ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

CLIMECON OY

CLEANMASTER, MISTMASTER AND STANDARDPLUS HOODS

Registration number in RTS EPD:

RTS EPD RTS_201_21

EcoPlatform reference number:

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GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	Climecon Oy
Address	Lämmittäjänkatu 4A, 00880 Helsinki
Website	https://climeconair.com/en-en/

PRODUCT IDENTIFICATION

Product name	Hoods
Declared unit	1 kg
Spesific product name	CleanMaster, MistMaster, StandardPlus
Place(s) of production	Pihtiputaa, Finland

EPD INFORMATION

Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD program operator	Building Information Foundation, RTS, Malminkatu 16 A 00100 Helsinki
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. RTS PCR 2020
EPD author	Granlund Oy, Malminkaari 21 00701 Helsinki Anni Viitala, Ida Karppinen
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐Internal certification ☒ External verification
Verification date	05.01.2023
EPD verifier	Heini Koutonen, Ramboll Finland Oy
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Yleissääntönä on noudatettu eurooppalaisen standardin EN 15804:2012 + A2:2019 vaatimuksia ja RTS tuoteryhmäsääntöjä	
Kansainvälisen standardin EN ISO 14025:2010 mukainen riippumaton varmentava taho on	
☐ **Sisäinen**	☒ **Ulkoinen**
Kolmannen osapuolen varmentamisen on suorittanut: Heini Koutonen  Ramboll Finland Oy	

PRODUCT INFORMATION

PRODUCT DESCRIPTION

This environmental declaration covers the environmental impacts hoods manufactured by Climecon Oy in Pihtiputaa, Finland. The EPD contains three different products.

- CleanMaster
- MistMaster
- StandardPlus

PRODUCT APPLICATION

CleanMaster hood is designed to meet the air purification, user-friendliness, and fire safety requirements of professional kitchens. The four-stage exhaust air cleaning mechanism combines two different types of ultraviolet light, ozone, and shock filtration.

MistMaster hood is a product equipped with a cold-water mist function, which is intended for use especially with open fires and charcoal grills. It has been developed for fire-safe handling of smoke and sparks.

StandardPlus is a hood designed for traditional professional kitchens for ventilation of the cooking and dishwashing lines.

PRODUCT RAW MATERIAL COMPOSITION AND TECHNICAL INFORMATION

Product	Material	Amount (%)
CleanMaster (frame), MistMaster (frame), StandardPlus	Steel	89 %-96 %
	LED luminaire	7 %-2 %
	Supply air chamber insulation	2 %-1 %
	Tempered safety glass	2 %-1 %
	Z bracing iron	0,3 %-0,1 %

Product	Material	Amount (kg)
Electronic parts of CleanMaster and MistMaster	Electronics (logic controller, external controller)	1,5
	Ultraviolet lamp	0,3
	Ultraviolet ballast	0,9
	Mechanical safety switch	0,2
	Adapter box	0,7
	Cable	0,2

Table below presents masses of the minimum-sized products and maximum-sized products as well medium-sized products. Product masses vary depending on dimensions (width, depth and height) of the hood. Masses of other product sizes and dimensions are available from Climecon.

Product	Product Size and dimensions	Mass (kg)
Standard Plus & CleanMaster (frame)	MIN 1000x100x300	46,8
	1500x1200x560	80,90
	2000x1200x560	104,6
	2000x1400x560	108,9
	MAX 3000x2000x560	167,6
MistMaster (frame)	MIN 1000x100x300	49,9
	1500x1400x560	89,2
	2000x1400x560	136,0
	MAX 3000x2000x560	170,7

PACKAGING MATERIAL COMPOSITION AND TECHNICAL INFORMATION

Product	Material	Amount (kg per kg product)
CleanMaster	Eur Pallet	0,93
	Postal tube	0,0014-0,0042
MistMaster	Eur Pallet	0,93
StandardPlus	Eur Pallet	0,93

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

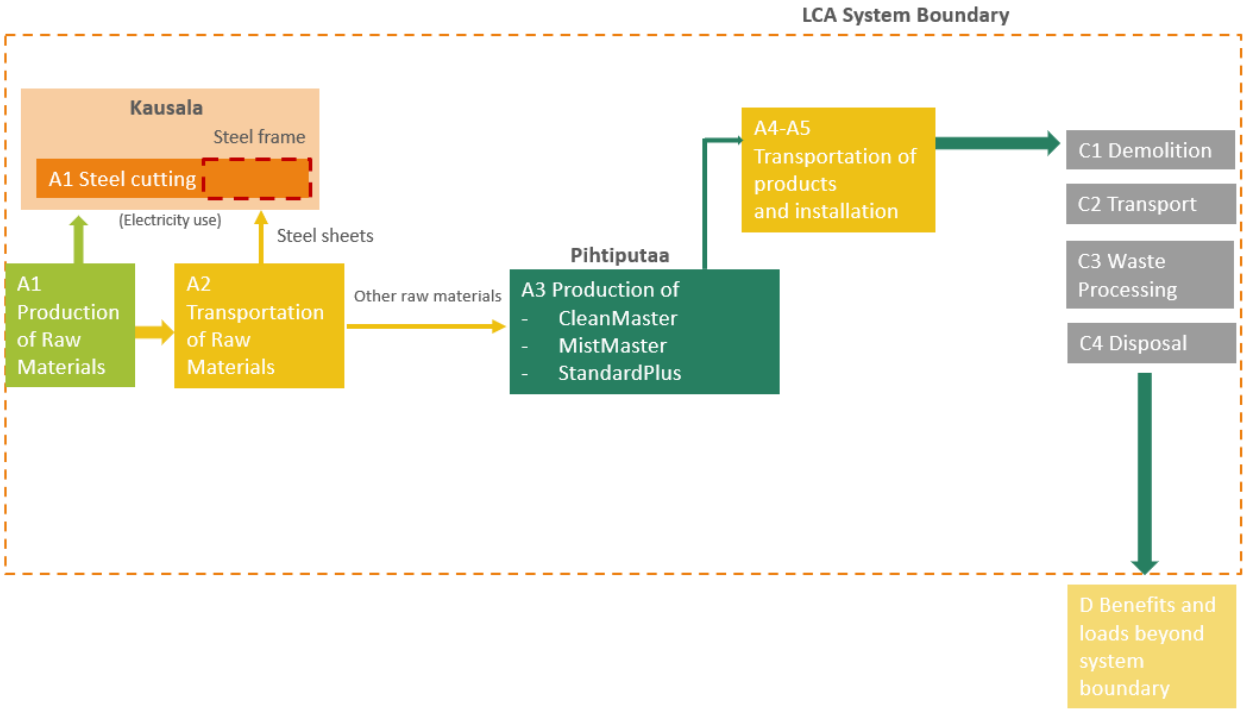
Period for data	1 year, 2021

DECLARED UNIT

Declared unit	1 kg This EPD provide environmental impact assessment results per kg of product for following products: • CleanMaster (only frame, excluding electronic parts) • Mistmaster (only frame, excluding electronic parts) • StandardPlus EPD information is presented in modular approach separately for frame and electronic parts for • CleanMaster • Mistmaster EPD data for these products can be scaled to different product sizes by using result table for frame per kg and electronic parts per product.

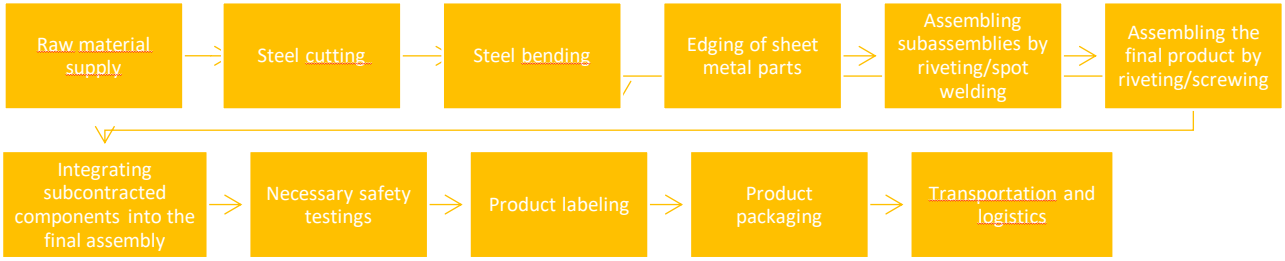
SYSTEM BOUNDARY

Studied system covers the following steps of life cycle according to EN 15804: **A1** Raw material supply**, A2** Transport, **A3** Manufacturing, **A4** Transportation of the product to construction site, **A5** Installation to building, **C1** Deconstruction, **C2** Transportation of end-of-life **C3** Waste processing and **C4** Disposal. In addition, the benefits and loads beyond the system boundary of stage **D** consist of product reuse, recovery and recycling. System boundary describing the system boundary and the input and output flows is shown below:



The end of waste point of the recycled steel raw material was assumed to be after scrap steel collection, sorting and preparation. Processing of scrap steel to be used in raw material in Climecon's products was considered to be part of this life cycle and thus was included to the system boundaries. End of waste point of the studied product is the step when material is used as fuel in an incineration plant or recycled material is handled in the collection and sorting plant.

Production stage (A3) on the Climecon's production sites cover following manufacturing processes; raw material supply (steel, steel cutting, steel bending, assembly (edging of sheet metal parts, assembling subassemblies by riveting/spot welding, assembling the final product by riveting/screwing, Integrating subcontracted components into the final assembly, necessary safety testings, product labelling) and packaging. After that, products will be transported to the client. The production processes of hoods are presented in following Figure.



Studied system covers the following steps of life cycle according to EN 15804:

	Product Stage			Construction Process Stage		Use Stage							End-of-Life Stage				Benefits and loads beyond the system boundary		
	Raw material supply	Transport	Manufacturing	Transport to building	Installation to building	Use/applications	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
Included	X	X	X	X	X								X	X	X	X	X	X	X
Relevancy	R	R	R	R	R	NR	NR	NR	NR	NR	NR	NR	R	R	R	R	R	R	R

R = Relevant NR= Not relevant

Mandatory
Mandatory as per the RTS PCR section 6.2.1 rules and terms
Optional modules based on scenarios

The study does not omit any life cycle stages, processes or data needs that are mandatory according to EN 15804 and RTS PCR. The study excludes following life cycle stages which are optional according to EN 15804 and RTS PCR.

- B1 Use
- B2 Maintenance
- B3 Repairs
- B4 Replacement
- B5 Refurbishment
- B6 Operational energy use
- B7 Operational water use

CUT-OFF CRITERIA

This study follows the cut-off criteria stated in RTS PCR and EN 15804 -standard. This study does not exclude anu modules or processes which represent more than 1 % of the emissions of studied life cycle stage. The study does not exclude any hazardous materials or substances.

Excluded processes and the criteria for exclusion are given in following table. Machines and facilities (capital goods) required for and during production are excluded, as is transportation of employees.

Process excluded from study	Cut-off criteria	Quantified contribution from process
A1-A3 CLM2G fan for electronics	emission effect	< 1 % mass of unit process
A1-A3 Differential pressure transmitter for electronics	emission effect	< 1 % mass of unit process
A1-A3 CLM2G grommets and pressure separator hoses	emission effect	< 1 % mass of unit process
A1-A3 Locking of the supply air unit	emission effect	< 1 % mass of unit process
A1-A3 Paper tape	emission effect	< 1 % mass of unit process
A1-A3 UV lamp brackets	emission effect	< 1 % mass of unit process
A1-A3 screws	emission effect	< 1 % mass of unit process
B1-B5, B7 use	Not mandatory according to the RTS instructions	

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation rules used are made according to the ISO14044:2006. Allocation is avoided when possible and when necessary, allocation is made based on physical shares and also avoiding double calculations. Allocation is required if the production process produces more than one product and the flows of materials, energy and waste cannot be separately measured for the studied product. Allocation used in generic data sources follow the requirements of the EN 15804 -standard. It should be noticed that the allocation method 'allocation, cut-off by classification' has been used for Ecoinvent 3.6 data, which complies with EN 15804.

In the Pihtiputaa Production site, various products are produced, and some allocations were needed. Avoiding allocation could not be avoided for following inputs as the information was only measured on factory or production process level.

- Electricity and heat consumption: only measured on factory level
- Energy and plastic waste, only measured on factory level
- Water use, only measured on factory level

The inputs were allocated to studied product based on production volume (mass).

According to EN 15804, flows leaving the system at the end-of-waste boundary of the product stage (A1-A3) are allocated as co-products. In this study, the recyclable metal scrap from cutting process is considered as a co-product. Scrap metal collected from the steel cutting process is sent for recycling, and environmental impacts from the waste processing in A3 module are allocated for this co-product based on mass (kg).

KEY ASSUMPTIONS

A1 Raw material supply: Recycled content in steel raw materials: 20 % based on industry estimations.

A3 Manufacturing: Metal scrap was assessed based on manufacturer's long-term estimations.

C1 Deconstruction/demolition: According to waste handling companies, HVAC products are collected separately for recycling in the end-of-life stage. It can be assumed that there are no significant environmental impacts caused by demolition phase and hence it is not declared.

C2 Transportation: Transportation distance 75 km road driving by lorry (SYKE 2021)

C3-4: It was assumed that hoods are collected, and the materials are separated.

- Steel, materials in electronic components and glass to material recycling
- Plastic components to energy recovery
- Ultraviolet lamp to final disposal.

Module D covers the net benefits and loads arising from the reuse of products or the recycling or recovery of energy from end-of-waste state materials.

- Recovery: when a product is incinerated at its end-of-life and the produced heat is recovered, the benefits can include avoiding the production of energy.
    - Net calorific value as received of the construction waste was assumed to be 9,8 MJ/kg and efficiency of heat and power co-generation was 90 %.
- Recycling: Benefits from the recycling of steel and materials from electronic components as well as glass were included to the assessment. Only share of virgin raw materials in the product composition were included to the module D.
    - Steel: Benefits from avoided primary steel production due to the recycling of steel at end of life was included.
    - Electronic components and cables: Benefits from avoided primary steel, copper, polycarbonate and other raw materials production due to the recycling of materials at end of life was included. PVC materials were assumed to end up the energy recovery.
    - Glass: Benefits from avoided primary glass in foam glass production due to the recycling of glass at end of life was included.
- It was assumed that 5 % of recyclable or recoverable materials end up as material loss.

VALIDATION OF DATA

The quality requirements for the life cycle assessment were set according to the EN ISO 14044 standard (4.2.3.6) and EN 15804 standard (6.3.7).

This LCA study follows the standard EN 15804:2012+A2:2019 and RTS PCR and no decisions are made based on the values.

PROCEDURED FOR COLLECTION PROCESS SPECIFIC DATA

Production specific data was collected directly from manufacturer's production plant. The data represents the production of the studied product at the plant from the materials transported to the facility and represents 1 year average. The data represents year 2021, which was the latest year with full year data. All gathered data was used without excluding categories in advance following the system boundaries set in earlier chapters.

CRITERIA FOR CHOOSING THE GENERIC DATA

Generic data that was used for upstream and downstream processes represents complementary data from Ecoinvent 3.6 database.

The datasets were chosen to represent the studied system as closely as possible. When available supplier specific information was used for instance in form of EN 15804 EPDs or emissions profile of local energy supplier. When supplier specific information was not available the information sources were chosen based on their technical and geographical representativeness. Only when country specific or European data has not been available has global level data been used (concerns mainly data from Ecoinvent 3.6)

As up-to-date data as possible was chosen and no more than five-year-old for producer specific data and ten years for generic data was used.

ENVIRONMENTAL IMPACT DATA

This EPD provide environmental impact assessment results per kg of product for following products:

- CleanMaster (frame)
- Mistmaster (frame)
- StandardPlus

EPD information is presented in modular approach separately for frame and electronic parts for

- CleanMaster
- Mistmaster

EPD data for products can be scaled for different product sizes by using EPD result table of the Hood's frame and adding electronic parts accordingly with following calculation model. Modular rules apply only for CleanMaster and MistMaster

$EPD\ Data\ of\ CleanMaster\ and\ MistMaster$

$$= EPD\ Data\ of\ Hood\ frame\ (per\ kg) * Mass\ of\ the\ product\ (kg) + EPD\ Data\ of\ Electronic\ parts$$

STANDARDPLUS, MISMASTER (FRAME), CLEANMASTER (FRAME)

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP – total	kg CO_2e	1,50E+00	2,15E-02	5,18E-02	1,57E+00	2,29E-02	1,53E+00	0,00E+00	6,84E-03	5,37E-02	0,00E+00	-1,5E+00
GWP – fossil	kg CO_2e	3,07E+00	2,15E-02	3,01E-02	3,12E+00	2,27E-02	8,65E-03	0,00E+00	6,84E-03	5,52E-02	0,00E+00	-1,54E+00
GWP – biogenic	kg CO_2e	-1,48E+00	1,55E-05	2,18E-02	-1,45E+00	1,65E-05	1,52E+00	0,00E+00	4,91E-06	-1,61E-03	0,00E+00	5,46E-03
GWP – LULUC	kg CO_2e	5,97E-03	6,43E-06	9,89E-06	5,98E-03	7,26E-06	3,46E-06	0,00E+00	2,05E-06	3,65E-05	0,00E+00	-4,17E-04
Ozone depletion pot.	kg $CFC_{11}e$	2,16E-07	5,14E-09	3,34E-09	2,25E-07	5,77E-09	1,85E-09	0,00E+00	1,60E-09	3,44E-09	0,00E+00	-6,10E-08
Acidification potential	mol H^+e	4,02E-02	9,19E-05	1,19E-04	4,04E-02	1,03E-04	3,70E-05	0,00E+00	2,78E-05	3,27E-04	0,00E+00	-8,44E-03
EP-freshwater[3)]	kg Pe	1,95E-04	1,77E-07	1,21E-06	1,96E-04	1,97E-07	1,22E-07	0,00E+00	5,56E-08	1,69E-06	0,00E+00	-8,89E-05
EP-marine	kg Ne	4,57E-03	2,75E-05	4,06E-05	4,64E-03	2,99E-05	1,11E-05	0,00E+00	8,55E-06	7,70E-05	0,00E+00	-1,74E-03
EP-terrestrial	mol Ne	1,43E-01	3,04E-04	3,02E-04	1,43E-01	3,42E-04	1,22E-04	0,00E+00	9,62E-05	8,77E-04	0,00E+00	-1,98E-02
POCP ("smog")	kg NMVOCe	1,64E-02	9,75E-05	8,68E-05	1,66E-02	1,09E-04	3,91E-05	0,00E+00	2,99E-05	2,36E-04	0,00E+00	-8,46E-03
ADP-minerals & metals	kg Sbe	3,47E-03	3,65E-07	4,25E-07	3,47E-03	4,06E-07	1,53E-07	0,00E+00	1,15E-07	1,40E-06	0,00E+00	-2,65E-05
ADP-fossil resources	MJ	3,83E+01	3,35E-01	2,95E-01	3,89E+01	3,77E-01	1,31E-01	0,00E+00	1,06E-01	3,70E-01	0,00E+00	-1,31E+01
Water use[2)]	m^3e depr.	1,49E+00	1,26E-03	4,83E-03	1,50E+00	1,41E-03	6,00E-04	0,00E+00	3,85E-04	6,75E-03	0,00E+00	-6,89E-01

1)GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential. 2) 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 experienced with the indicator. 3) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO_4e.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Renew. PER as energy	MJ	2,00E+01	4,25E-03	1,76E-02	2,01E+01	4,70E-03	3,31E-03	0,00E+00	1,32E-03	4,93E-02	0,00E+00	-1,26E+00
Renew. PER as material	MJ	1,58E+01	0,00E+00	0,00E+00	1,58E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	3,58E+01	4,25E-03	1,76E-02	3,58E+01	4,70E-03	3,31E-03	0,00E+00	1,32E-03	4,93E-02	0,00E+00	-1,26E+00

Non-re. PER as energy	MJ	3,72E+01	3,35E-01	2,95E-01	3,78E+01	3,77E-01	1,31E-01	0,00E+00	1,06E-01	3,70E-01	0,00E+00	-1,31E+01
Non-re. PER as material	MJ	1,17E+00	0,00E+00	0,00E+00	1,17E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	3,83E+01	3,35E-01	2,95E-01	3,89E+01	3,77E-01	1,31E-01	0,00E+00	1,06E-01	3,70E-01	0,00E+00	-1,31E+01
Secondary materials	kg	2,89E-01	0,00E+00	4,91E-06	2,89E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,65E-01
Renew. secondary fuels	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
Non-ren. secondary fuels	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
Use of net fresh water	m^3	3,86E-02	6,98E-05	8,31E-04	3,95E-02	7,91E-05	2,80E-05	0,00E+00	2,14E-05	1,86E-04	0,00E+00	-1,15E-02

6) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	7,93E-01	3,33E-04	1,70E-03	7,95E-01	3,63E-04	1,79E-04	0,00E+00	1,03E-04	0,00E+00	0,00E+00	-5,60E-01
Non-hazardous waste	kg	9,01E+00	3,60E-02	6,21E-02	9,11E+00	4,06E-02	1,53E-02	0,00E+00	1,13E-02	0,00E+00	0,00E+00	-4,81E+00
Radioactive waste	kg	1,07E-04	2,32E-06	1,35E-06	1,10E-04	2,56E-06	8,97E-07	0,00E+00	7,26E-07	0,00E+00	0,00E+00	-8,87E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	D
Components for re-use	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
Materials for recycling	kg	0,00E+00	0,00E+00	2,82E-01	2,82E-01	0,00E+00	1,34E-01	0,00E+00	0,00E+00	9,95E-01	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	2,95E-02	2,95E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,34E-03	0,00E+00
Exported energy	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

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content	**Unit (expressed per functional unit or per declared unit)**
Biogenic carbon content in product	0 kg
Biogenic carbon content in accompanying packaging	0,416 kg

NOTE 1 kg biogenic carbon is equivalent to 44/12 kg of CO2.

ELECTRONIC PARTS OF CLEANMASTER AND MISTMASTER

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP – total	kg CO_2e	6,64E+01	1,93E-01	1,63E-01	6,68E+01	4,40E-02	0,00E+00	0,00E+00	2,60E-02	3,64E+00	7,30E-02	-5,59E+01
GWP – fossil	kg CO_2e	6,66E+01	1,93E-01	8,40E-02	6,68E+01	4,40E-02	0,00E+00	0,00E+00	2,60E-02	3,63E+00	7,40E-02	-5,62E+01
GWP – biogenic	kg CO_2e	-2,40E-01	1,40E-04	8,16E-02	-1,59E-01	3,20E-05	0,00E+00	0,00E+00	1,90E-05	-3,00E-04	-1,00E-03	3,73E-01
GWP – LULUC	kg CO_2e	1,06E-01	5,79E-05	7,23E-06	1,06E-01	1,30E-05	0,00E+00	0,00E+00	7,70E-06	3,18E-04	1,10E-04	-9,77E-02
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	5,46E-06	4,51E-08	8,54E-09	5,51E-06	1,00E-08	0,00E+00	0,00E+00	6,00E-09	2,59E-08	1,10E-08	-4,69E-06
Acidification potential	mol H^+e	5,97E-01	8,11E-04	1,31E-04	5,98E-01	1,90E-04	0,00E+00	0,00E+00	1,10E-04	3,36E-03	5,00E-04	-4,62E-01
EP-freshwater [3]	kg Pe	1,20E-02	1,57E-06	2,68E-06	1,20E-02	3,60E-07	0,00E+00	0,00E+00	2,10E-07	9,73E-06	2,20E-06	-1,044E-02
EP-marine	kg Ne	8,53E-02	2,47E-04	8,08E-05	8,56E-02	5,60E-05	0,00E+00	0,00E+00	3,20E-05	1,55E-03	1,40E-04	-7,14E-02
EP-terrestrial	mol Ne	1,03E+00	2,72E-03	3,23E-04	1,03E+00	6,20E-04	0,00E+00	0,00E+00	3,60E-04	1,47E-02	1,60E-03	-8,52E-01
POCP ("smog")	kg NMVOCe	2,90E-01	8,73E-04	9,91E-05	2,91E-01	2,00E-04	0,00E+00	0,00E+00	1,10E-04	3,70E-03	4,50E-04	-2,36E-01
ADP-minerals & metals	kg Sbe	3,16E-02	3,28E-06	1,47E-07	3,16E-02	7,60E-07	0,00E+00	0,00E+00	4,40E-07	5,81E-06	1,30E-06	-2,93E-02
ADP-fossil resources	MJ	8,52E+02	3,00E+00	7,24E-01	8,55E+02	6,90E-01	0,00E+00	0,00E+00	4,00E-01	3,61E+00	1,09E+00	-7,19E+02
Water use [2]	m^3e depr.	2,17E+01	1,11E-02	1,30E-02	2,17E+01	2,60E-03	0,00E+00	0,00E+00	1,50E-03	3,34E-01	1,70E-02	-1,75E+01

1)GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential. 2) 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 experienced with the indicator. 3) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO_4e.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Renew. PER as energy	MJ	1,34E+02	3,79E-02	8,98E-03	1,34E+02	8,70E-03	0,00E+00	0,00E+00	5,00E-03	2,58E-01	6,50E-02	-7,81E+01
Renew. PER as material	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
Total use of renew. PER	MJ	1,34E+02	3,79E-02	8,98E-03	1,34E+02	8,70E-03	0,00E+00	0,00E+00	5,00E-03	2,58E-01	6,50E-02	-7,81E+01
Non-re. PER as energy	MJ	8,31E+02	3,00E+00	7,24E-01	8,34E+02	6,90E-01	0,00E+00	0,00E+00	4,00E-01	3,61E+00	1,09E+00	-7,12E+02
Non-re. PER as material	MJ	2,11E+01	0,00E+00	0,00E+00	2,11E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-6,83E+00

Total use of non-re. PER	MJ	8,52E+02	3,00E+00	7,24E-01	8,55E+02	6,90E-01	0,00E+00	0,00E+00	4,00E-01	3,61E+00	1,09E+00	-7,19E+02
Secondary materials	kg	1,08E+00	0,00E+00	1,80E-05	1,08E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-5,18E-01
Renew. secondary fuels	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
Non-ren. secondary fuels	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
Use of net fresh water	m^3	9,54E-01	6,28E-04	2,94E-03	9,57E-01	1,40E-04	0,00E+00	0,00E+00	8,30E-05	1,01E-02	4,30E-04	-8,52E-01

6) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	7,06E+00	2,93E-03	4,30E-03	7,07E+00	6,70E-04	0,00E+00	0,00E+00	3,90E-04	0,00E+00	3,30E-02	-6,18E+00
Non-hazardous waste	kg	4,48E+02	3,19E-01	1,17E-01	4,48E+02	7,40E-02	0,00E+00	0,00E+00	4,30E-02	0,00E+00	1,17E+00	-3,78E+02
Radioactive waste	kg	2,07E-03	2,06E-05	2,92E-06	2,09E-03	4,70E-06	0,00E+00	0,00E+00	2,70E-06	0,00E+00	5,60E-06	-1,82E-03

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	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
Materials for recycling	kg	0,00E+00	0,00E+00	6,85E-04	6,85E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,41E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	1,07E-01	1,07E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,09E+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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content	**Unit (expressed per functional unit or per declared unit)**
Biogenic carbon content in product	0 kg
Biogenic carbon content in accompanying packaging	0 kg

NOTE 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Energy type	Object	QWP value	Data quality
Electricity	Electricity data quality and CO2 emission kg CO2 eq. / kWh	0,059 kg CO2e / kWh	Market for electricity, medium voltage, Finland, EN15804+A1, EN15804+A2, EcoInvent 3.6
			Electricity production, hydro, run-of-river, Finland, EN15804+A1, EN15804+A2, EcoInvent 3.6
			Electricity production, wind, 1-3mw turbine, onshore, Finland, EN15804+A1, EN15804+A2, EcoInvent 3.6
District Heat	**Electricity data quality and CO2 emission kg CO2 eq. / kWh**	0,024 kg CO2e /kWh	Heat production, softwood chips from forest, at furnace 5000kw, global, EN15804+A1, EN15804+A2, EcoInvent 3.6

Transportation scenario

Parameter	Value
Fuel type and consumption of vehicle used for transport	Truck: diesel, maximum load capacity 34 t. Specific transport emissions 0,064 kg CO_2 equiv. / tn x km
Distance (km)	Average transport distance 130 km
Capacity utilization (%)	100 % for truck
Bulk density of transported products (kg/m^3)	Bulk density varies depending on product type and thickness
Volume capacity utilization factor	Not applicable

End-of-life scenario; CleanMaster (Frame), MistMaster (Frame) and StandardPlus

			Hood frame
		Material	
Process flow	**Size (mm)**	-	MIN 1000x100x300 MAX 3000x2000x560
Collection process specified by type	kg collected separately	-	46,7 / 165,9
	kg collected with mixed construction waste	-	-
Recovery system specified by type	kg for reuse	-	-
	kg for recycling	Steel Glass Led lighter	44,14/ 160,14 0,41 / 1,43 2 / 4
	kg for energy recovery	Polyurethane	0,25 / 1
Disposal specified by type	kg material for final deposition	-	-
Assumptions for scenario development	units as appropriate	Assumptions for scenario development	Waste materials are transported 75 km by truck to recycling facility with a truck capacity utilization of 45%

End-of-life scenario; Electronic components of CleanMaster and MistMaster

			Electronic parts of Hood
		Material	
Collection process specified by type	kg collected separately	-	3,7
	kg collected with mixed construction waste	-	-
Recovery system specified by type	kg for reuse	-	-
	kg for recycling	Electronic parts (steel, copper, polycarbonate)	2,4
		Cables (copper)	0,09
	kg for energy recovery	plastics and Synthetic rubber in electronic parts	0,09
Disposal specified by type	kg material for final deposition	UV lamp	0,3
		UV ballast	0,9
		Silicone	0,08
Assumptions for scenario development	units as appropriate	Waste materials are transported 75 km by truck to recycling facility with a truck capacity utilization of 45%	

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ANNEX: RESULTS BY RTS PCR REQUIREMENTS (PER KG)

STANDARDPLUS, MISMASTER (FRAME), CLEANMASTER (FRAME)

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C2	C3	D
Global Warming Potential total	kg CO2e/kg	1,50E+00	2,15E-02	5,18E-02	1,57E+00	2,29E-02	1,53E+00	6,84E-03	5,37E-02	-1,53E+00
Abiotic depletion potential (ADP-elements) for non fossil resources	kg Sbe/kg	3,47E-03	3,65E-07	4,25E-07	3,47E-03	4,06E-07	2,57E-08	1,15E-07	1,40E-06	-2,65E-05
Abiotic depletion potential (ADP-fossil fuels) for fossil resources (+A2)	MJ/kg	3,83E+01	3,35E-01	2,95E-01	3,89E+01	3,77E-01	1,31E-01	1,06E-01	3,70E-01	-1,31E+01
Water use	m3e depr./kg	1,49E+00	1,26E-03	4,83E-03	1,50E+00	1,41E-03	6,00E-04	3,85E-04	6,75E-03	-6,88E-01
Biogenic carbon content in product	kg C/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
Use of secondary materials	kg/kg	2,89E-01	0,00E+00	4,91E-06	2,89E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,65E-01

ELECTRONIC PARTS OF CLEANMASTER AND MISTMASTER

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C2	C3	D
Global Warming Potential total	kg CO2e/kg	1,75E+01	5,09E-02	4,28E-02	1,76E+01	1,16E-02	0,00E+00	6,84E-03	9,58E-01	-1,47E+01
Abiotic depletion potential (ADP-elements) for non fossil resources	kg Sbe/kg	8,32E-03	8,62E-07	3,87E-08	8,32E-03	2,00E-07	0,00E+00	1,16E-07	1,53E-06	-7,69E-03
Abiotic depletion potential (ADP-fossil fuels) for fossil resources (+A2)	MJ/kg	2,24E+02	7,89E-01	1,91E-01	2,25E+02	1,82E-01	0,00E+00	1,05E-01	9,49E-01	-1,89E+02
Water use	m3e depr./kg	5,71E+00	2,93E-03	3,41E-03	5,72E+00	6,84E-04	0,00E+00	3,95E-04	8,78E-02	-4,59E+00
Biogenic carbon content in product	kg C/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
Use of secondary materials	kg/kg	2,83E-01	0,00E+00	4,74E-06	2,83E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,38E-01