ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Lindab UltraLink - FTCU and FTMU
Lindab Ventilation A/S & Lindab AS

EPD HUB, HUB-5244
Published on 06.02.2026, last updated on 06.02.2026, valid until 05.02.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Lindab Ventilation A/S & Lindab AS
Address	Haderslev, Denmark & Tallinn, Estonia
Contact details	lindab@lindab.com
Website	https://www.lindab.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Kerstin Bergstrom
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Lindab UltraLink - FTCU and FTMU
Additional labels	FTCU, FTMU
Product reference	FTCU Ø160
Place(s) of raw material origin	Europe
Place of production	Haderslev, Denmark & Talinn, Estonia
Place(s) of installation and use	Europe
Period for data	2024
Averaging in EPD	Multiple products and multiple factories
Variation in GWP-fossil for A1-A3 (%)	+20/-45%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	39,2

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 UltraLink FTCU
Declared unit mass	1 kg
Mass of packaging	0,85 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	6,03
GWP-total, A1-A3 ($kgCO_2e$)	3,74
Secondary material, inputs (%)	7,39
Secondary material, outputs (%)	72,6
Total energy use, A1-A3 (kWh)	25,4
Net freshwater use, A1-A3 (m^3)	0,08

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Lindab is a leading ventilation company in Europe, offering solutions for energy-efficient ventilation and a healthy indoor climate. The products are characterised by high quality, ease of installation and environmental thinking. In northern Europe, Lindab also offers an extensive range of roof, wall and rainwater systems.

FOR A BETTER CLIMATE

We want to create a better climate. Most of us spend a majority of our time indoors. The air we breathe, in our homes, at our workplaces and at school, affects our well-being. Since air is not visible, we do not always think about it. However, the indoor climate is crucial for how we feel, for our energy levels and whether we stay healthy. Lindab wants to contribute to the architecture and indoor climate of tomorrow. We also want a better climate for our planet. That is why we develop energy-efficient solutions for healthy indoor environments

OUR VISION

We want to be the leading player in the area in which we are strongest – ventilation in Europe. We focus on air distribution and air diffusion. Since we offer high-quality products, we focus on Europe where demand for good ventilation is high, and we can offer superior availability. We specialise in those parts of the ventilation system where we are the strongest. We adapt our offering to the local market, with our core ventilation offering as the clear common denominator in all markets.

THE IMPORTANCE OF VENTILATION

About 90 percent of the global population breathes poor air every day. A common misconception is that outdoor air is more polluted due to emissions, smog, and harmful chemicals. In fact, indoor air in homes, schools, offices, and factories can be as much as five times more polluted. People nonetheless spend most of their life indoors. The most common causes of indoor air pollution are mould, chemicals in, for example, furniture and building materials, dust, radon, and cigarette smoke but, above all, airborne particles from combustion and industrial processes, which are so small they can enter the human bloodstream via the respiratory system. Today, air pollution is a risk factor in several of the world’s most common causes of death, including heart disease, pneumonia, stroke, diabetes, and lung cancer. Ventilation is an efficient and convenient method to remove those indoor air pollutants.

SUSTAINABILITY PLAN

For us, sustainability is a way of thinking and working. This affects how we work with Lindab's strategy in all areas. Everything from the purchases we make, to the deliveries and the service we offer our customers. Lindab has three long-term, non-financial targets for the business, one that focuses on increasing our attractiveness as an employer, one for reducing our own carbon dioxide emissions, and one for a better working environment.

Read more about Lindab Groups sustainability work and non-financial targets on www.lindabgroup.com

PRODUCT DESCRIPTION

UltraLink FTCU is a highly accurate airflow controller. UltraLink FTCU has the possibility to give you the benefits of a modern demand controlled ventilation system with only a couple of UltraLinks together with bluetooth sensors installed in your existing ventilation system. **UltraLink FTMU** is a highly accurate airflow measurement unit. UltraLink FTMU makes it possible to measure low airflows while maintaining measurement accuracy.
Ultralink measures the airflow with ultrasound and airflow can be calculated and compensated to a very high accuracy within the whole airflow range. The method is very stable over time due to its design, which minimizes the contamination of the airflow sensors. These products offers great advantages in terms of comfort and savings in energy consumption.

Further information and product specific GWP calculations see additional document [EPD values Galvanized steel (file type: xlsx] which is presented for each product on www.lindab.com/

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	84,3	Europe/Asia
Minerals		
Fossil materials	15,7	Europe/Asia
Bio-based materials		

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	
Biogenic carbon content in packaging, kg C	0,63

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 UltraLink FTCU
Mass per declared unit	1 kg
Functional unit	Air volume control from one FTCU 160 during 25 years, assuming active operation 12 hours per day, 5 days a week every week per year, the remaining time in resting mode.
Reference service life	25 years

SUBSTANCES, REACH - VERY HIGH CONCERN

Substances of very high concern	EC	CAS
Lead Zirconate Titanate	235-038-9	12060-00-3
Lead	231-100-4	47439-92-1
2-methylimidazole	211-765-7	693-98-1
Lead monoxide (lead oxide)	215-267-0	1317-36-8

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×		×	
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission. The main parts of FTCU and FTMU are composed of galvanized steel from our own steel centre, Lindab Steel. For FTCU the damper is pre-manufactured in our manufacturing site in Czeck Republic. Assembling of the FTCU with damper, measurement unit, metal components, plastic parts and electronics occurs in Haderslev, Denmark and Tallinn, Estonia.

A market-based approach is used in modelling the electricity mix utilized in the factory. The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Material loss during installation is estimated to be zero. Activities related to recycling are included in A5 and modelled based on a European scenario.
Transport from production site to customer is calculated based on market share. The following estimated distances and transportation methods have been used for the scenario in this EPD.

PRODUCT USE AND MAINTENANCE (B1-B7)

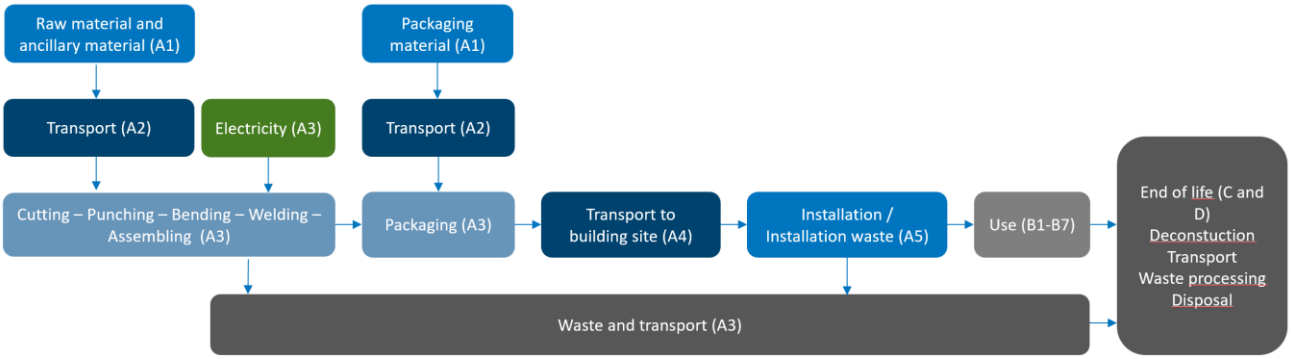
Cleaning of duct part should be done according to duct cleaning instructions. Often manually and therefore neglected in this EPD. No maintenance is needed for measurement unit during its lifetime. Electricity consumption during the use phase is calculated based on active operation 12 hours per day, 5 days a week every week per year, the remaining time in resting mode. The use stage results are only applicable to the scenario described and should not be compared with results from other product EPD's, in a context where other scenarios can be relevant. The reference service life of the product is highly dependent on the conditions of use, average lifespan under normal conditions is minimum 25 years.

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Energy (0,1kWh) for deconstruction is included in C1. The distance for transportation to disposal is assumed as 50 km and the transportation method is assumed to be lorry in C2. Activities related to recycling are included in C3 and C4 and modelled based on a European scenario.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products and multiple factories
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	+20/-45%

Based on the period of data, calender year 2024 Haderslev produced the most amount of articles of both FTCU and FTMU and the most sold article FTCU dim 160 produced in Haderslev is the representative article for this EPD. All articles included in this EPD are manufactured in Lindab Ventilation A/S (Haderslev, Denmark) or Lindab Ventilation AS(Tallinn, Estonia). Compared to FTCU 160 produced in Haderslev, Denmark, FTCU-100 produced in Tallinn, Estonia differ +20% and FTMU-630 differ -45%. All included article consists of the same components, beside the difference that FTMU only is a measuring unit, while FTCU also consists of a controlled damper with motor to control the airflow. The products vary in size of the body and damper, while electronic components stay the same. Production processes are similar in all aspects but the geographical location. The main difference in A1-A3 GWP-fossil between production sites is the transportation distance in A2.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD System Verification v3.2.3. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2‘.

World Steel, 2020
Plastics Europe, 2020
Eurostat:
https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519259/default/table?lang=en

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	5,24E+00	2,75E-01	-1,77E+00	3,74E+00	1,66E-01	2,86E+00	MND	MND	MND	MND	MND	9,91E+00	MND	3,29E-02	9,16E-03	2,22E-01	3,73E-02	-1,33E+00
GWP – fossil	kg CO_2e	5,23E+00	2,75E-01	5,27E-01	6,03E+00	1,66E-01	3,00E-02	MND	MND	MND	MND	MND	9,68E+00	MND	3,27E-02	9,15E-03	2,22E-01	3,73E-02	-1,37E+00
GWP – biogenic	kg CO_2e	2,94E-03	3,60E-05	-2,31E+00	-2,31E+00	3,27E-05	2,83E+00	MND	MND	MND	MND	MND	5,03E-02	MND	7,34E-05	1,99E-06	-1,37E-05	2,37E-05	4,73E-02
GWP – LULUC	kg CO_2e	3,75E-03	5,99E-05	1,84E-02	2,22E-02	5,94E-05	3,20E-05	MND	MND	MND	MND	MND	1,83E-01	MND	1,00E-04	4,00E-06	2,43E-05	2,65E-06	-2,21E-03
Ozone depletion pot.	kg CFC-$_{11}$e	1,47E-07	4,57E-09	1,23E-08	1,64E-07	3,28E-09	4,05E-10	MND	MND	MND	MND	MND	2,17E-07	MND	6,03E-10	1,33E-10	2,65E-10	5,19E-11	-1,10E-08
Acidification potential	mol H^+e	2,89E-02	1,27E-03	2,89E-03	3,31E-02	6,43E-04	1,45E-04	MND	MND	MND	MND	MND	5,52E-02	MND	1,92E-04	3,04E-05	2,29E-04	2,07E-05	-6,64E-03
EP-freshwater[2)]	kg Pe	1,85E-03	1,03E-05	2,55E-04	2,11E-03	1,09E-05	7,37E-06	MND	MND	MND	MND	MND	6,09E-03	MND	3,05E-05	7,04E-07	1,12E-05	6,04E-07	-6,99E-04
EP-marine	kg Ne	7,97E-03	4,44E-04	9,59E-04	9,37E-03	2,05E-04	1,87E-04	MND	MND	MND	MND	MND	9,75E-03	MND	3,02E-05	9,89E-06	6,27E-05	4,20E-05	-1,24E-03
EP-terrestrial	mol Ne	5,05E-02	4,86E-03	9,67E-03	6,50E-02	2,24E-03	5,39E-04	MND	MND	MND	MND	MND	1,07E-01	MND	2,71E-04	1,08E-04	6,54E-04	8,03E-05	-1,31E-02
POCP ("smog")[3)]	kg NMVOC	1,62E-02	1,67E-03	3,75E-03	2,16E-02	8,97E-04	1,87E-04	MND	MND	MND	MND	MND	2,98E-02	MND	8,91E-05	4,29E-05	1,86E-04	2,53E-05	-4,56E-03
ADP-minerals & metals[4)]	kg Sbe	1,73E-04	3,59E-07	3,05E-06	1,77E-04	5,33E-07	1,33E-07	MND	MND	MND	MND	MND	3,22E-04	MND	4,42E-07	2,96E-08	1,13E-06	1,25E-08	-5,97E-05
ADP-fossil resources	MJ	6,22E+01	3,77E+00	8,64E+00	7,46E+01	2,33E+00	3,56E-01	MND	MND	MND	MND	MND	3,25E+02	MND	7,62E-01	1,29E-01	2,58E-01	4,65E-02	-1,72E+01
Water use[5)]	m^3e depr.	2,79E+00	1,12E-02	7,37E-01	3,54E+00	1,13E-02	9,59E-03	MND	MND	MND	MND	MND	2,10E+01	MND	2,08E-02	6,02E-04	1,20E-02	2,35E-03	-4,90E-01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[6)]	MJ	4,24E+00	3,31E-02	1,57E+01	2,00E+01	3,97E-02	-1,30E+01	MND	MND	MND	MND	MND	2,37E+02	MND	2,09E-01	1,79E-03	4,21E-02	2,16E-03	-1,02E+00
Renew. PER as material	MJ	2,48E-04	0,00E+00	2,12E+01	2,12E+01	0,00E+00	-2,12E+01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	-1,81E-04	-6,70E-05	4,45E-01
Total use of renew. PER	MJ	4,24E+00	3,31E-02	3,69E+01	4,12E+01	3,97E-02	-3,42E+01	MND	MND	MND	MND	MND	2,37E+02	MND	2,09E-01	1,79E-03	4,19E-02	2,09E-03	-5,71E-01
Non-re. PER as energy	MJ	5,96E+01	3,77E+00	7,64E+00	7,10E+01	2,33E+00	3,56E-01	MND	MND	MND	MND	MND	3,25E+02	MND	7,62E-01	1,29E-01	-3,81E+00	-2,03E+00	-1,72E+01
Non-re. PER as material	MJ	4,64E+00	0,00E+00	9,96E-01	5,63E+00	0,00E+00	-9,96E-01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	-3,39E+00	-1,25E+00	1,19E+00
Total use of non-re. PER	MJ	6,43E+01	3,77E+00	8,64E+00	7,67E+01	2,33E+00	-6,40E-01	MND	MND	MND	MND	MND	3,25E+02	MND	7,62E-01	1,29E-01	-7,20E+00	-3,28E+00	-1,60E+01
Secondary materials	kg	7,39E-02	9,41E-04	1,62E-01	2,37E-01	1,07E-03	3,61E-04	MND	MND	MND	MND	MND	8,40E-02	MND	1,26E-04	5,76E-05	3,73E-04	1,70E-05	-9,51E-03
Renew. secondary fuels	MJ	3,80E-03	9,92E-06	5,11E-01	5,15E-01	1,32E-05	2,72E-06	MND	MND	MND	MND	MND	4,89E-04	MND	1,01E-06	7,33E-07	1,33E-05	8,38E-07	-8,58E-05
Non-ren. secondary fuels	MJ	4,75E-22	0,00E+00	0,00E+00	4,75E-22	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	6,42E-02	3,37E-04	1,74E-02	8,20E-02	3,09E-04	-6,74E-04	MND	MND	MND	MND	MND	5,89E-01	MND	6,58E-04	1,72E-05	2,16E-04	-9,46E-05	-1,23E-02

6) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	5,72E-01	3,41E-03	3,66E-02	6,12E-01	3,33E-03	3,59E-03	MND	MND	MND	MND	MND	7,53E-01	MND	1,93E-03	2,21E-04	3,93E-03	6,51E-04	-4,91E-01
Non-hazardous waste	kg	8,17E+00	6,45E-02	8,65E-01	9,10E+00	6,97E-02	1,30E+00	MND	MND	MND	MND	MND	3,01E+01	MND	1,49E-01	4,17E-03	1,43E-01	2,25E-01	-3,78E+00
Radioactive waste	kg	5,13E-04	5,88E-07	1,57E-05	5,29E-04	7,25E-07	3,60E-07	MND	MND	MND	MND	MND	3,54E-03	MND	5,40E-06	2,66E-08	4,78E-07	3,53E-08	-3,25E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	3,20E-06	0,00E+00	0,00E+00	3,20E-06	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,94E-02	0,00E+00	1,12E-01	1,31E-01	0,00E+00	4,70E-01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	7,26E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	2,35E-19	0,00E+00	0,00E+00	2,35E-19	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,89E-01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	9,50E-01	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,71E-01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	4,00E-01	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,18E-01	MND	MND	MND	MND	MND	0,00E+00	MND	0,00E+00	0,00E+00	5,50E-01	0,00E+00	0,00E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[7)]	kg CO_2e	5,23E+00	2,75E-01	5,46E-01	6,05E+00	1,66E-01	3,00E-02	MND	MND	MND	MND	MND	9,86E+00	MND	3,28E-02	9,15E-03	2,22E-01	3,73E-02	-1,38E+00

7) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	GO electricity 100 % wind, supplied by Becour; Modelled with Electricity production, wind, 1-3MW turbine, offshore, Denmark, Ecoinvent 3.10.1 GO electricity 100 % hydro, supplied by Becour; Modelled with Electricity production, hydro, reservoir, non-alpine region, Czech Republic, Ecoinvent 3.10.1 GO electricity 2,4% solar, 93,7%hydro, 3,9% natural gas, supplied by Alexela Modelled with Electricity production, solar tower power plant, 20MW, World, Ecoinvent 3.10.1; Electricity production, hydro, run-of-river, Estonia, Ecoinvent 3.10.1; Heat and power co-generation, natural gas, conventional power plant, 100MW electrical, Estonia, Ecoinvent 3.10.1 All manufacturing sites uses high electricity, no transformation and transmission losses considered.
Electricity CO2e / kWh per source	0,0167, 0,006, 0,0473, 0,0044, 0,69
District heating data source and quality	-
District heating CO2e / kWh	0

Transport scenario documentation A4

Scenario parameter	Value
Fuel type, consumption, and vehicle type. Eg, electric truck, diesel powered truck	EURO5, truck 16-32 metric ton, diesel, 0,00441l/tkm Transport, freight, sea, ferry
Average transport distance, km	Truck 451 km Ferry 21 km
Capacity utilization (including empty return) %	50
Bulk density of transported products (kg/m3)	-
Volume capacity utilization factor	1

Installation scenario documentation A5

Scenario information	Value
Ancillary materials for installation (specified by material) / kg or other units as appropriate	0
Water use / m³	0
Other resource use / kg	0
Quantitative description of energy type (regional mix) and consumption during the installation process / kWh or MJ	0
Waste materials on the building site before waste processing, generated by the product's installation (specified by type) / kg	0
Output materials (specified by type) as result of waste processing at the building site e.g. collection for recycling, for energy recovery, disposal (specified by route) / kg	Waste paperboard, materials for recycling, 0.32 kg Waste packaging paper, incineration with energy recovery, 0.031 kg Waste packaging paper, landfill, 0.035 kg Waste wood, materials for recycling, 0.15 kg Waste wood, incineration with energy recovery, 0.14 kg Waste wood, landfill, 0.18 kg
Direct emissions to ambient air, soil and water / kg	0

Use stages scenario documentation - B6-B7 Use of energy and use of water

Scenario information	Value
Ancillary materials specified by material / kg or units as appropriate	0
Net fresh water consumption / m³	0
Type of energy carrier, e.g., electricity, natural gas, district heating / kWh	Electricity mix used is a weighted average of sales per country
Power output of equipment / kW	0,48
Characteristic performance, e.g., energy efficiency, emissions, variation of performance with capacity utilization, etc.	0
Further assumptions for scenario development, e.g., frequency and period of use, number of occupants	0

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	1
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	0,7
Recovery process – kg for energy recovery	0,1
Disposal (total) – kg for final deposition	0,2
Scenario assumptions e.g. transportation	Transported 50 km by lorry

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
03.02.2026

APPENDIX 1

The table below presents climate impact for modules A1-A3 (Cradle to gate) for all dimensions of FTCU and FTMU. Variation in impact is due to differences in material composition and size.

FTCU											
Impact category		**Unit**	**A1-A3**								
Product dimension		mm	100	125	160	200	250	315	400	500	630
Product weight		kg	1,67	1,94	2,46	3,33	4,65	6,36	10,6	20,8	30,4
EN 15804+A2, PEF	GWP-total	kg CO_2e	8,2	9,2	9,2	11,6	14,5	17,6	33,1	42,8	68,4
	GWP-fossil	kg CO_2e	11,4	12,5	14,8	18,3	22,5	28,0	43,7	82,8	111,3
	GWP-biogenic	kg CO2e	-3,2	-3,3	-5,7	-6,8	-8,2	-10,5	-10,6	-39,9	-43,2
	GWP-luluc	kg CO_2e	0,04	0,05	0,05	0,05	0,11	0,11	0,05	0,08	0,09
	GWP-GHG	kg CO_2e	11,4	12,6	14,9	18,3	22,6	28,1	43,8	82,8	111,6
Scaling factor	GWP-fossil		0,8	0,8	1,0	1,2	1,5	1,9	2,9	5,6	7,5
Scaling factor	GWP-GHG		0,8	0,8	1,0	1,2	1,5	1,9	2,9	5,6	7,5
FTMU											
Impact category		**Unit**	**A1-A3**								
Product dimension		mm	100	125	160	200	250	315	400	500	630
Product weight		kg	0,58	0,72	0,94	1,24	1,8	2,51	4,6	8	12,4
EN 15804+A2, PEF	GWP-total	kg CO_2e	2,2	2,6	2,0	3,8	5,1	7,3	13,3	23,4	35,8
	GWP-fossil	kg CO_2e	3,0	3,5	4,7	5,3	7,3	9,4	15,8	27,4	42,2
	GWP-biogenic	kg CO_2e	-0,8	-0,9	-2,7	-1,4	-2,1	-2,1	-2,5	-4,0	-6,3
	GWP-luluc	kg CO_2e	0,01	0,01	0,02	0,01	0,01	0,01	0,01	0,02	0,03
	GWP-GHG	kg CO_2e	3,1	4,6	4,8	5,3	7,3	9,4	15,8	27,4	42,2
Scaling factor	GWP-fossil		0,2	0,2	0,3	0,4	0,5	0,6	1,1	1,8	2,8
Scaling factor	GWP-GHG		0,2	0,3	0,3	0,4	0,5	0,6	1,1	1,8	2,8