EPD®
THE INTERNATIONAL EPD® SYSTEM

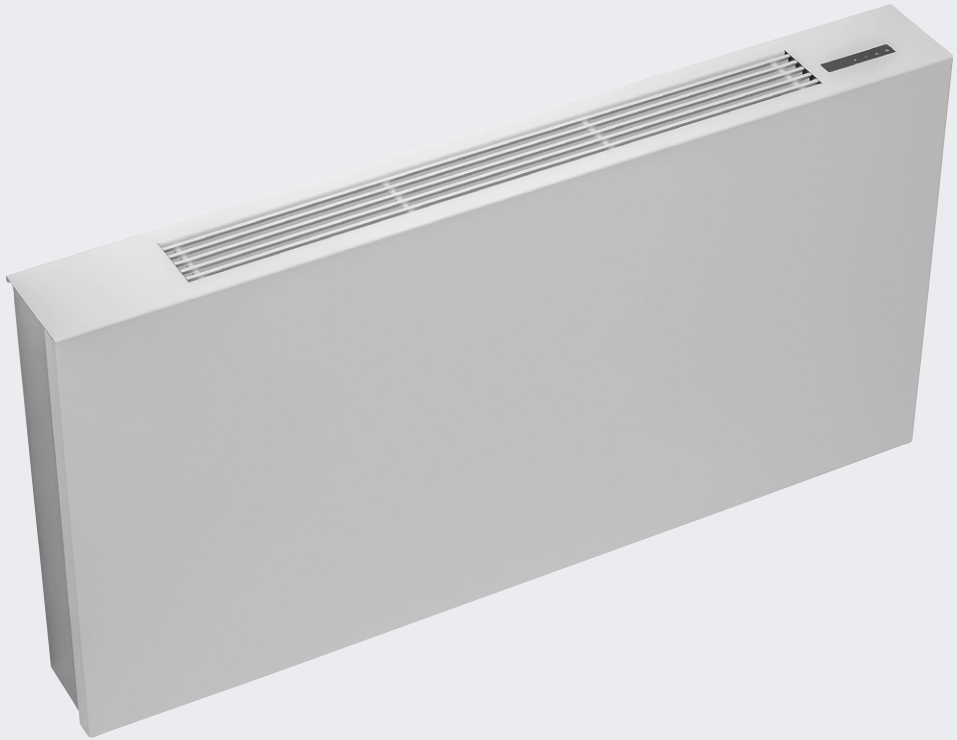
ECO PLATFORM EPD VERIFIED

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019/AC:2021

PowerKon LT - size 3

Manufactured by Kampmann GmbH & Co. KG



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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

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EPD Information

Programme information
How to read this EPD?

Programme Information

CEN standard EN 15804 serves as the core Product Category Rules (PCR)

Product Category Rules (PCR):

PCR 2019:14 Construction products, version 1.3.3, Construction EN 15804:2012+A2:2019/AC:2021 Sustainability of Construction Works

UN CPC Code: 44824
Air heaters and hot air distributors, not electrically heated, incorporating a motor-driven fan or blower, of iron or steel

PCR review was conducted by: The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile

EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

EPD verification by individual verifier

Third party individual verifier: Matt Fishwick, Fishwick Environmental

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes x No

LCA practitioners

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Kampmann GmbH & Co. KG has the sole ownership, liability, and responsibility for this EPD.

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How to read this EPD?

An Environmental Product Declaration (EPD) is an ISO Type III Environmental Declaration based on the ISO 14025 standard. An EPD transparently reports the environmental performance of products or services from a lifecycle perspective. The preparation of an EPD includes different stages, from acquiring raw materials to the end of life of the final product/service. EPDs are based on international standards and consider the entire value chain. Additionally, EPD is a third-party verified document. This EPD includes several sections described below.

1. General and Program Information

The first part of an EPD has information about the name of the manufacturer and product/service and other general information such as the validity and expiration dates of the document, the name of the program operator, geographical scope, etc. The second page states the standards followed and gives information about the program operator, third-party verifier, etc. The followed Product Category Rule (PCR) is indicated on the second page.

2. Company and Product/Service Information

Information about the company and the investigated product is given in this section. It summarizes the characteristics of the product provided by the manufacturer. It also includes information about the product such as product composition and packaging.

3. LCA Information

LCA information is one of the most important parts of the EPD as it describes the functional/declared unit, time representativeness of the study, database(s) and LCA software, along with system boundaries.

The table presented in this part has columns for each stage in the life cycle. The considered stages are marked 'X' whereas the ones that are not considered are labeled as 'NR'. Not all EPDs consider the full life cycle assessment for a product's entire life stages. The 'System Boundary' page is also the place where one can find detailed information about the stages and the assumptions made.

4. LCA Results

The results of the Life Cycle Assessment analysis are presented in table format. The first column in each table indicates the name of the impact category and their measurement units are presented in the second column. These tables show an amount at each life cycle stage to see the impact of different indicators on different stages. Each impact can be understood as what is released through the production of the declared unit of the material—in this case, 1 unit of PowerKon LT – size 3. The benefits of reuse/recycling of the declared product is reflected in this section.

The first impact in the table is global warming potential (GWP), which shows how much CO_2 is released at each stage. Other impacts include eutrophication potential, acidification potential, ozone layer depletion, land use related impacts, etc. The second table provides results for resource use and the third table is about the waste produced during the production. The fourth and final table shows the results for the GWP-GHG indicator, which is almost equivalent to the GWP-Total indicator mentioned previously. The only difference is that this indicator excludes the biogenic carbon content by following a certain methodology.

About

About the Kampmann Group
About PowerKon LT - size 3

About the Kampmann Group

The whole is more than the sum of its parts. The Kampmann Group shows why.

Kampmann GmbH & Co. KG develops, produces and sells high-quality, customised systems for heating, cooling and ventilating buildings. Kampmann has set itself the goal of creating a feel-good climate in cooperation with its customers and partners. For this reason, the company's employees work for a good climate, for innovations, for sustainability and for cooperation with customers and partners in a spirit of partnership. In terms of sustainability, the goal for our products is to operate as efficient as possible, have a long service life, be versatile and be made of recyclable materials. The company is certified according to DIN EN 9001 and DIN EN ISO 50001.

The company's main site is located in Lingen (DE). In addition, the company has a production site in Łęczyca (PL). The product groups include trench units, fan coils, unit heaters, door air curtains, decentralised ventilation units and air diffusers. The areas of application are, for example, office buildings, commercial and industrial buildings, hotels, retail chains, sales buildings and multi functional halls.

About PowerKon LT

Heat pump-based heaters for the efficient low-temperature heating and cooling of existing and new buildings.

A heat pump is essential for the contemporary heating of existing as well as new buildings. Low system temperatures are crucial for the efficiency of the heat pump. Under these conditions, PowerKon LT units provide for heating and cooling with maximum comfort. The fan coil can be used in existing and new residential and commercial buildings. Existing heaters in buildings can be replaced with PowerKon LT units with little installation work involved and thus produce sufficient heat output at low system temperatures. Also in new buildings, the PowerKon LT can heat up a room within a few minutes and therefore can meet the demand in rooms where a fast response is required. Additionally, using wet cooling in summer can help to air-condition rooms.

The heat pump-based heater blends perfectly into any space, thanks to its visually contemporary and slimline design. As the air intake opening is located on the underside of the product, the visible side of the PowerKon LT is minimalist and attractive. Its shape also ensures simple inspection and cleaning. The use of expanded polypropylene (EPP) ensures an optimum air flow, resulting in maximum air volumes at low sound pressure levels. EPP is also a sustainable material as it is 100% recyclable.

PowerKon LT

The heat outputs were determined in accordance with DIN EN 16430 “Fan-assisted radiators, convectors and trench convectors” and the cooling outputs in accordance with DIN EN 1397:2022 “Heat exchangers - Hydronic room fan coil units - Test procedures for establishing the performance”.

Fan coils are very often used in acoustically sensitive areas. The units have therefore been optimised in terms of sound emissions.

The acoustic data was recorded in accordance with the provisions of DIN EN 16583 by DIN EN ISO 3744 and DIN EN ISO 3741 in the Kampmann GmbH & Co. KG laboratories.

Kampmann GmbH & Co. KG produces the fan coil PowerKon LT in three different sizes. This EPD is specific for PowerKon LT - size 3*. The product can operate in different switching stages. The environmental performance of different configurations was investigated, and the results of this study are provided for the use at maximum switching stage. By disclosing the environmental performance of this reference product, the other product configurations are covered. Heat and cooling outputs of the product are shown in the table below.

PowerKon LT - size 3	
Heat output [W]	2850
Cooling output [W]	2485

Product Composition

Required materials for the product and its packaging are shown in the table below with the weight percentages.

Material	**Weight (%)**	**Post-consumer material weight- %**	**Biogenic material kg C / kg**
Steel	55.2	19.89	0
Aluminium	16.4	0	0
Copper	6.84	0	0
Expanded polypropylene (EPP)	5.25	0	0
Polyethylene (PE)	3.75	0	0
Powder coating	2.48	0	0
Brass	2.18	0	0
Polyvinyl chloride (PVC)	1.87	0	0
Polypropylene (PP)	1.49	0	0
Power supply unit (PSU)	0.915	0	0
Printed circuit board (PCB)	0.910	0	0
Others (ABS, tin, EPDM, other plastics etc.)	1.0	0	0
Stainless steel	0.761	0	0
Gunmetal	0.607	0	0
Polyamid	0.394	0	0
Packaging material			
Paperboard	100	0	7.74E-01

This EPD follows additional requirements for construction products considered as electronic or electric equipment.

*EPDs for the other sizes are available separately.

System Boundary

System Boundary

A1 - Raw Material

This stage includes raw materials extraction and pre-treatment processes before production. Main materials used in the product are steel, aluminium, copper and various types of plastics. Environmental impacts of these materials are considered in this stage.

A2 - Raw Material Transport

This stage is relevant for the delivery of raw materials to the production plant and within the plant. Highway transport is the dominant mean of transport at this stage. Transport routes and distances are supplier-specific and provided by the manufacturer.

A3 - Manufacturing

The following production steps are included: production of the required sheet metal parts in the sheet metal prefabrication, final assembly of the sheet metal parts and the other components of the product, testing of products according to the quality management system DIN EN ISO 9001 and packing of the products for the final shipment.

A4 - Transport to Site

This stage is relevant for the delivery of final product to the intended markets and customers. Highway, seaway and airway transportation are involved in this stage. The transport routes and distances are supplier-specific and provided by the manufacturer.

A5 - Installation

The PowerKon LT is installed by drilling four holes in the wall and then assembling and hanging up the product with four screws, four fender washers and four dowels per whole product. The screws are fixed by a screwdriver. There is no energy used.

B2 - Maintenance

The recommended maintenance cycle for the product is cleaning it four times per year. During the cleaning, the filter is vacuum cleaned (approximately 1 minute per product). Per year, this results in 4 minutes of cleaning with a vacuum cleaner. In addition, common cleaning agent of approximately 10 ml (0.01 l) is used per product per year. Thus, the impact of vacuuming and cleaning agent use are considered, and their impacts are represented by the declared unit.

System Boundary

B3 - Repair
The only repair of the product, which can be necessary during the life cycle, is the repairing of minor optical damages with a bit of paint. The material use for the repairing is approximately 30 ml of paint in 5 years, which results in 6 ml (0,006 l) per year.

B4 - Replacement of Parts
According to the manufacturer, the fan and valves have to be replaced every 10 years, the filters every 5 years and the PCB every 15 years. Thus, these impacts based on the material level are analysed and represented by the declared unit.

B6 - Energy Use
Considering the optimum working conditions of the product for heating demands and product's service life (20 years), product's energy use is determined. German market grid mix is considered. Thus, energy use-related impacts are represented by the declared unit. Annually, 2000 heating and 1000 cooling hours are considered. Power consumption for PowerKon LT - size 1 is considered as 34.8 W at maximum switching stage (fan power) of the product.

C1 - De-construction
This stage includes the impacts during the dismantling of PowerKon LT from the building. It is assumed that no energy and additional material are needed for the dismantling of the product.

C2 - Waste Transport
This stage includes the transportation of discarded products to the waste processing/disposal area. 50 km distance by trucks is assumed.

C3 - Waste Processing
According to the JRC report, Annex C V.2.1, end-of-life coefficients for plastics and metals are determined. Metals are mostly assumed recycled after accounting the losses. According to the type of plastic materials, their end-of-life fate is determined and modelled.

C4 - Disposal
Impact of any material that do not go to recycling scheme are included at this stage.

D - Future reuse, recycling and energy recovery potentials
Metals that are recycled are assumed to substitutethe use of virgin metals. In addition, the benefits of heat recovery from the incineration of plastics are included.

LCA Information

LCA Information

Declared Unit
1 unit of PowerKon LT - size 3 at 45°C flow temperature, 40°C return temperature, 20°C room air temperature for heating and 7°C flow temperature, 12°C return temperature, 27°C inlet air temperature, 48% relative humidity for cooling.

Conversion factor:
Product weight per stated declared unit is 22.08 kg. Thus, a mass (kg) conversion factor of 0.045 should be used.

System Boundary
Cradle to gate with options, modules C1–C4, module D and with optional modules (A4, A5, B).

Cut-Off Rules
The criteria for exclusion were set so that individual input flows less than 1% of the total, with a cumulative limit of less than 5%, could be omitted. This was contingent upon confirming that these excluded flows did not significantly alter the reported data, with "significant" defined as affecting the total by less than 5%.

REACH Regulation
No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

Background Data
For all LCA modelling and calculation, ecoinvent database (v3.9.1), cut-off and SimaPro (v9.5) LCA software were used. Characterization factors of EN 15804 reference package based on EF 3.1 are utilized. Impact of infrastructure and capital goods are excluded from the analysis.

LCA Modelling, Calculation and Data Quality
The results of the LCA with the indicators as per EPD requirements are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while freshwater use is calculated with selected inventory flows in SimaPro according to the PCR. There are no co-product allocations within the LCA study underlying this EPD. The regional energy datasets were used for all energy calculations. For use phase energy calculations, environmental impacts are calculated for one year of operation and Germany grid mix is used.

Period Under Review
The data used for LCA study concerns the year 2022.

Source of Electricity
The modeled electricity data for the manufacturing of Powerkon LT is taken from ecoinvent 3.9.1 database which has carbon density of 0.693 kg CO_2 eq. / kWh for medium voltage residual mix electricity production. The selected electricity data consists of 50.8% electricity production from hard coal, 25.8% natural gas, 21.9% nuclear, 1.2% oil and around 0.3 % from various other sources.

Allocations
Energy consumption and raw material transportation were weighted according to 2022 production figures. In addition, hazardous and non-hazardous waste amounts were also allocated from the total waste generation in 2022. For end of life allocation, Annex C version 2.1 (May 2020) of JRC report is utilized to determine the final fate (recycling, landfilling, incineration etc.) of materials and their percentages.

Assumptions
Upstream and downstream road transportation are assumed to be carried out with Euro6 motor vehicles with a size class of > 32 metric tonnes where distances acquired through Google Maps. In addition, 50 km distance for the waste transport at C2 stage is assumed.

LCA Information

	Product Stage			Construction Process Stage		Use Stage							End of Life Stage				Benefits and Loads
	Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction / Demolition	Transport	Waste Processing	Disposal	Future reuse, recycling or energy recovery potentials
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules Declared	X	X	X	X	X	ND	X	X	X	ND	X	ND	X	X	X	X	X
Geography	GLO	GLO	DE	GLO	GLO	-	DE	DE	DE	-	DE	-	GLO	GLO	GLO	GLO	GLO
Specific Data Used	*13.2%					-	-	-	-	-	-	-	-	-	-	-	-
Variation - Products	0%					-	-	-	-	-	-	-	-	-	-	-	-
Variation - Sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

(X = Module included, ND = Not declared, DE = Germany, GLO = Global)

*Transportation and manufacturing-related activities are considered as specific data according to PCR 2019:14 v.1.3.3.

LCA Results

LCA results for a declared unit of *"1 unit of PowerKon LT - size 3 at 45°C flow temperature, 40°C return temperature, 20°C room air temperature for heating and 7°C flow temperature, 12°C return temperature, 27°C inlet air temperature, 48% relative humidity for cooling"* are provided in tables below.

Core environmental impact indicators (Mandatory)	Unit	A1-A3	A4	A5	B2	B3	B4	B6	C1	C2	C3	C4	D
GWP - Fossil	kg CO_2 eq.	1.07E+02	3.90E+00	1.95E-01	5.24E-02	3.08E-02	1.61E+00	4.85E+01	0.00E+00	1.11E-01	3.06E+00	2.91E+00	-3.59E+01
GWP - Biogenic	kg CO_2 eq.	-2.13E-01	6.42E-04	5.40E-01	2.11E-04	3.70E-05	4.00E-03	7.25E-01	0.00E+00	3.70E-05	2.75E-04	2.04E-03	-9.24E-01
GWP - Luluc	kg CO_2 eq.	7.29E-01	7.40E-04	1.10E-04	2.41E-03	8.28E-03	2.93E-03	8.05E-02	0.00E+00	5.39E-05	1.94E-04	6.35E-03	-4.35E-01
GWP - Total	kg CO_2 eq.	1.08E+02	3.90E+00	7.35E-01	5.50E-02	3.91E-02	1.62E+00	4.93E+01	0.00E+00	1.11E-01	3.06E+00	2.92E+00	-3.73E+01
ODP	kg CFC-11 eq.	2.62E-06	6.79E-08	2.07E-09	3.05E-09	1.03E-09	4.50E-08	4.46E-07	0.00E+00	2.51E-09	5.74E-08	3.51E-08	-9.83E-07
AP	mol H+ eq.	1.71E+00	1.68E-02	7.71E-04	3.32E-04	2.37E-04	3.23E-02	1.06E-01	0.00E+00	2.74E-04	9.61E-04	1.96E-01	-2.92E-01
EP - Freshwater	kg P eq.	1.10E-02	1.37E-05	1.13E-05	4.39E-06	1.85E-06	2.40E-04	7.45E-03	0.00E+00	9.27E-07	5.84E-06	8.77E-04	-2.10E-03
EP - Marine	kg N eq.	1.38E-01	6.47E-03	1.57E-04	7.92E-05	5.24E-05	2.57E-03	1.99E-02	0.00E+00	7.30E-05	2.89E-04	1.02E-02	-3.04E-02
EP - Terrestrial	mol N eq.	1.73E+00	6.95E-02	1.59E-03	6.44E-04	3.54E-04	3.28E-02	2.51E-01	0.00E+00	7.66E-04	3.26E-03	1.45E-01	-3.58E-01
POCP	kg NMVOC	6.21E-01	2.33E-02	7.20E-04	1.88E-04	1.40E-04	1.13E-02	6.98E-02	0.00E+00	4.47E-04	9.19E-04	4.09E-02	-1.66E-01
***ADPE**	kg Sb eq.	1.99E-02	3.40E-06	8.01E-07	3.96E-07	3.26E-07	5.60E-04	8.15E-05	0.00E+00	3.09E-07	9.40E-07	2.97E-03	-1.61E-03
***ADPF**	MJ	1.54E+03	5.35E+01	5.05E+00	1.00E+00	4.08E-01	2.76E+01	7.32E+02	0.00E+00	1.68E+00	1.46E+00	3.72E+01	-4.77E+02
***WDP**	m^3 depriv.	4.27E+01	1.36E-01	2.31E-01	3.93E-02	1.22E-02	8.84E-01	1.79E+00	0.00E+00	8.02E-03	9.67E-02	3.02E+00	-4.22E+00
Additional environmental impact indicators (Mandatory)													
****GWP-GHG**	kg CO_2 eq.	1.08E+02	3.91E+00	1.96E-01	5.50E-02	3.92E-02	1.62E+00	4.92E+01	0.00E+00	1.11E-01	3.07E+00	2.92E+00	-3.64E+01
Additional environmental impact indicators (Optional)													
PM	disease inc.	8.86E-06	1.23E-07	1.22E-08	2.66E-09	2.50E-09	1.23E-07	4.13E-07	0.00E+00	1.09E-08	8.15E-09	4.71E-07	-2.61E-06
*****IR**	kBq U-235 eq.	5.09E+00	1.34E-02	4.00E-03	5.15E-03	4.52E-04	6.93E-02	2.75E+00	0.00E+00	8.07E-04	5.05E-03	1.52E-01	-1.83E+00
ETP-FW	CTUe	2.14E+03	2.60E+01	1.05E+00	6.15E-01	8.65E-01	5.39E+01	1.56E+02	0.00E+00	8.07E-01	2.41E+01	2.96E+02	-2.09E+02
***HTP - C**	CTUh	4.83E-07	7.48E-10	1.21E-09	3.33E-11	2.11E-11	5.14E-09	1.05E-08	0.00E+00	4.92E-11	4.75E-10	4.22E-08	-1.57E-07
***HTP - NC**	CTUh	1.81E-05	4.17E-08	5.79E-09	7.47E-10	5.21E-10	3.62E-07	3.24E-07	0.00E+00	1.20E-09	4.50E-09	3.37E-06	-2.53E-06
***SQP**	Pt	7.13E+02	1.74E+01	3.48E-01	5.09E-01	5.01E-01	1.28E+01	1.04E+02	0.00E+00	1.70E+00	4.14E-01	6.65E+01	-8.79E+01

Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics - particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.
Legend	A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A4: Transport, A5: Installation, B2: Maintenance, B3: Repair, B4: Replacement, B6: Operational Energy C1: Demolition, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Future reuse, recycling or energy recovery potentials,

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The results of this EPD should not be used without the consideration of Module C.

Indicators describing resource use (Mandatory)	Unit	A1-A3	A4	A5	B2	B3	B4	B6	C1	C2	C3	C4	D
PERE	MJ	2.83E+02	3.63E-01	2.21E+01	2.83E-01	1.10E-01	2.79E+00	1.48E+02	0.00E+00	2.46E-02	1.71E-01	1.09E-01	-1.22E+02
PERM	MJ	2.19E+01	0.00E+00	-2.19E+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
PERT	MJ	3.05E+02	3.63E-01	1.34E-01	2.83E-01	1.10E-01	2.79E+00	1.48E+02	0.00E+00	2.46E-02	1.71E-01	1.09E-01	-1.22E+02
PENRE	MJ	1.55E+03	5.35E+01	5.05E+00	1.00E+00	4.08E-01	2.76E+01	7.32E+02	0.00E+00	1.68E+00	1.47E+00	1.48E+00	-4.77E+02
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.55E+03	5.35E+01	5.05E+00	1.00E+00	4.08E-01	2.76E+01	7.32E+02	0.00E+00	1.68E+00	1.47E+00	1.48E+00	-4.77E+02
SM	kg	**2.43E+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
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	1.28E+00	5.91E-03	3.12E-03	1.76E-03	5.07E-04	2.36E-02	2.80E-01	0.00E+00	3.34E-04	9.62E-02	3.28E-02	-1.81E-01
Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water.												
Environmental information describing waste categories (Mandatory)	Unit												
HWD	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
NHWD	kg	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	0.00E+00	0.00E+00	0.00E+00
RWD	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
Environmental information describing output flow (Mandatory)	Unit												
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
MFR	kg	3.32E+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	1.34E+01	0.00E+00
MER	kg	0.00E+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	1.16E+00	0.00E+00	0.00E+00
EE (Electric)	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	8.17E-01
EE (Thermal)	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	2.19E+01
Acronmys	HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy thermal.												
*Disclamer 1	The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.												
**Disclamer 2	GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology. The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. The GWP-GHG indicator is identical to GWP-total except that the characterisation factor (CF) for biogenic CO2 is set to zero.												
***Disclamer 3	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.												

References

ISO 9001:2015/ Quality Management Systems

ISO 50001:2018/ Energy Management Systems

GPI/ General Programme Instructions of the International EPD® System. Version 4.0.

ISO 14020:2000/ Environmental Labels and Declarations — General principles

EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products

ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

ISO 14040/44/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

PCR for Construction Products and Construction Services/ Prepared by IVL Swedish Environmental Research Institute, Swedish environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB, The International EPD System, 2019:14 Version 1.3.3.

The International EPD® System/ The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com

Ecoinvent / Ecoinvent Centre, www.ecoinvent.org

SimaPro/ SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com

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