	44.674	45.086	56.183	g
Electrical energy	0.097	0.101	0.101	0.101	0.095	MJ
Thermal energy	0.176	0.184	0.184	0.184	0.172	MJ

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	![epddanmark logo] www.epddanmark.dk Template version 2024.1
Programme operator	Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
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LCA software /background data	Sphera LCA for experts version 10.8.0.14, 2023 including MLC database professional core v.2023.2 https://sphera.com/ Ecoinvent v3.10 Life-Cycle Assessment database https://ecoinvent.org/database-login/
3rd party verifier	David Althoff Palm Dalemarken AB david@dalemarken.dk

General programme instructions
General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804
DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental
product declarations – Core rules for the product category of construction products"

EN 15942
DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations –
Communication format business-to-business"

ISO 14025
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– Principles and procedures"

ISO 14040
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ISO 14044
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