Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:
Swegon Comfort module PARASOL 1200
from
Swegon Group AB

Programme:	The International EPD® System, www.environdec.com
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Swegon

Programme information

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
Product category rules (PCR): PCR 2019:14 Construction products. Version 1.11, date 2021-05-02.	
PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Claudia A. Peña. Contact via info@environdec.com	
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification	
Third party verifier: Bureau Veritas Certification Sverige AB (Camilla Landén and Anders Nordelöf) The certification body is accredited by: SWEDAC , accreditation nr 1236	
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ No	
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Company information

Owner of the EPD

Swegon Group AB

Description of the organisation

People spend most of their time indoors, which is why we need a sound indoor climate for our health, well-being, and happiness. Swegon´s ambition is to achieve the world's best indoor environment with the least possible impact on the external environment. Our business models, services, products, and systems are all designed to provide the right solution for each individual project.

Swegon Group AB is a market leading supplier in the field of indoor environment, offering solutions for ventilation, heating, cooling and climate optimisation, as well as connected services and expert technical support. Swegon has subsidiaries in and distributors all over the world and 16 production plants in Europe, North America and India. The company employs more than 2 600 people.

Name and location of production site

Swegon Operations AB, Fallebergsvägen 17, SE-671 34 Arvika

Product information

Product name
Swegon Comfort module Parasol 1200

Product identification
Product number: Parasol c 1192-A-HF-H-stock or 921392171

The table below provides information on the product presented in this EPD.

Product	Representative product included in the EPD	Technical standard	Weight (kg)	Dimensions (mm)	Material composition
Comfort module	Comfort module Parasol 1200	OM-12-2013, EN 14518, EN 15116, ISO 3741, ISO 5135, ISO 5167	22.6	1192 x 592 x 220	Steel, aluminium, copper

Product description
"Parasol" is the generic name of a family of products consisting of comfort modules for cooling, heating and ventilation. The modules are designed to supplement one another and together create optimal room comfort. The comfort modules operate on a basic principle that is closely akin to that of chilled beams. The difference is mainly that the comfort module distributes air in four directions instead of two. This maximizes the area where supply air is mixed with room air so that the modules discharge air at high capacity, yet they do not occupy more ceiling space than necessary. The comfort modules are also optimized to quickly mix the discharged air with room air providing better comfort in the room. In heating applications, this technique can be advantageously utilized to efficiently provide heat along the ceiling. The average lifetime of the product is 25 years.

Products included in the EPD
This EPD concerns the comfort module Parasol 1200

UN CPC code
The CPC code applied is CPC 54632 Ventilation and air-conditioning equipment installation services.

Geographical scope
Global

LCA information

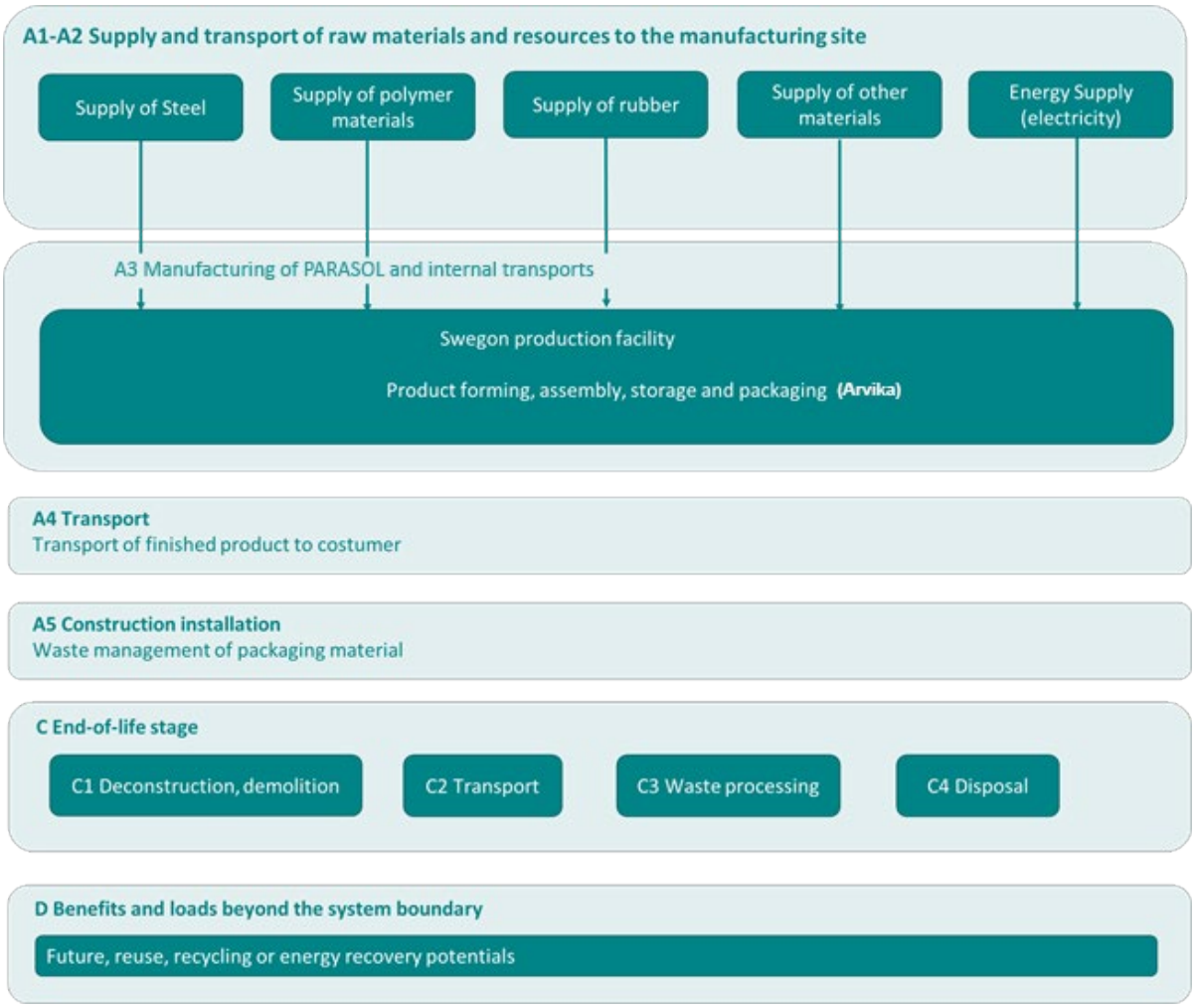
Declared unit
The declared unit is set to 1 piece of finished product (22.6 kg).

Reference service life
This EPD does not indicate Reference Service Life (RSL).

Time representativeness
The data used to model product manufacturing corresponds to 2020. The data from generic databases are from 2014 – 2021. No data used is older than 10 years.

Database(s) and LCA software used
The LCA was modelled using the LCA software GaBi 10 Professional and the respective generic life cycle inventory data-sets provided by Sphera (2021).

System diagram



Description of system

Cradle to gate with module C1-C4, module D and with optional modules. The life cycle stages included are described in the table below:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction, demolition	Transport	Waste processing	Disposal	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	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	BE, SE, CN	BE, SE, CN	SE	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
Specific data used	1,1%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation -sites	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X: Module declared

ND: Module not declared

*This stage (A5) is partly declared i.e. only handling of packaging material is included.

Allocation

Allocation has been avoided whenever possible by increasing the level of detail of the production process and by collecting product specific environmental data. Electricity consumption at the production facility was based on specific measurements and product specific data were collected. In cases where allocation could not be avoided the electricity demand was allocated to the product based on its mass or time in the respective machine.

All direct and indirect energy (heat and electricity) consumption were included in the analysis. For the indirect energy use (such as for lighting and heating) a mass-based allocation approach was applied.

Scenarios

The analysis is carried out using factory-specific data for use of energy and utilities and waste generation, as well as product-specific data for use of raw materials. Therefore, the results represent the product system and no other scenarios were applied in production.

Data quality

Site-specific production data has been retrieved for 2020 from the production site. The upstream and downstream processes have been modelled based on data from generic databases, mostly Sphera database. The collected data was reviewed in terms of consistency, and it is estimated as good quality.

Cut-off criteria

The study applies a cut-off criterion of maximum 1%.

Modelling of transportation modules

Three types of transportation processes are included in this LCA study; the transport of raw materials and its packaging to the production sites (A2), the transport of the final products to the customers (A4) and the transport of waste materials from the production sites to the disposal (C2). The following table presents the transport scenarios applied and the modelling assumptions:

Transport module	Transport mode	Average distance (km)	Capacity utilization (%)
Suppliers to manufacturing (A2)	28-32-ton Euro 5 diesel truck	595	85%
	Boat	23225	
	Electric train	1500	
Manufacturing to customer (A4)	28-32-ton Euro 5 diesel truck	531	85%
	Boat	222	
Customer to waste management (C2)	28-32-ton Euro 5 diesel truck	150	85%

Modelling of product manufacturing (A3)

Swegon comfort module parasol 1200, consists primarily of steel and other metals like aluminium and copper with smaller amounts of polymer and rubber components. The steel produced in upstream modules is supplied in the form of rolled sheets that are pressed, formed and assembled with the remaining materials and components in Swegon's production facility.

The inventory performed for the production process accounts for all the energy flows needed during the production process (such as electricity) as well as the energy demands for auxiliary process such as internal transports. Electricity demand in the facilities is modelled using the site-specific renewable electricity mix that is supplied to Swegon consisting 100% of hydro power.

The waste streams from the manufacturing site include steel scrap, copper (welding wire) and stone wool. Steel and coper are sent to material recycling while stone wool is disposed in landfill.

Modelling of End-Of-Life (C1-C4)

The impacts from deconstruction were modelled based on literature data for energy use in demolition, accounting for 0.004 MJ of diesel-powered machinery work per kg finished product. The entire product was assumed to be demolished at the End of Life.

Below is an example on how the amounts for C3 and C4 was calculated.

*C3 (a) = Reference flow * 0.85 * share of steel in the product*

*C3 (b) = Reference flow * 0.85 * share of aluminium in the product*

*C3 (c) = Reference flow * 0.80 * share of copper in the product*

C4 = Reference flow - C3(a) - C3(b) - C3(c)

The following end-of-life scenario has been applied:

Scenario	Kg per declared unit	Source for scenario
Recycling, waste processing at treatment plant. (C3)	18.94	Assumption
Disposal, at inert construction waste landfill (C4)	3.66	Assumption

In this scenario, it was assumed that steel, aluminium and copper in the product will be recycled.

Modelling of benefits beyond End-Of-Life (D)

For module D, the benefits from the recycling waste are presented. The steel, aluminium, and copper recycled is credited with the avoided production of the raw material they would be displacing if recycled. A loss factor of 15 % for steel and aluminium and 20% for copper was applied to the benefits from the recycling waste streams since losses exist in the recycling process.

Furthermore, the steel was assumed to consist of 12.7 % scrap which therefore was subtracted before crediting. The steel was credited with the dataset "GLO: Values of scrap (Worldsteel 2018)."

The aluminium was assumed to consist of 0 % scrap since a primary aluminium was used in the modelling. The aluminium was credited with the dataset "Aluminium ingot - cradle to gate (EuroAl 2015, EU-28, consumption mix)".

The copper was assumed to consist of 44% scrap which therefore was subtracted before crediting. The copper was credited with the dataset "Copper wire - cradle to gate (ECI_DKI 2012, EU-27)".

Key estimates and assumptions

The scenarios and assumptions applied in this study for all the life cycle stages included are based on data provided by Swegon and correspond to the most likely scenario.

Content declaration

The content declaration includes the declared unit of product (22.6 kg) and the associated packaging material; therefore, the gross material weight is larger than 22.6 kg.

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Steel	18.2	12.7	0
Aluminium	2.5	0	0
Copper	1.6	44	0
Polymers	0.2	0	0
Zinc	0.1	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	
Wood	4.1	18	
Polyethene film	0.1	0.4	
Corrugated board	2.6	12	

No substances that appear in the REACH candidate list of SVHC (Candidate List of Substances of Very High Concern) are present or used in the product concerning this EPD.

Environmental performance for the Comfort module Parasol 1200

Potential environmental impact per piece finished product

Parameter describing environmental impacts	Unit	A1-A3	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
Indicator for climate impact, GWP-GHG	kg CO2 eq.	8,31E+01	7,92E+01	8,31E-01	3,05E+00	9,97E-01	5.61E-01	7.44E-03	1.97E-01	4.98E-02	5.45E-02	-4.09E+01
Climate Change - total	kg CO2 eq.	7,92E+01	8,14E+01	8,48E-01	-3,02E+00	1,02E+00	6,68E+00	7.58E-03	2.01E-01	5.12E-02	5.39E-02	-4.22E+01
Climate Change - fossil	kg CO2 eq.	8,52E+01	8,13E+01	8,41E-01	3,09E+00	1,01E+00	5.68E-01	7.53E-03	1.99E-01	5.08E-02	5.53E-02	-4.21E+01
Climate Change - biogenic	kg CO2 eq.	-6,02E+00	9,08E-02	2,53E-03	-6,12E+00	-1,06E-03	6,12E+00	-9.71E-06	-2.55E-04	1.66E-05	-1.61E-03	-4.86E-02
Climate Change - land use and land use change	kg CO2 eq.	2,65E-02	1,65E-02	4,20E-03	5,80E-03	7,57E-03	1.27E-04	6.23E-05	1.64E-03	3.51E-04	1.63E-04	-4.89E-04
Ozone depletion	kg CFC-11 eq.	1,08E-08	4,76E-09	8,68E-15	6,01E-09	1,27E-16	1.22E-15	9.72E-19	2.56E-17	1.32E-16	2.15E-16	-1.72E-10
Acidification	Mol H+ eq.	3,30E-01	3,17E-01	3,37E-03	1,02E-02	6,26E-03	2.35E-03	4.38E-05	6.08E-04	4.92E-04	3.94E-04	-1.54E-01
Eutrophication aquatic freshwater	kg (PO4)3- eq.	1,18E-04	7,78E-05	2,31E-06	3,81E-05	2,76E-06	3.01E-07	2.26E-08	5.94E-07	1.45E-07	9.29E-08	-1.88E-05
Eutrophication aquatic marine	kg N eq.	5,99E-02	5,46E-02	1,12E-03	4,19E-03	2,16E-03	7.09E-04	2.15E-05	2.79E-04	2.41E-04	1.02E-04	-2.27E-02
Eutrophication terrestrial	mol N eq.	6,45E-01	5,89E-01	1,24E-02	4,36E-02	2,40E-02	1.04E-02	2.38E-04	3.12E-03	2.65E-03	1.12E-03	-2.41E-01
Photochemical ozone formation	kg NMVOC eq.	1,97E-01	1,81E-01	2,61E-03	1,34E-02	4,99E-03	1.89E-03	4.13E-05	5.48E-04	7.03E-04	3.10E-04	-8.11E-02
Depletion of abiotic resources - minerals and metals	kg Sb eq.	3,26E-03	3,26E-03	1,41E-07	3,58E-07	7,31E-08	2.10E-08	5.79E-10	1.52E-08	5.58E-08	5.22E-09	-5.44E-04
Depletion of abiotic resources - fossil fuels	MJ	9,21E+02	8,56E+02	1,28E+01	5,30E+01	1,34E+01	2.83E+00	1.01E-01	2.66E+00	9.93E-01	7.34E-01	-4.38E+02
Water use	m^3	1,17E+01	1,02E+01	6,17E-02	1,43E+00	8,16E-03	1.23E+00	6.61E-05	1.74E-03	9.51E-03	5.94E-03	-7.90E+00

Use of resources per piece finished product

Parameter describing environmental impacts	Unit	A1-A3	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	2,26E+02	1,42E+02	3,29E+00	8,03E+01	6,90E-01	6.20E-01	5.65E-03	1.49E-01	7.32E-02	9.89E-02	-8.16E+01
Use of renewable primary energy resources used as raw materials (PERM)	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 renewable primary energy resources (primary energy and primary energy resources used as raw materi-als) (PERT)	MJ	2,26E+02	1,42E+02	3,29E+00	8,03E+01	6,90E-01	6.20E-01	5.65E-03	1.49E-01	7.32E-02	9.89E-02	-8.16E+01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)	MJ	9,22E+02	8,56E+02	1,28E+01	5,30E+01	1,34E+01	2.83E+00	1.01E-01	2.67E+00	9.94E-01	7.35E-01	-4.38E+02
Use of non-renewable primary energy resources used as raw materials (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
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	9,22E+02	8,56E+02	1,28E+01	5,30E+01	1,34E+01	2.83E+00	1.01E-01	2.67E+00	9.94E-01	7.35E-01	-4.38E+02
Use of secondary material (SM)	kg	4.03E+00	4.03E+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	-6.19E-01
Use of renewable secondary fuels (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
Use of non renewable secondary fuels (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
Net use of fresh water (FW)	m^3	5,19E-01	4,78E-01	3,26E-03	3,79E-02	7,92E-04	2.93E-02	6.47E-06	1.70E-04	2.74E-04	1.81E-04	-3.66E-01

Waste production per piece finished product

Parameter describing environmental impacts	Unit	A1-A3	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	-9,79E-07	-1,01E-06	2,00E-09	2,95E-08	6,29E-10	4.56E-10	5.11E-12	1.34E-10	5.54E-11	7.80E-11	-1.35E-06
Non-hazardous waste disposed (NHWD)	kg	9,54E+00	9,52E+00	5,47E-03	1,54E-02	1,94E-03	2.17E-01	1.51E-05	3.96E-04	2.66E-04	3.66E+00	-2.94E+00
Radioactive waste disposed (RWD)	kg	2,28E-02	1,96E-02	9,62E-04	2,19E-03	1,61E-05	2.01E-04	1.23E-07	3.23E-06	1.28E-05	7.71E-06	-1.38E-02

Output flows per piece finished product

Parameter describing environmental impacts	Unit	A1-A3	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
Components for re-use (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
Materials for recycling (MFR)	kg	8.06E-01	0.00E+00	0.00E+00	8.06E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for energy recovery (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
Exported electrical energy (EEE)	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
Exported thermal energy (EET)	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

Additional information

Certifications and labels

All production plants in Sweden are certified under ISO 14001 and ISO 9001.

Technical documentation

PARASOL

https://www.swegon.com/siteassets/_product-documents/waterborne-climate-systems/comfort-modules/_en/parasolc.pdf

Differences from previous version

Version 1.1:

The scope of the EPD has been updated to Global in order for customers all around the world to use it. This implied differences in transport to customer (A4) and the scenarios for end of life was still deemed as representative for the global scope.

Furthermore a previous error was corrected, the upstream impact of the generated production scrap was not accounted for. This is now corrected.

References

CEN European Committee for Standardisation (2019). EN 15804:2012+A2:2019, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

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