Environmental Product Declaration

Bathroom extract fans: SILENT Series

In accordance with ISO 14025:2006, EN 15804:2012+A2:2019 / AC:2021 and c-PCR-018 Ventilation components (Adopted from NPCR 030:2021) for:

EPD of multiple products, based on a representative product.
Products included:
All models of the SILENT series. The variability analysis covers one representative product for each size, as well as the product with the highest impact (A1–A3) across the entire range*. The directly represented products in the EPD are:

- SILENT 100 CZ
- SILENT 200 CHZ
- SILENT 300 CHZ
- SILENT-300 CHZ 'PLUS' DESIGN -3C

*See annexes for the list of all included products.

From:

S&P Sistemas de Ventilación, S.L

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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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General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

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

Product Category Rules (PCR): PCR 2019:14 Construction products, version 1.3.4 published on 2024.03.01 and c-PCR-018 Ventilation components (Adopted from NPCR 030:2021).

PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact

Life Cycle Assessment (LCA)

LCA accountability: Martí Roig Rabadà, *Product Sustainability Manager, Soler & Palau.*

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 verifier: Elisabet Amat Guasch (Greenize Projects) (eamat@greenize.es)

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:
☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, 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. For further information about comparability, see EN 15804 and ISO 14025.

Company information

- **Owner of the EPD:** S&P SISTEMAS DE VENTILACIÓN, SL; Calle Llevant, 4 - Polígono Industrial Llevant; 08150 Parets del Vallès (Barcelona).
- **Contact**: Martí Roig Rabadà (mroig@solerpalau.com), Product Sustainability Manager.
- **Description of the organisation:** Committed to improving indoor air quality and making it accessible to everyone, S&P develops highly energy-efficient, reliable, and durable ventilation solutions that benefit both our customers and the planet. Easy installation is a key pillar of our innovation, ensuring our products meet the needs of both users and installers. We also prioritize human well-being, which is why we are dedicated to designing exceptionally quiet equipment.

- **Product-related or management system-related certifications:** ISO 9001 (ES-257/2001) and ISO 14001 (ES-2001/0052).
- **Name and location of production site(s):** The product is manufactured in one site of the S&P SISTEMAS DE VENTILACIÓN, SL group, located in the province of Barcelona.

Soler&Palau Ventilation Group

Product information

- **Product name:** Bathroom Extractor Fans – SILENT Series.
- **Product identification:** The SILENT series is a range of axial extract fans for bathrooms. It is offered in three sizes – SILENT 100, 200, and 300 – with distinct models and designs for each size based on additional features.
- **Product description:** The SILENT series offers airflow rates from approx. 95 to 300 m³/h for circular ducting with diameters of 100 to 150 mm. Its motor is mounted on silent-elastic blocks that absorb vibrations, ensuring very low noise levels. All fans are made from injection-moulded plastic, fitted with an automatic shutter and a single-phase 230V-50Hz, Class B low-consumption motor with thermal overload protection. They feature Class II insulation, an IP45 rating, and are suitable for air temperatures up to 40ºC.
- **UN CPC code:** Ventilation and air-conditioning equipment installation services (CPC 54632, version 2.1 dated 2015).
- **Geographical scope:** The product is manufactured in Spain. LCA downstream scenario considered is Europe, however product can be used globally.
- **Included products:** This EPD covers multiple products and is based on the SILENT-100 CZ, chosen as the representative model due to its status as the best-selling in the range.

  All models of the SILENT series are included in this EPD. The variability analysis covers one representative product for each size, as well as the product with the highest impact in module A1–A3 across the entire range. A complete list of included products can be found in the annexes.

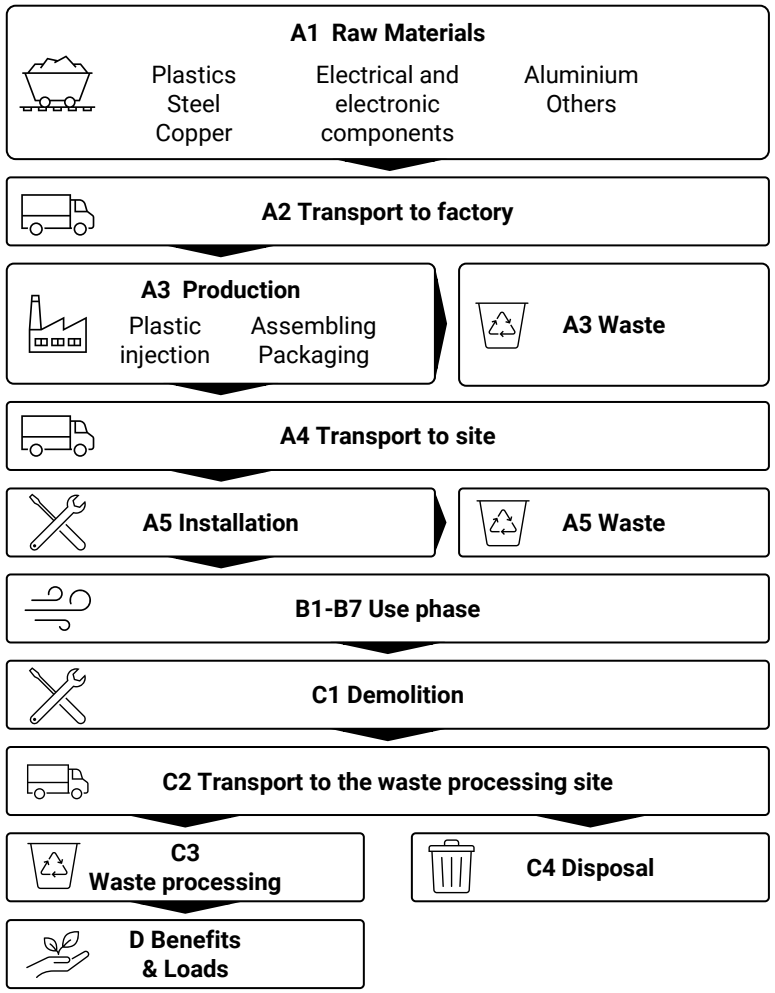
Prod. Reference	Product name	Weight (Kg)*
5210400700	SILENT-100 CZ (220-240V 50) RE	0,68
5210426200	SILENT-200 CHZ (220-240V 50) RE	1,04
5210421300	SILENT-300 CHZ (220-240V 50) RE	1,26
5210622900	SILENT-300 CHZ 'PLUS' DESIGN -3C (220-240V 50HZ) RE	1,80

* Including packaging except wooden pallet.

LCA information

- **Declared unit:** 1 unit of SILENT-100 CZ.
- **Reference service life:** 25 years.
- **Time representativeness:** All specific data related to the production plants and use, used for the study date from 2023.
- **Database(s) and LCA software used:** The primary inventory data has been obtained from S&P, corresponding to the references listed above, produced in 2023 at S&P production site in Barcelona province, Spain. The secondary data has been extracted from the Ecoinvent version 3.10.1 database, included in the OneClick LCA software and internationally recognized. Whenever possible, inventory data related to Spain has been selected; otherwise, data from Europe in general has been used.
- **Description of system boundaries:** Cradle to gate with options, modules A4-A5, modules B1-B7, modules C1–C4, and module D.
- **Cut-off rules:** In accordance with the provisions of the PCR 2019:14 construction products, version 1.3.4 and the standard UNE-EN 15804:2012+A2:2020, at least 95% of total inflows and outflows (mass and energy) per module have been included. The "polluter pays" principle has been applied. Additionally, the following processes have been excluded from the study scope:
  - Manufacture of equipment used in production.
  - Business trips.
  - Maintenance activities at the production plants.
  - Transportation of personnel to and within the plants.
  - Diffuse particle emissions during the transport and storage of raw materials.

- **System diagram:**



- **Hypothesis and considerations applied:**

  PRODUCT STAGE (A1-A3): Encompasses the manufacturing of raw materials, their transportation to the production facility, and all stages of the product manufacturing process.

  - **Raw materials supply (A1):** This stage includes the procurement of raw materials and pre-assembled components used in the product's manufacturing.
  - **Transport (A2):** This stage accounts for the transportation of raw materials and pre-assembled components from direct suppliers to S&P production site.
  - **Manufacturing (A3):** The SILENT range is manufactured and assembled almost entirely in-house. This stage covers plastic injection molding of all components, full product assembly, and quality testing.

    Mass allocation has been applied to accurately determine the share of resources.

    Electricity used during the manufacturing process is backed by a certificate of origin issued by the National Commission on Markets and Competition (CNMC), guaranteeing that it is sourced entirely from renewable energy, specifically wind (16%), hydro (26%), and solar power (58%). The modelled energy mix for A3 module has an emission factor of 0,044 kg CO_{2eq}/kWh. The transformation losses have been included.

    Water consumption during manufacturing is negligible, as the process uses a closed-loop system.

  CONSTRUCTION PROCESS STAGE (A4-A5): The construction process stage includes the transportation of the product to the installation site and the processes required for its installation.

  - **Transportation to site (A4):** Transportation to the installation site is calculated based on the product's sales distribution in 2023. The distance to the site is estimated according to the geographic location of sales. Since the product is sold globally, transportation is assumed to cover 1.766 km by lorries (16–32 metric tons, EURO6) and 380 km by freight sea container ship.
  - **Installation (A5):** The installation process has a negligible impact, as it is performed manually. However, the impact of the product packaging that is generated as a waste during this phase is accounted for. Recycling processes have been modeled based on EUROSTAT statistics.

  USE STAGE (B1- B7): Includes all impacts associated with the operation, maintenance, and repair of the product throughout its lifespan.

  - **Use, Maintenance, Repair, Replacement, and Refurbishment (B1-B5):** These submodules are considered negligible because the product does not generate additional impacts during its use, requires no maintenance, and is not expected to need repairs, replacements, or refurbishments during its operational life.
  - **Operational Energy Use (B6):** The operational energy consumption (B6) has been calculated considering that the equipment has a nearly constant consumption of 8 W during operation. A realistic scenario assumes that the equipment operates intermittently throughout the day, accumulating a total use of 1 hour per day over its entire Reference Service Life (25 years). Under these conditions, the device's annual energy consumption is 2,92 kWh. For more information about the consumption of the equipment, please visit our website, where you will find all the technical data.

    As the bathroom extract fans are used across Europe, an average market dataset for European low voltage electricity is used. The emission factor for the used dataset is 0,33 $KgCO_{2eq}$/kWh.
  - **Operational Water Use (B7):** This submodule is negligible, as the product does not require water for its operation.

END OF LIFE STAGE (C1-C4): Includes all processes related to the product's disposal, such as deconstruction, transport, waste processing, and final disposal.

- **Deconstruction (C1):** Deconstruction impacts are assumed to be zero, as the equipment is manually removed from buildings.
- **Transport (C2):** A transport distance of 50 km has been assumed for waste from the product deinstallation point to the waste management facility. It is assumed that transport is conducted using freight lorries of 16-32 metric tons, EURO6 - Europe.
- **Waste processing and disposal (C3-C4):** Waste management has been modeled using a conservative and realistic scenario, although the recyclability potential of the equipment is higher than what is stated in the LCA.

  The percentages for recycling, incineration (with or without energy recovery), and landfill disposal have been defined based on the norm EN 50693.

  These are as follows for the entire product: 44% of the product is recycled, 26% of the equipment is incinerated (with or without energy recovery), and 30% of the equipment is landfilled.

BENEFITS AND LOADS (D): Accounts for the potential environmental benefits and loads associated with the reuse, recycling, or energy recovery of materials after the product's end-of-life. These benefits are reported beyond the system boundaries.

- **Benefits and loads (D):** To ensure a realistic and evidence-based approach in modeling the impacts of Module D, data points generated by OneClick LCA and based on ECOINVENT data have been used. The quantities imputed to the different datapoints correspond only to waste that does not go to landfill.

Material	End of Life Stage (C1-C4) Scenario	Benefits and Loads (D) Scenario
Steel	80% is recycled 20% is landfilled	Generation of steel scrap
Aluminium	70% is recycled 30% is landfilled	Generation of aluminium scrap
Copper	60% is recycled 40% is landfilled	Generation of copper scrap
Polypropylene	20% is recycled 40% is incinerated with energy recovery 40% is landfilled	Generation of recycled Polypropylene Energy recovery
Other Plastics	50% is incinerated with energy recovery 25% is incinerated without energy recovery 25% is landfilled	Energy recovery
Electric Components	100% is landfilled	-
Cardboard Paper	83% is recycled 8% is incinerated 9% is landfilled	Generation of recycled cardboard Energy recovery
Wood	32% is recycled 30% is incinerated 38% is landfilled	Generation of recycled wood Energy recovery

Soler&Palau encourages the proper management of the equipment's waste and to increase the recyclability ratio at the end of its useful life, as the **product's recyclability potential is >95%.**

Modules Declared

The variation in GWP-GHG between the representative product, which is also the one with the lowest environmental impact (SILENT-100 CZ), and the product with the highest impact (SILENT-300 CHZ 'PLUS' DESIGN) in stages A1-A3 is 309%, due to a weight difference of approximately 164% (~1.2 kg) and the additional electronics of the SILENT-300 CHZ 'PLUS' DESIGN.

Module	Product stage			Construction Process stage		Use stage							End of Life stage				Resource Recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	X
Geography	GLO	GLO	ES	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU
Specific data used	11% (GWP-GHG)			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	309% (GWP-GHG)			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Variability analysis

Below is presented the variation in the results of specific products included in the EPD with respect to the reference product. The percentage variation is shown for the combined impacts of modules A1-A3 and A-C.
The EPD includes three representative product sizes and the model with the highest manufacturing impact, representing the worst-case scenario.

Differences in module A1–A3 are mainly due to equipment weight, since all models use the same materials. Over the full life cycle (A–C), module B6 has the highest impact. The SILENT-300 CHZ, with the highest energy consumption, shows the greatest deviation from the reference product.

Variation (%) of Results per Declared Unit							
Indicator	**Unit**	**SILENT-200 CHZ (220-240V 50) RE**		**SILENT-300 CHZ (220-240V 50) RE**		**SILENT-300 CHZ 'PLUS' DESIGN -3C (220-240V 50HZ) RE**	
		A1-A3	**A-C**	**A1-A3**	**A-C**	**A1-A3**	**A-C**
GWP-fossil	Kg $CO_{2eq.}$	101%	88%	111%	211%	309%	166%
GWP-biogenic	Kg $CO_{2eq.}$	49%	88%	115%	226%	174%	152%
GWP-luluc	Kg $CO_{2eq.}$	117%	90%	163%	219%	217%	155%
GWP-total	Kg $CO_{2eq.}$	109%	88%	111%	211%	327%	166%
ODP	kg $CFC11_{eq.}$	186%	95%	205%	221%	266%	159%
AP	mol $H^{+}_{eq.}$	73%	85%	70%	198%	172%	154%
EP-freshwater	kg $P_{eq.}$	115%	90%	104%	215%	180%	153%
EP-marine	kg $N_{eq.}$	93%	88%	94%	207%	254%	165%
EP-terrestrial	mol $N_{eq.}$	89%	87%	88%	202%	240%	164%
POCP	kg NMVOC $_{eq.}$	99%	89%	105%	202%	254%	168%
ADP-minerals&metals*	kg $Sb_{eq.}$	180%	130%	154%	192%	269%	204%
ADP-fossil*	MJ	93%	88%	120%	217%	265%	158%
WDP*	m^3	98%	88%	108%	216%	247%	156%

Acronyms: GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption.

* EPD International Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Content information

None of the components present in the final product and included in the “Candidate List of Substances of Extreme Concert in the authorization procedure” of the REACH regulation has a percentage higher than 0,1%.

The wooden pallet is allocated among the units placed on it during transport, considering only a single-use cycle.

Plastic film is allocated at the factory level based on product weight.

Product components	Reference Product Weight, kg	Best case Product Weight, kg	Worst case Product Weight, kg	Post-consumer material, weight-%	Biogenic material, weight, kg C/kg
Steel	0,19	0,19	0,45	0%	-
Aluminium	0,03	0,03	0,13	0%	-
Copper	0,05	0,05	0,07	0%	-
Plastics	0,26	0,26	0,81	0%	-
Electrical and electronic components	0,00	0,00	0,04	0%	-
TOTAL	**0,53**	**0,53**	**1,50**	**0%**	-

Packaging materials	Reference Product Weight, kg	Best case Product Weight, kg	Worst case Product Weight, kg	Weight-% (versus the reference product)	Weight biogenic carbon, kg C/kg
Cardboard	0,08	0,08	0,23	15%	0,55
Paper	0,09	0,09	0,07	16%	0,55
Wood	0,05	0,05	0,26	10%	0,45
Plastic film	0,00	0,00	0,01	0%	-
TOTAL	**0,22**	**0,22**	**0,57**	**42%**	**0,50**

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

A declared unit of one unit of SILENT-100 CZ (220-240V 50) RE with a weight of 0,68Kg is considered. The impact assessment is based on EF3.1. 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. Usage of results from A1-A3 without considering the results of module C is not encouraged. When comparing results from different Environmental Product Declarations (EPDs), exercise caution due to varying methodologies and inherent uncertainties across programs.

Results per declared unit																
Indicator	**Unit**	**A1 - A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	Kg $CO_{2eq.}$	2,64E+00	2,32E-01	1,10E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,39E+01	0,00E+00	0,00E+00	5,09E-03	2,97E-01	7,15E-02	-6,11E-01
GWP-biogenic	Kg $CO_{2eq.}$	-3,24E-01	4,64E-05	3,24E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,36E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,33E-04
GWP-luluc	Kg $CO_{2eq.}$	7,10E-03	8,36E-05	6,20E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,34E-02	0,00E+00	0,00E+00	1,85E-06	1,05E-05	1,69E-06	-8,06E-04
GWP-total	Kg $CO_{2eq.}$	2,32E+00	2,32E-01	3,36E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,40E+01	0,00E+00	0,00E+00	5,09E-03	2,97E-01	7,15E-02	-6,11E-01
ODP	kg $CFC11_{eq.}$	4,13E-08	4,59E-09	9,16E-11	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,40E-07	0,00E+00	0,00E+00	9,95E-11	1,37E-10	6,14E-11	-7,14E-09
AP	mol $H^{+}_{eq.}$	3,10E-02	5,54E-04	3,28E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,40E-01	0,00E+00	0,00E+00	1,10E-05	1,13E-04	2,43E-05	-6,93E-03
EP-freshwater	kg $P_{eq.}$	2,15E-03	1,55E-05	1,85E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,22E-02	0,00E+00	0,00E+00	3,46E-07	4,02E-06	3,82E-07	-3,60E-03
EP-marine	kg $N_{eq.}$	3,45E-03	1,34E-04	4,92E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,20E-02	0,00E+00	0,00E+00	2,72E-06	4,26E-05	7,58E-05	-1,73E-03
EP-terrestrial	mol $N_{eq.}$	3,88E-02	1,45E-03	1,08E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,98E-01	0,00E+00	0,00E+00	2,94E-05	4,02E-04	1,08E-04	-2,44E-02
POCP	kg $NMVOC_{eq.}$	1,39E-02	8,51E-04	4,05E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,50E-02	0,00E+00	0,00E+00	1,80E-05	1,08E-04	3,32E-05	-5,45E-03
ADP-minerals&metals*	kg $Sb_{eq.}$	2,74E-04	7,65E-07	4,49E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,23E-04	0,00E+00	0,00E+00	1,69E-08	3,46E-07	8,23E-09	-6,75E-05
ADP-fossil*	MJ	4,33E+01	3,25E+00	8,18E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,56E+02	0,00E+00	0,00E+00	7,16E-02	1,18E-01	4,59E-02	-8,51E+00
WDP*	m^3	1,06E+00	1,61E-02	2,29E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,52E+01	0,00E+00	0,00E+00	3,55E-04	1,38E-02	4,18E-03	-1,30E-01

Acronyms: GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption.

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Additional mandatory and voluntary impact category indicators

Results per declared unit																
Indicator	**Unit**	**A1 - A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG (1)	Kg $CO_{2eq.}$	2,64E+00	2,32E-01	1,10E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,40E+01	0,00E+00	0,00E+00	5,09E-03	2,97E-01	7,15E-02	-6,12E-01
PM	Disease inc.	1,94E-07	1,69E-08	5,01E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,01E-07	0,00E+00	0,00E+00	3,77E-10	1,17E-09	3,08E-10	-7,55E-08
IRP (2)	kBq U-235_{eq}	1,64E-01	4,17E-03	4,36E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,54E+01	0,00E+00	0,00E+00	9,03E-05	4,21E-04	6,27E-05	-6,10E-02
ETP-fw (3)	CTUe	3,28E+01	4,31E-01	2,06E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,47E+01	0,00E+00	0,00E+00	9,63E-03	3,22E-01	1,55E+00	-4,12E+01
HTP-c (3)	CTUh	3,24E-09	3,90E-11	5,38E-12	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,08E-09	0,00E+00	0,00E+00	8,55E-13	2,06E-11	5,42E-12	-9,74E-11
HTP-nc (3)	CTUh	2,16E-07	2,05E-09	2,86E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,19E-07	0,00E+00	0,00E+00	4,53E-11	8,64E-10	3,10E-10	2,99E-09
SQP (3)	Pt	3,61E+01	1,95E+00	6,63E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,24E+02	0,00E+00	0,00E+00	4,33E-02	1,60E-01	7,63E-02	-5,18E+00

Acronyms: **GWP-fossil = GWP-GHG**: Global warming potential-Greenhouse gas; **PM**= particulate matter; **IRP** =Ionizing radiation, human health; **ETP-fw**=Ecotoxicity tap water-organic; **HTP-c**= human health, carcinogenic effects; **HTP-nc**= human health , non-carcinogenic effects; **SQP** = Land use related impacts/ Soil quality.

1)This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.

2)This impact category refers to the eventual impacts of low amounts of ionizing radiation on human health from the nuclear fuel cycle. It does not consider the effects due to possible nuclear accidents or occupational exposure due to possible nuclear accidents or occupational exposure due to radon or from some construction materials.

3)The results of this environmental impact category must be used wisely, as the uncertainties in the results are elevated and the results are elevated and the experience with this parameter is limited.

Resource use indicators

Results per declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	4,35E+00	5,66E-02	-3,45E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,53E+02	0,00E+00	0,00E+00	1,24E-03	1,32E-02	1,12E-03	-1,67E+00
PERM	MJ	3,00E+00	0,00E+00	-3,00E+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	0,00E+00
PERT	MJ	7,36E+00	5,66E-02	-6,45E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,53E+02	0,00E+00	0,00E+00	1,24E-03	1,32E-02	1,12E-03	-1,67E+00
PENRE	MJ	3,35E+01	3,25E+00	-1,98E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,56E+02	0,00E+00	0,00E+00	7,16E-02	-5,37E+00	-4,15E+00	-8,81E+00
PENRM	MJ	8,56E+00	0,00E+00	-1,76E-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	-5,46E+00	-2,92E+00	1,32E+00
PENRT	MJ	4,20E+01	3,25E+00	-1,96E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,56E+02	0,00E+00	0,00E+00	7,16E-02	-1,08E+01	-7,07E+00	-7,49E+00
SM	kg	1,40E-01	1,51E-03	1,13E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,20E-02	0,00E+00	0,00E+00	3,32E-05	2,25E-04	2,23E-05	1,59E-01
RSF	MJ	3,53E-02	1,89E-05	7,20E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,34E-04	0,00E+00	0,00E+00	4,20E-07	4,96E-06	5,94E-07	-1,45E-04
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	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,78E-02	4,41E-04	-9,88E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,80E-01	0,00E+00	0,00E+00	9,74E-06	2,05E-04	-2,73E-04	-9,91E-03

Acronyms: PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water.

Waste indicators

Results per declared unit																
Indicator	**Unit**	**A1 - A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4,66E-01	4,72E-03	1,12E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,41E+00	0,00E+00	0,00E+00	1,05E-04	4,37E-03	1,19E-03	-1,44E-01
Non-hazardous waste disposed	kg	1,24E+01	9,94E-02	2,26E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,09E+02	0,00E+00	0,00E+00	2,21E-03	1,45E-01	5,02E-01	9,68E-01
Radioactive waste disposed	kg	4,18E-05	1,04E-06	1,11E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,95E-03	0,00E+00	0,00E+00	2,24E-08	1,05E-07	1,55E-08	-1,55E-05

Output flow indicators

Results per declared unit																
Indicator	**Unit**	**A1 - A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**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	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	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	0,00E+00	0,00E+00	2,27E-01	0,00E+00	0,00E+00
Materials for energy recovery	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	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	6,83E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,80E-01	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	9,47E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,80E-01	0,00E+00	0,00E+00

Additional environmental information

Below are the impacts of the SILENT-100 CZ module B6 (220-240V 50) RE when the product is functioning according to the defined scenario in different European countries. The dataset used corresponds to low-voltage electricity (market activity).

Results per declared unit - B6								
Indicator	**Unit**	**SPAIN**	**FRANCE**	**GERMANY**	**BELGIUM**	**NORWAY**	**ITALY**	**GREAT BRITAIN**
GWP-fossil	Kg $CO_{2eq.}$	1,49E+01	6,38E+00	2,84E+01	1,49E+01	1,75E+00	2,58E+01	1,90E+01
GWP-biogenic	Kg $CO_{2eq.}$	3,71E-02	1,14E-02	1,43E-01	2,19E-02	3,03E-02	1,06E-01	1,11E-02
GWP-luluc	Kg $CO_{2eq.}$	1,96E-01	6,37E-03	5,87E-02	4,01E-02	8,17E-03	5,59E-03	2,36E-02
GWP-total	Kg $CO_{2eq.}$	1,52E+01	6,39E+00	2,86E+01	1,50E+01	1,79E+00	2,59E+01	1,90E+01
ODP	kg $CFC11_{eq.}$	3,05E-07	2,26E-07	3,66E-07	6,39E-07	4,71E-08	5,95E-07	9,62E-07
AP	mol $H^{+}_{eq.}$	8,24E-02	4,45E-02	8,21E-02	4,76E-02	2,42E-02	1,09E-01	7,05E-02
EP-freshwater	kg $P_{eq.}$	3,54E-03	2,66E-03	3,88E-02	3,30E-03	1,84E-03	5,75E-03	3,41E-03
EP-marine	kg $N_{eq.}$	1,47E-02	8,47E-03	2,11E-02	9,90E-03	2,10E-03	1,62E-02	1,53E-02
EP-terrestrial	mol $N_{eq.}$	1,54E-01	7,03E-02	1,56E-01	1,01E-01	2,56E-02	1,77E-01	1,77E-01
POCP	kg $NMVOC_{eq.}$	5,53E-02	2,41E-02	5,03E-02	3,20E-02	7,79E-03	7,58E-02	4,93E-02
ADP-minerals&metals*	kg $Sb_{eq.}$	3,26E-04	3,06E-04	3,62E-04	3,44E-04	2,78E-04	3,25E-04	3,21E-04
ADP-fossil*	MJ	4,92E+02	8,27E+02	4,45E+02	5,90E+02	2,11E+01	4,14E+02	5,16E+02
WDP*	m^3	9,73E+00	1,05E+01	7,39E+00	6,96E+00	9,16E+01	1,59E+01	5,09E+00

Acronyms: GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption.

* EPD International Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Annexes

Products included in the EPD

The following products are included in the scope of this EPD. All minor design variations, such as the range of colors available, included in the S&P catalogue also fall within the scope of this EPD.

SILENT 100 CZ
DESIGN ECOWATT

SILENT DUAL 200

SILENT-100 CZ
SILVER

Product name
SILENT-100 CZ
SILENT-100 CRZ
SILENT-100 CHZ
SILENT-100 CHZ VISUAL
SILENT-100 CDZ
SILENT-100 CZ 12V
SILENT-100 CZ ECOWATT
SILENT-100 CRZ ECOWATT
SILENT-100 CHZ ECOWATT
SILENT-100 CDZ ECOWATT
SILENT DUAL 100
SILENT - 100 CZ DESIGN
SILENT - 100 CRZ DESIGN
SILENT - 100 CHZ DESIGN
SILENT - 100 CZ DESIGN - 3C
SILENT - 100 CRZ DESIGN - 3C
SILENT - 100 CHZ DESIGN - 3C
SILENT - 100 CZ DESIGN ECOWATT
SILENT - 100 CRZ DESIGN ECOWATT
SILENT - 100 CHZ DESIGN ECOWATT

Product name
SILENT-200 CZ
SILENT-200 CRZ
SILENT-200 CHZ
SILENT DUAL 200
SILENT - 200 CZ DESIGN - 3C
SILENT - 200 CRZ DESIGN - 3C
SILENT - 200 CHZ DESIGN - 3C
SILENT-300 CZ
SILENT-300 CRZ
SILENT-300 CHZ
SILENT DUAL 300
SILENT - 300 CZ DESIGN - 3C
SILENT - 300 CRZ DESIGN - 3C
SILENT - 300 CHZ DESIGN - 3C
SILENT - 300 CZ 'PLUS' DESIGN - 3C
SILENT - 300 CRZ 'PLUS' DESIGN - 3C
SILENT - 300 CHZ 'PLUS' DESIGN - 3C

References

- PCR 2019:14. Construction products. Version 1.3.4. Valid until 20/06/2025.
- c-PCR-018 Ventilation components (Adopted from NPCR 030:2021)
- ISO 14025:2010: Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures.
- ISO 14040: Environmental management-Life Cycle Assessment-Principles and framework (2006).
- ISO 14044: Environmental management-Life Cycle Assessment-Requirements and guidelines (2006).
- EN 15804:2012+A2:2019/AC:2021: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.
- General Programme Instructions for international EPD System version 5.0.0 (2024-06-19).
- General Programme Instructions for international EPD System version 4.0.0 (2021-03-29).
- LCA Report Memoria ACV SILENT RANGE S&P.
- Product Environmental Footprint report. Representative product study for: Unidirectional Residential Ventilation Units (URVU), Bidirectional Residential Ventilation Units (BRVU), Non-residential Ventilation Units (NRVU), Fans (>125W); EVIA.
- Packaging waste by waste management operations; EUROSTAT; 2025.
- EN 50693:2020 - Product category rules for life cycle assessments of electronic and electrical products and systems

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