ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	Salto Systems
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-SAL-20250435-IBA1-EN
Issue date	18.11.2025
Valid to	17.11.2030

Salto CU42xx door controller

Salto Systems

Institut Bauen und Umwelt e.V.

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1. General Information

Salto Systems

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-SAL-20250435-IBA1-EN

This declaration is based on the product category rules:

Electronic and physical Access Control Systems, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

18.11.2025

Valid to

17.11.2030

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Salto CU42xx door controller

Owner of the declaration

Salto Systems
Arkotz, Polígono Lanbarren 9
20180 Oiartzun
Spain

Declared product / declared unit

The declared unit consists of 1 piece of Salto CU42xx Door Controller.

Scope:

This declaration is based on LCA data for Salto CU42xx door controller.

Final assembly takes place in Salto Spain manufacturing facilities in Oiartzun, via external suppliers who provide the different elements to be incorporated into the device.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally

Dipl. Natw. ETH Sascha Iqbal,
(Independent verifier)

2. Product

2.1 Product description/Product definition

Salto door controllers enable the expansion of Salto access control benefits to a wide variety of automatic doors, barriers, sliding doors, electronic gates or elevator and lift access control.

The Salto CU4000 and CU42E0 Door Controller series (in the following referred to as 'CU42xx') is designed for online door management within Salto's smart access ecosystem over wired TCP/IP networks using SSL/TLS. To extend the SVN (Salto Virtual Network) data-on-card technology advantages of user access credentials update, event reporting, maintenance reporting and flexible control over users' access rights.

(Scalable) The Salto CU4000 Door Controller series is optimized for both small and large installations. It supports any type of smart credential, including key cards, mobile credentials, and PIN codesecting a Salto Wall Reader. The communication data is encrypted to improve the security of the system. The controller also supports offline and online operation and is designed with a tamper switch.

The unit is equipped with 6 physical inputs and 4 outputs fully configurable through the Salto ProAccess Space access control software to interface with third-party systems and fully compatible with the Salto Wall Readers range.

This EPD is based on a representative product selected from CU models starting with 'CU42'. This representative product corresponds to the worst-case scenario with respect to the BoM (number and weight of PCBs) as well as power consumption. It covers the CU42E0 and CU4200 models, including packaging boxes and housing coverings designed for European, American, Australian, and UK power supply standards. The CU4EB8 and UBOX4000 models are not included. For the placing on the market in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the following legal provisions apply: Directive 2014/53/EU, 16 April 2014, on the harmonisation of the laws of the Member States relating to the marking available on the market of radio equipment and repealing *Directive 1995/5/EC*, and the harmonised standards based on these provisions: *ETSI EN 300 328 / ETSI EN 300 330 / ETSI EN 301 489-1 / ETSI EN 301 489-3 / ETSI EN 301 489-17 / EN IEC 62368-1:2020 + A11:2020 / EN IEC 62311:2020 / EN IEC 63000:2018*.

The CE-marking considers the proof of conformity with the respective harmonized standards based on the legal provisions above. For the application and use the respective national provisions apply.

2.2 Application

The CU42xx completes the access control installation, adding support for the operation of electrical devices and SVN update capabilities wherever individual access control is needed, e.g. office and government buildings, healthcare, sports facilities, public institutions, education, hospitality, and airports.

2.3 Technical Data

The technical properties of CU42xx are detailed in the next table:

Technical data

Name	Value	Unit
Power supply (VDC)	12	V
Current Requirements ...Peak opening	2	A
Current Requirement (Stand by)	0.014	mA
Operating Temperature	0 - 60	°C
Operating Humidity up to	85	%
Transmit Frequency	13560	kHz
Peak Power Draw during card read	0.225 - 0.177	W
Output current	1	A
Height (Dimension with housing)	240	mm
Width (Dimension with housing)	56	mm
Length (Dimension with housing)	180	mm

VDC - Volts Direct Current

This product is designed for indoor use, not for outdoor use.

CE marked product *RED Directive* (2014/53/EU) compliance.
Additional internal testing for humidity.
Performance data of the product with respect to its characteristics in accordance with the relevant technical provision, which can be applied, are mentioned above.

2.4 Delivery status

Units are packed individually in cardboard boxes together with specifications, mounting scheme and power supply.
Cardboard packaging dimensions are: 352 mm x 262 mm x 75 mm.

2.5 Base materials/Ancillary materials

The material composition of a single device is given in mass percentages (%); packaging and labelling are not included in this table.

Name	Value	Unit
Steel	0.9	%
Stainless steel	1.3	%
Electronic-PCB	18.4	%
Electronic commercialised	0.4	%
Plastics	61.4	%
Power supply	15.5	%
Adapter	2.0	%

This product contains substances listed in the candidate list (date: 25-Jun-2025) exceeding 0.1 percentage by mass: **no**.

This product contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B, which are not on the candidate list, exceeding 0.1% by mass: **no**.

Biocide products were added to this construction product, or has it been treated with biocide products (this then concerns a treated product as defined in the (EU) *Ordinance on Biocide Products No. 528/2012)*: **no**.

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2.6 Manufacture
CU42xx are fully designed and assembled manually in Salto's facilities in Oiartzun, Spain. Most of the components included in the device are produced in Spain by different companies.
The factory of Salto has a certification of Quality Management System in accordance with *ISO 9001*.

2.7 Environment and health during manufacturing
Salto's factory in Oiartzun, Spain, operates an Environmental Management System certified according to *ISO 14001*.

2.8 Product processing/Installation
The installation of Salto CU42xx door controllers is performed with the aid of hand tools by trained installers. The assembly instructions and mounting scheme are included inside the packaging of each unit.

2.9 Packaging
Product packaging consists of a cardboard box including product labels, a mounting scheme and instructions in a plastic bag, all of which are transported in a wooden pallet with plastic film.
The amount of packaging material per product is 0.524 kg of cardboard/paper (78.33 %), 0.014 kg of plastic (2.1 %) and 0.131 kg of wood (19.54 %). The total weight of the packaging is 0.669 kg.
For the correct operation of the product, this packaging includes the power supply and the adapter (0.136 kg).
All packaging materials are recyclable.
European waste codes:

- Cardboard packaging 15 01 01
- Plastic packaging 15 01 02
- Wooden packaging 15 01 03

2.10 Condition of use
During the use of the device under normal conditions, no maintenance is needed.

Special cleaning is not needed.

2.11 Environment and health during use
There are no interactions between the device and the environment or health while it is operating.
There is no harmful emissive potential. No damage to health or impairment is expected under normal use corresponding to the intended use of the product. The product complies with legislation relevant to electromagnetic fields, i.e. emitted electromagnetic fields do not exceed standard or limit values and the product's electromagnetic compatibility is secure for individuals who are at Increased risk in this regard, as Pacemakers.

2.12 Reference service life
The experience and historical trends suggest that the typical USEFUL LIFE is likely to fall within the range of 10 to 15 years. The ageing of the products hardly takes place when used as intended and with expert use. Under normal conditions, maintenance and replacement of parts is not needed.

2.13 Extraordinary effects
Fire
No fire testing according to EN 13501-1 has been carried out, as the product is not required to undergo such testing. The housing and cover are made of materials with documented flame ratings according to UL94. The housing and base of the large box achieve a UL94 V0 rating. The cover of the large box achieves UL94 V0 in grey and UL94 V2 in transparent.

- Building material class: not applicable
- Flaming droplet class: not applicable
- Smoke density class: not applicable.

Water
There is no interaction between the device and water under normal conditions or in case of flood.

Mechanical destruction
During unexpected mechanical destruction, no specific effects on the environment are expected.

2.14 Re-use phase
The device can be re-used, moving it from one place to another until the end of its service life, though this is not a typical procedure. For the EoL phase, re-use after the reference service life is not possible, and the device needs to be disposed of (see 2.15 below).

2.15 Disposal
Disposal of the device is under Waste of Electrical and Electronic Equipment - *WEEE*) European Directive (*Directive 2012/19/EU WEEE*).
The device can be disassembled, and most of the metal components are recyclable; the rest (plastics) can be used for energy recovery by incineration.
According to *EWC- European Waste Codes,* waste codes are:

- *EWC/ 16 02 13* discarded equipment containing hazardous components (1) other than those mentioned in 16 02 09 to 16 02 10*
- *EWC/ 17 04 05 iron, steel*
- *EWC/ 17 04 01 copper*
- *EWC/ 17 04 11 cables*
- *EWC/ 17 02 03 plastic*

2.16 Further information
Additional information about Salto CU42xx door controller can be obtained from:

Salto Systems, SL
Arkotz 9, Polígono Lanbarren
20180 Oiartzun – Gipuzkoa - Spain

Tel.:+34 943 344 550
E-mail: info@saltosystems.com
http://www.saltosystems.com

3. LCA: Calculation rules

3.1 Declared Unit
The declared unit refers to 1 piece of CU42xx as specified in IBU PCR PART B requirements on the EPD for Electronic and physical Access Control Systems.

Declared unit

Name	Value	Unit
Declared unit	1	pce.
Mass total system	0.773	kg
Conversion factor to 1 kg	1.294	-
Mass reference	0.773	kg/pce

3.2 System boundary

The EPD is of type "cradle to gate - with options". The following life cycle stages have been considered under this declaration as part of the system boundaries:
Module A1-A3 – The product stage includes provision of all materials, products and energy, as well as waste processing up to the end-of-waste state or disposal of final residues during the product stage. These modules consider the manufacturing of system components/raw materials in particular plastic parts, metal parts, power supplies, populated printed circuit boards and other electronics, the transport to the production site and the assembly of the product under study, which only uses electricity. The impact of packaging materials is included.
Module A4. In this module, the countries to which the final product is shipped are listed and reported.
Module A5 – Polyethylene film is used as packaging by SALTO as well as cardboard and wood. The end of life of the packaging material is declared as module A5 in this EPD, where materials go through waste treatment. There is no additional effort to install SALTO's products in the buildings since it is done manually; therefore, this has not been accounted for in the LCA model.
Module B1 to B7 - SALTO's control units actively consume electricity according to the number of openings. In order to calculate the electrical energy consumption during module B6 (operational energy use), SALTO provided data based on worst-case estimations and technical data.
Module B1 to B5 and B7 are considered as non-relevant for the control unit and therefore are not declared.
Modules C1 to C4 for End-of-Life (EoL) stages. The End-of-Life stage starts when the product is replaced, dismantled or deconstructed from the building or construction works and does not provide any further function. It can also start at the end-of-life of the building, depending on the choice of the product's EoL scenario.
This stage comprises: De-installation (C1), Transport to waste processing (C2), Waste processing for reuse, recovery and/or recycling (C3), Disposal (C4).
Module D includes benefits and loads beyond the system boundaries resulting from the recycling and recovery processes taking place under modules A5 and C3.

3.3 Estimates and assumptions

For transporting product components and packaging from European suppliers, which are mostly located in Spain, a worst-case distance of 592 km has been used (module A2).
The Bill of Materials (BOM) contains multiple mono-material parts. Parts of the same material are grouped per type and modelled as input of one part per material. Metal parts in the BOM are purchased as parts. MLC datasets are available for finished steel and stainless-steel screw parts including underlying waste assumptions. The plastics are mostly injection moulded parts modelled via a standard MLC dataset process for injection moulding of small plastic parts.
The BOM also includes a power supply, an adapter and three populated printed circuit boards (PCB) which have specified weight and dimensions. The electronic components are modelled based on their dimensions.
For the environmental impact in A3, Salto has a photovoltaic system installed on site that generated 19 % of their electricity requirements during the year of this study. The remaining electricity is purchased from a Spanish electricity provider that has guarantees of origin for 100 % of the electricity sold to Salto with a composition, which has been represented accordingly in the model following the requirements of the PCR Part A. The proportion of the electricity demand covered by 'green' electricity in the total electricity demand is 100 %.

3.4 Cut-off criteria

In the assessment, all available data from the production process are considered, i.e., all raw materials used, utilised thermal energy (upstream only, i.e., A1), and electric power consumption using best available LCI datasets. Only small amounts of oil used in the laboratory or grease for some machines, as well as production waste, were not considered in the modelling. These represent less than 3.5 % of mass and have negligible environmental impact relevance compared with the rest of the materials and energy inputs used to make the product.
The sum of the excluded material flows does not exceed 5 % of mass, energy or environmental relevance.
Production of capital equipment, facilities and infrastructure required for manufacture are outside the scope of this assessment.
Transport processes for the packaging materials have also been neglected.
The packaging of the raw materials and their disposal are not considered in the scope of this study.

3.5 Background data

The background data has been taken from the latest available *Sphera LCA FE* (GaBi) database *MLC CUP 2024.2* (Sphera Managed Lifecycle Content (MLC)). The requirements for data quality and background data correspond to the specifications of *IBU Part A*.

3.6 Data quality

Data for production and assembly were collected by SALTO and supported by *Sphera*. The technological background of the collected data reflects the physical reality of the declared products. The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs. The background data has been taken from the latest available *Sphera* LCA FE (GaBi) database *CUP 2024.2*. No data was knowingly excluded. The completeness of the foreground processes is considered high and representativeness (technological, geographical and temporal) is considered good.

3.7 Period under review

The collection of the foreground data refers to the year 2024 (12 months).

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Global

3.9 Allocation

The overall production of Salto comprises further products besides the products considered in this study. Data for electrical energy as well as packaging, refer to the declared product. During data collection, the allocation is done via pieces produced (yearly total produced products). Production waste is not considered in this study.
Environmental burdens of the incineration of packaging are assigned to the installation phase (A5); resulting benefits for thermal and electrical energy are declared in module D.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. The background data has been taken from the latest available *Sphera LCA FE* (GaBi) database *MLC CUP 2024.2* (Sphera Managed Lifecycle Content (MLC)).

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The calculation of the biogenic carbon content is based on the assumption, that the absolutely dry wood/paper/cardboard mass consists of 50 % biogenic carbon. Aside from the packaging, the product's life cycle does not have any other sources of biogenic carbon content.

Information on describing the biogenic Carbon Content at factory gate

Amount of carton in the packaging: 0.524 kg
Amount of wood in the packaging: 0.131 kg

Name	Value	Unit
Biogenic carbon content in accompanying packaging	0.298	kg C

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

The following technical information is a basis for the declared modules and can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel Diesel (truck)	0.00258	l/100km
Litres of fuel Jet fuel (plane)	0.01636	l/100km
Transport distance truck	1180.84	km
Transport distance plane	2436	km
Capacity utilisation (including empty runs) truck	55	%
Capacity utilisation (including empty runs) plane	66	%

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (Paper packaging)	0.524	kg
Output substances following waste treatment on site (Plastic packaging)	0.014	kg
Output substances following waste treatment on site (wood packaging)	0.131	kg

Reference service life

Salto CU42XX controllers are designed for indoor applications only under the following in-use operating conditions:

	Min	Typ	Max	Unit
Temperature	0	25	60	ºC
Humidity	35		85	

Assumed quality of work, when installed, shall be in accordance with SALTO's installation guides for CU42XX controllers. See CU42XX technical data sheet for declared product properties (at the gate) and finishes, as well as design application parameters, including the references to the appropriate practices and application codes.

Name	Value	Unit
Life Span according to the manufacturer	15	a

Operational Energy use (B6)

Salto CU42XX controllers are connected to mains electricity and actively consume electricity according to the number of openings.
In order to calculate the energy consumption, worst-case estimations and measurements were assumed.

Name	Value	Unit
Power supply - VDC	12	V
Current requirements, Peak opening	2	A
Current requirements, Standby	0.000014	A
Power Consumption NSC - w/IPM (standby)	0.150	mW
Peak Power Draw during card read	0.255 / 0.177	W
Total power consumption over RSL (15 a)	5.069	kWh/RSL

VDC: Volts Direct Current
NSC: Normal Standby Current
IPM: Intelligent Power Management Mode

End of life (C1-C4)

The EoL stage considers the following three scenarios: EoL scenario 1 (C3, C4, D): 100 % recycling/energy recovery; EoL scenario 2 (C3/1, C4/1, D/1): 100 % incineration of the product without energy recovery (thermal waste processing); EoL scenario 3 (C3/2, C4/2, D/2): 100 % landfilling of the product.

Name	Value	Unit
Collected separately waste type as mixed construction waste	0.773	kg
Recycling stainless steel (EoL scenario 1)	0.01005	kg
Recycling steel (EoL scenario 1)	0.00717	kg
Recycling electronics and metals (EoL scenario 1)	0.2808	kg
Incineration of plastics with energy recovery (EoL scenario 1)	0.4571	kg
Product incineration w/o energy recovery (EoL scenario 2)	0.773	kg
Product landfill (EoL scenario 3)	0.773	kg

Distance from user to EoL site (C2) 100 km.

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	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**
X	X	X	X	X	MND	MND	MNR	MNR	MNR	X	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece Salto CU42xx Door Controller

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
GWP-total	kg CO_2 eq	1.59E+01	1.32E+00	9.99E-01	1.67E+00	0	8.67E-03	1.47E+00	0	0	0	5.46E-01	2.29E-02	-1.27E+00	-4.86E-02	-4.86E-02
GWP-fossil	kg CO_2 eq	1.7E+01	1.32E+00	6.55E-02	1.66E+00	0	8.5E-03	1.47E+00	0	0	0	5.46E-01	2.27E-02	-1.26E+00	-4.82E-02	-4.82E-02
GWP-biogenic	kg CO_2 eq	-1.1E+00	2.4E-03	9.33E-01	1.05E-02	0	2.05E-05	8.79E-04	0	0	0	-2.79E-06	6.97E-05	-2.84E-03	-5.18E-04	-5.18E-04
GWP-luluc	kg CO_2 eq	2.08E-02	1.59E-03	1.36E-05	2.07E-04	0	1.44E-04	1.18E-04	0	0	0	8.45E-05	8.37E-05	-1.11E-03	8.36E-05	8.36E-05
ODP	kg CFC11 eq	2.16E-10	8.83E-14	1.27E-13	3.15E-11	0	1.27E-15	2.75E-12	0	0	0	2.45E-13	7.5E-14	-6.66E-12	-7.36E-13	-7.36E-13
AP	mol H^+ eq	8.03E-02	5.02E-03	2.46E-04	3.01E-03	0	9.23E-05	5.16E-04	0	0	0	3.99E-04	1.36E-04	-1.44E-02	1.23E-04	1.23E-04
EP-freshwater	kg P eq	8.14E-05	6.25E-07	3.55E-08	4.76E-06	0	3.67E-08	5.43E-07	0	0	0	1.06E-07	1.3E-05	-2.05E-06	-8.82E-08	-8.82E-08
EP-marine	kg N eq	1.31E-02	2.26E-03	8.73E-05	8.93E-04	0	4.65E-05	1.5E-04	0	0	0	1.89E-04	2.93E-05	-1.37E-03	3.69E-06	3.69E-06
EP-terrestrial	mol N eq	1.41E-01	2.48E-02	1.12E-03	9.43E-03	0	5.13E-04	2.1E-03	0	0	0	2.14E-03	3.21E-04	-1.49E-02	4.27E-05	4.27E-05
POCP	kg NMVOC eq	3.97E-02	6.48E-03	2.33E-04	2.38E-03	0	8.87E-05	4.02E-04	0	0	0	4.91E-04	9.37E-05	-4.39E-03	1.68E-05	1.68E-05
ADPE	kg Sb eq	1.65E-03	3.76E-08	1.35E-09	2.7E-07	0	7.48E-10	2.27E-08	0	0	0	1.07E-09	1.51E-09	-8.09E-04	9.83E-07	9.83E-07
ADPF	MJ	2.62E+02	1.72E+01	2.86E-01	3.16E+01	0	1.13E-01	2.81E+00	0	0	0	4.66E-01	3.84E-01	-1.82E+01	-1.04E+00	-1.04E+00
WDP	m^3 world eq deprived	4.32E+00	3.33E-03	1.2E-01	2.5E-01	0	1.33E-04	1.78E-01	0	0	0	1.24E-01	2.94E-03	-4.54E-01	4.94E-03	4.94E-03

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 piece Salto CU42xx Door Controller

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
PERE	MJ	1.06E+02	1.65E-01	1.19E+01	2E+01	0	9.75E-03	1.75E+00	0	0	0	1.37E-01	5.8E-02	-5.4E+00	-4.14E-01	-4.14E-01
PERM	MJ	1.18E+01	0	-1.18E+01	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ	1.18E+02	1.65E-01	7.86E-02	2E+01	0	9.75E-03	1.75E+00	0	0	0	1.37E-01	5.8E-02	-5.4E+00	-4.14E-01	-4.14E-01
PENRE	MJ	2.48E+02	1.72E+01	9.41E-01	3.16E+01	0	1.13E-01	1.69E+01	0	0	0	4.66E-01	3.84E-01	-1.82E+01	-1.04E+00	-1.04E+00
PENRM	MJ	1.47E+01	0	-6.55E-01	0	0	0	-1.41E+01	0	0	0	0	0	0	0	0
PENRT	MJ	2.62E+02	1.72E+01	2.86E-01	3.16E+01	0	1.13E-01	2.81E+00	0	0	0	4.66E-01	3.84E-01	-1.82E+01	-1.04E+00	-1.04E+00
SM	kg	6.09E-03	0	0	0	0	0	0	0	0	0	0	0	5.42E-02	-5.89E-03	-5.89E-03
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	1.36E-01	1.95E-04	2.81E-03	1.44E-02	0	1.09E-05	4.73E-03	0	0	0	2.9E-03	8.78E-05	-2.31E-02	1.94E-04	1.94E-04

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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels;

NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2:
1 piece Salto CU42xx Door Controller

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
HWD	kg	5.37E-06	5.07E-10	1.64E-10	3.53E-08	0	4.33E-12	3.57E-09	0	0	0	2.96E-10	9.49E-11	-2.51E-06	3.84E-06	3.84E-06
NHWD	kg	7.58E-01	1.71E-03	2.77E-02	2.58E-02	0	1.85E-05	1.82E-01	0	0	0	1.97E-01	7.7E-01	-9.11E-02	-1.15E-03	-1.15E-03
RWD	kg	1.26E-02	1.63E-05	1.46E-05	3.91E-03	0	2.06E-07	3.56E-04	0	0	0	2.08E-05	5.42E-06	-7.77E-04	-1.06E-04	-1.06E-04
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	2E-04	0	0	0	0	0	6.01E-02	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	3.91E-01	0	0	0	2.19E +00	0	0	0	0	0	0	0	0
EET	MJ	0	0	7.03E-01	0	0	0	4.92E +00	0	0	0	0	0	0	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 piece Salto CU42xx Door Controller

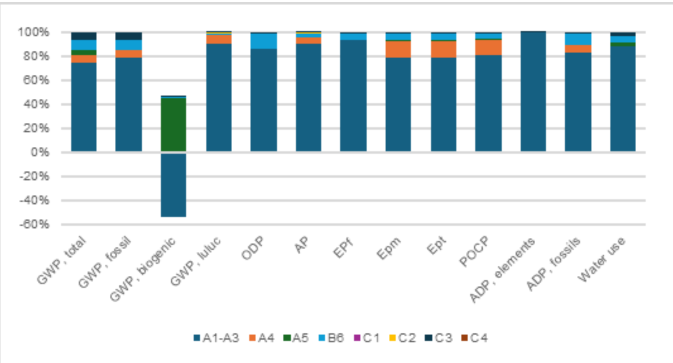
Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C3/1	C3/2	C4	C4/1	C4/2	D	D/1	D/2
PM	Disease incidence	9.33E-07	2.09E-08	1.4E-09	2.65E-08	0	9E-10	5.44E-09	0	0	0	4.91E-09	1.41E-09	-1.24E-07	3.82E-09	3.82E-09
IR	kBq U235 eq	1.5E+00	2.14E-03	2.3E-03	5.69E-01	0	2.99E-05	5.74E-02	0	0	0	3.11E-03	7.43E-04	-1.23E-01	-1.77E-02	-1.77E-02
ETP-fw	CTUe	1.86E +02	1.28E +01	1.24E-01	7.09E +00	0	8.4E-02	9.42E-01	0	0	0	3.72E-01	8.32E-01	-6.98E +00	1.11E-02	1.11E-02
HTP-c	CTUh	2.15E-08	2.32E-10	8.47E-12	4.84E-10	0	1.71E-12	6.23E-11	0	0	0	3.28E-11	1.23E-11	-8.09E-10	4.94E-10	4.94E-10
HTP-nc	CTUh	1.8E-07	7.54E-09	2.38E-10	6.8E-09	0	7.64E-11	2.53E-09	0	0	0	1.98E-09	2.58E-10	-2.09E-08	-2.24E-10	-2.24E-10
SQP	SQP	2.08E +02	6.42E-01	8.78E-02	9.4E+00	0	5.57E-02	1.11E +00	0	0	0	1.54E-01	6.52E-02	-4.79E +00	-2.31E-01	-2.31E-01

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator 'Potential Human exposure efficiency relative to U235'. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation-weighted water consumption', 'potential comparative toxic unit for ecosystems', 'potential comparative toxic unit for humans – cancerogenic', 'Potential comparative toxic unit for humans - not cancerogenic', 'potential soil quality index'. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

6. LCA: Interpretation



From the above chart, it is visible that the manufacturing phase dominates the product system, followed by the use stage, and finally the EoL stage. Modules A1-A3 contribute the most, followed by module B6 (≤13% of total impact), which has a low relative impact due to the energy consumption occurring only during the short-lasting opening activity of the product.

In the recycling/energy recovery EoL scenario 1 (shown in the chart), module C3 comes in third for GWP total, followed by distribution of the product to the customer (module A4) and then incineration of packaging after disposal during the assembly stage (module A5). In the thermal waste processing and landfill EoL scenarios (scenarios 2 and 3) (visible in the tables as C4/1 or C4/2 and not in the chart), the impacts thereof in module C are the least contributing modules after A and B. All EoL treatments result in a low burden in module C2, and most impacts occur in C3 (recycling burden) or C4 (landfill or incineration burdens), while module C1 has zero impact due to manual disassembly. In the recycling scenario, C4 has zero impact due to the absence of materials sent to landfill. Finally, EoL recycling treatments and incineration of packaging provide the benefits shown in module D.

In the EoL recycling/energy recovery scenario 1, the trends observed for Global Warming Potential (GWP), where the manufacturing stage— particularly the production stage (A1-A3) —dominates the impact of the declared product, also apply to all other impact indicators, except for Global Warming Potential

Biogenic (GWP, biogenic). It can be observed that for the GWP, biogenic, the impact arises from the packaging and incineration after its disposal during the installation phase. This is due to the fact that the packaging is predominantly composed of wood and cardboard. In other impact categories, packaging has relatively low impacts (below 3 %), with the exception of GWP, luluc, where it contributes with 22% and EPf with 10-12% contribution.

In the use phase, impacts are similar for all impact categories. Similarly, module D has a similar relative contribution in all categories in a similar order of magnitude as for GWP, except for GWP biogenic, where it is almost negligible, and ADP, elements, and AP, where it is slightly higher.

In the EoL incineration and EoL landfill scenarios, the same trends as for the EoL recycling scenario are observed. The only exception is the contribution of module C4 for the EPf indicator in EoL landfill scenario, which is the second highest contributor after the production stage (A1-A3). Different to the EoL recycling scenario, some core indicators also show positive results in module D as observed in the tables. This is due to the use of secondary material, namely for steel and stainless steel.

The contribution of electrical and electronic components is dominant across all impact categories but GWP, biogenic. Their impact ranges from 45 % of ODP (in all three EoL scenarios) to 77 % (EoL recycling scenario), 79 % (EoL incineration scenario) and 81 % (EoL landfill scenario) of the total impacts for water use, considering EoL and packaging disposal impact as absolute values. Notably, these components have a significant influence on the impact category of Abiotic Depletion Potential (ADP) for elements, accounting for 100 % of the total impact.

This includes the impact upstream, distribution, and use phases (excluding end-of-life). A detailed analysis of the electrical and electronic components in the product and the power supply unit reveals that the primary sources of impact are the electronic boards (details only available in the background report). The primary environmental impacts are mainly driven by upstream processes such as the extraction and refining of precious metals (e.g., gold, palladium, silver) and the high electricity demand in semiconductor manufacturing.

The different EoL scenarios studied (recycling, incineration and landfill), show low contributions to the total impact with a few exceptions. Due to the benefits obtained from recycling, the relative contribution of EoL in ADP, elements is 33% and 13 % in AP, but lower than 7 % in all other indicators. Benefits are not provided in the other two scenarios. Incineration of the product at EoL without energy recovery contributes up to 3 % to the total of each impact indicator, while landfill of the product contributes up to 1 % to the total of each impact indicator with the exception of EPf with 13 %.

In summary, the electrical and electronic components of the product play a dominant role in its environmental impact across all categories. Coming in second, the use phase, driven by electricity consumption, has a comparatively low impact (≤13 %). Finally, the different EoL scenarios studied (recycling, incineration and landfill), show mostly low contributions to the total impact. Overall, understanding these impacts—especially those related to the electrical components and their manufacturing processes— provides valuable insight into the environmental footprint of the product, highlighting areas where improvements can be made to reduce its overall impact.

7. Requisite evidence

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