DICHIARAZIONE DI VERIFICA EPD
Declaration of verification of EPD

ATTESTATO N° **ATTESTATION N°**

ICMQ – 24797EPD

ICMQ S.p.A., Organismo di verifica di terza parte,
ICMQ Third party verification body,

ha verificato la seguente Dichiarazione Ambientale di Prodotto (DAP):
has verified the following the Environmental Product Declaration (EPD):

Product EPD, Declaration n. "CGC20240916005" del 05/12/2024
emessa dall'organizzazione:
issued by organization:

Carlo Gavazzi Controls S.p.A.
Via Lunigiana, 46 - 20125 Milano (MI)

unità operativa:
operational unit:

Via Safforze 8 - 32100 Belluno (BL)

relativa ai prodotti riportati in allegato
relative to the products listed in Annex
sviluppata con l'uso dell'algoritmo di calcolo
developed using the calculation algorithm
"LCA Tool_dati 2023_GAV" rev. 4 del 15/11/2024
la cui corretta applicazione è stata verificata in fase di validazione dell'algoritmo
the correct application of which was verified during the algorithm validation
in conformità ai seguenti documenti:
is in compliance with the following document:

Regolamento EPDItaly rev. 6 del 30/10/2023
Core PCR EPDItaly007 rev. 3 del 13/01/2023
ISO 14025; EN 50693

L'uso e la validità del presente attestato sono soggetti al rispetto del Regolamento ICMQ per la convalida della Dichiarazione Ambientale di Prodotto
Use and validity of this reference are subject to ICMQ rules for EPD validation

La dichiarazione ambientale di prodotto è un documento emesso sotto la responsabilità dell'Organizzazione indicata;
The Environmental product declaration is emitted under responsibility of organization indicated

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
N° 0004 VV
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

PRIMA EMISSIONE
First issue
05/12/2024

EMISSIONE CORRENTE
Current issue
05/12/2024

IL PRESIDENTE E DIRETTORE GENERALE
LORENZO ORSENIGO

PRODOTTO *Product*	**Fieldbus SHSUT**
UN CPC	46
PROGRAM OPERATOR	EPDItaly - Via de Castillia, 10 – 20124 Milano
CICLO DI VITA CONSIDERATO *Life cycle considered*	Cradle to grave
TIPO DI DATI IMPIEGATI *Type of data used*	Dati storici *Historical data*
CONFINE TEMPORALE *Time limits*	2023 *2023*
GIUDIZIO *Opinion*	Positivo (Report esito verifica del 23/11/2024) *Positive*
LIVELLO DI GARANZIA *Level of guarantee*	Ragionevole *Reasonable*
SOGLIA DI RILEVANZA *significance threshold*	0 %
LIMITAZIONI E RISERVE *Limitations and reservations*	Nessuna *None*

Carlo Gavazzi Controls S.p.A.

Environmental Product Declaration

Product: name:

SHSUT (FIELDBUS)

Site Plant:

via Safforze, 8
32100 – Belluno (BL)

in compliance with ISO 14025 and EN 50693

Program Operator	EPDItaly
Publisher	EPDItaly
Declaration Number	CGC20240916005
EPDItaly Registration Number	EPDITALY0847
Issue Date	05/12/2024
Valid to	05/12/2029



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Environmental Product Declaration

SHSUT

General information

EPD Owner	Gavazzi Controls S.p.A., Viale Lunigiana, 46 20125 - Milano (MI) Italy www.gavazzi-automation.com
Reference production site(s)	Belluno plant: via Safforze, 8, 32100 – Belluno (BL)
Scope of application	This document refers to the device of the **Fieldbus** family.
Programme Operator	EPDItaly - info@epditaly.it
Independent Verification	This declaration was developed according to the EPDItaly Regulations; further information and the Regulations themselves are available at www.epditaly.it Independent verification of the declaration and data carried out according to ISO 14025:2010 ☐ _Internal ☒ _External Third-party verification performed by: ICMQ SpA, via De Castillia, 10 20124 - _Milan (www.icmq.it) Accredited by Accredia
CPC Code	46 "Electrical machinery and apparatus"
Company contact	Giampaolo Tormen, Certification Manager in Gavazzi Group.
Technical support	 **Aequilibria Srl - SB** P.le della Stazione, 8 35131 – Padova (PD) - ITALIA
Comparability	Environmental statements published within the same product category, but from different programs, may not be comparable. In particular, EPDs of similar products may not be comparable if they do not comply with the relevant Technical Standard.
Responsability	Carlo Gavazzi Controls S.p.A. releases EPDItaly from any non-compliance with environmental legislation. The holder of the declaration will be responsible for the supporting information and evidence; EPDItaly disclaims

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	any responsibility regarding the manufacturer's information, data and results of the life cycle assessment.
Reference documents	This statement was developed following the EPDItaly Program Regulations (Rev.6 of 30/10/2023 available at www.epditaly.it. The EN 50693:2019 standard is the framework reference for PCR "Electronic and electrical products and systems" (PCR EPDItaly007).
PCR – Product Category Rules	**Core-PCR:** EPDITALY007 "*Electronic and electrical product and systems*" Rev. 3 of 13/01/2023
Date and revision of this document	05/12/2024

Table 1. General information of EPD

Gavazzi Controls S.p.A.,
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http://www.gavazzi-automation.com/
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Environmental Product Declaration

SHSUT

Foreword

This document represents the EPD study conducted for the **SHSUT** device manufactured by Carlo Gavazzi Controls S.p.A., in accordance with the EPDItaly Program and its Regulations, developed in accordance with ISO 14025 and aimed at providing a tool for the development, verification and publication of Environmental Product Declarations.

The study was carried out in accordance with PCR EPDItaly007 (*PCR for electronic and electrical products and systems*), which identifies and documents the objective and scope of LCA-based information for the product category, the rules for producing additional environmental information, the life cycle stages to be included, the parameters to be addressed, and the manner in which the parameters are to be collected and communicated in a report.

Producer information and environmental policy

Carlo Gavazzi Controls SpA develops, manufactures and markets monitoring relays, timers, energy management systems, fieldbus systems, providing solutions for the industrial, residential and commercial automation markets, in the field of low voltage installations.

The products are marketed in Europe, North America and Asia-Pacific through a network of 22 own sales companies and about 60 independent national distributors. Carlo Gavazzi Controls has a production plant in Belluno (via Safforze 8, 32100 – Belluno).

The company already holds the following certifications, issued by accredited bodies:

- ISO9001 (since 1997)
- ISO14001 (since 2009)

Carlo Gavazzi Controls is committed to continuously reducing the environmental impact of its products throughout their life cycle, through the implementation of an environmentally conscious design process based on the principles of the EN 62430 standard and an ISO14001 certified environmental management system. The declared environmental claims have been assessed with a qualitative approach on the environmentally conscious design process.

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Environmental Product Declaration

SHSUT

Product Information

The product under analysis is device **SHSUT**, belonging to the Fieldbus family, nominal consumption 0.0164 W (0.0000164 kW), weight 150 g (0.150 kg) including packaging and manual.
The adopted functional unit was defined, based on the reference PCR, as **a device, characterized by its own operating power at 0.0000164 kW for a life time (RSL - Reference Service Life") of 10 years, including its packaging, and operating throughout its useful life.**

The assembly and testing of the product are carried out at the Carlo Gavazzi Controls production site.
Regarding the use phase, the product does not require periodic maintenance, it is considered continuously active throughout its estimated useful life of **10 years**, with a nominal consumption of 0,0164 W at a voltage of 8.2 VCC.

The finished device is then sent to the various Gavazzi distribution centers or, in some cases, directly to a specific customer.

Product family	Fieldbus	
Product identification number	SHSUT	
Technical Data	Power: 0.0164 W (0.0000164 kW) Frequency: VCC Weight: 0.10601 kg (packaging excluded) Service Life Time (RLS): 10 years Current Intensity: In = n.a. , Imax =n.a.	
Packaging	Weight: 0.04399 kg (43.99 g) Material: Paper and Cardboard	

Table 2. Product related information SHSUT

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Environmental Product Declaration

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Materials and constituents of the product

The declaration of materials is made in accordance with EN IEC 62474.

The products comply with substance restrictions in the EU RoHS directive (2011/65/EU).

Any recycled material content in the device is unknown.

Below is the total mass of the product (including packaging) and the weight percentages of each individual raw material to the total product.

Total mass of the device	**0.150 kg** (including packaging)

Raw Material Category SCLAM	SCLAM	SCLAM description	% of total weight	% of category to total weight
PCB	PCB-SEM	Printed circuit boards semplici (fino a due strati)	17.72%	17.72%
Electronic Components	TRSMD	SMD - Transistors and mosfets	0.005%	0.713%
	RESMD	SMD Resistors	0.001%	
	RESMD	SMD Resistors	0.003%	
	RESMD	SMD Resistors	0.003%	
	RESMD	SMD Resistors	0.003%	
	RESMD	SMD Resistors	0.003%	
	RESMD	SMD Resistors	0.003%	
	RESMD	SMD Resistors	0.003%	
	RESMD	SMD Resistors	0.003%	
	ICSMD	SMD - Integrated circuits	0.009%	
	CCERS	SMD - Ceramic capacitors	0.003%	
	CCERS	SMD - Ceramic capacitors	0.007%	
	CCERS	SMD - Ceramic capacitors	0.032%	
	CTANS	SMD - Tantalum capacitors	0.100%	
	DDSMD	SMD - Diodes, zeners, leds, transils, rectifier bridges	0.019%	
	DDSMD	SMD - Diodes, zeners, leds, transils, rectifier bridges	0.005%	
	ICSMD	SMD - Integrated circuits	0.010%	
	MICRO	Microprocessors	0.323%	
	ICSMD	SMD - Integrated circuits	0.015%	
	DDSMD	SMD - Diodes, zeners, leds, transils, rectifier bridges	0.069%	

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	CCERS	SMD - Ceramic capacitors	0.036%	
	CCERS	SMD - Ceramic capacitors	0.042%	
	CCERS	SMD - Ceramic capacitors	0.003%	
	RESMD	SMD Resistors	0.003%	
	RESMD	SMD Resistors	0.011%	
Sclam product specific	TBSTD	Standard terminal blocks	0.14%	2.01%
	TBSTD	Standard terminal blocks	1.87%	
Cables				0%
Small metallic parts	MESTD-ST	Standard metal parts steel	1.36%	1.36%
Plastics	PLCUS-ABS	Custom plastic parts ABS	12.83%	54.69%
	PLCUS-ABS	Custom plastic parts ABS	14.84%	
	PLCUS-ABS	Custom plastic parts ABS	12.97%	
	PLCUS-ABS	Custom plastic parts ABS	12.89%	
	PLSTD-PC	Standard plastic parts polycarbonate	0.00%	
	LAPAC	Packaging labels	1.17%	
Paper primary packaging	SHEET	Instruction sheets/ manuals	6.11%	27.12%
	BOXES	Carton boxes	2.20%	
	BOXES	Carton boxes	18.81%	

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Environmental Product Declaration

SHSUT

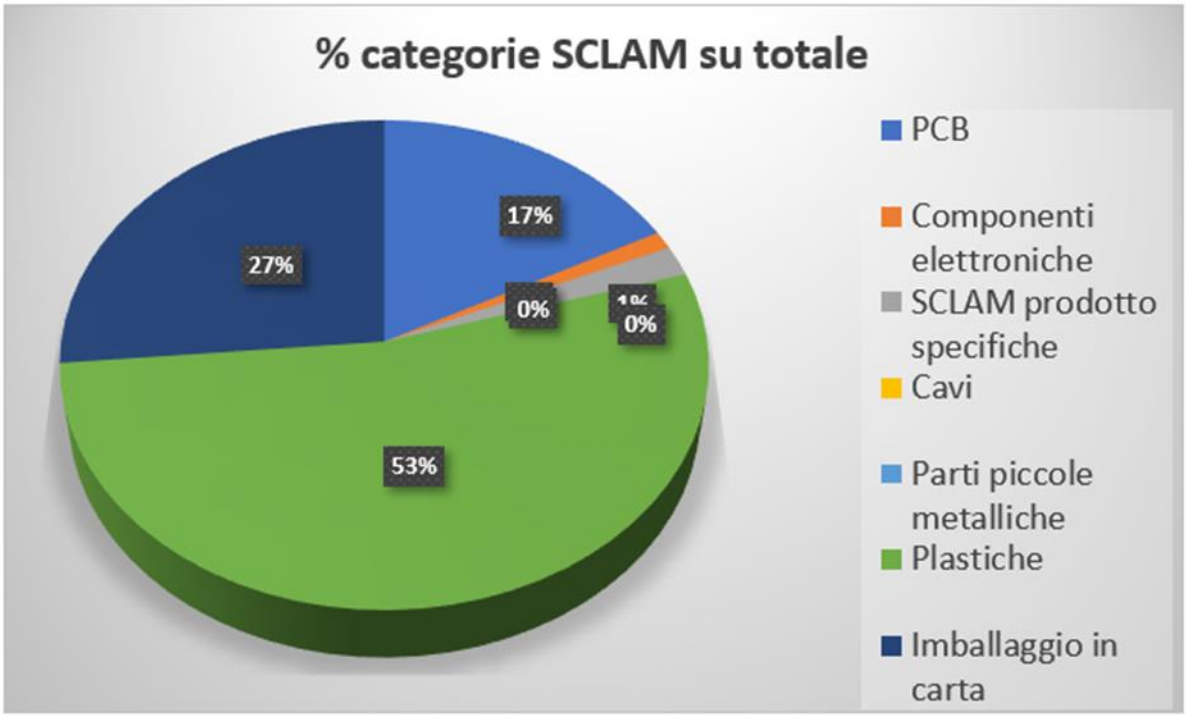


*Figure 1. Material breakdown of the **SHSUT** device*

Information related to the study

System boundaries	The boundaries of the study system are "**cradle-to-grave**".
Geographical validity	Global
Reference year data	2023
Reference tool	This EPD was generated using the results automatically generated by the Excel tool "LCA tool_dati 2023_GAV – rev4" of 15/11/2024

Table 4. Information related to the study

The assessment of all potential environmental impacts above is based on the entire life cycle of the product under analysis: production, distribution, installation, use and end of life.
The elements and processes considered for the assessment of impacts related to each phase are described below:

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Environmental Product Declaration

SHSUT

<table>
<tr><td>Production</td><td>• Product and packaging raw materials (primary and secondary), auxiliary materials and related transportation
• production and processing processes (involving energy and water consumption, air emissions, waste generated by production)
• The energy sources behind the electricity grid used in manufacturing is the italian residual mix 0,649 kg CO2 eq./kWh (Ecoinvent 3.10)</td></tr>
<tr><td>Distribution</td><td>• transportation from the Gavazzi plant to the latest distribution logistics platforms
<table>
<tr><th colspan="3">FINISHED PRODUCT DISTRIBUTION (CoD)</th></tr>
<tr><th>Distribution center finished product</th><th>% distributed to the CoD</th><th>Further distribution at the continental level?</th></tr>
<tr><td>CGC-CdD Italy</td><td>100.00%</td><td>Sì</td></tr>
<tr><td>CGC-CdD Spain</td><td>0.00%</td><td>Sì</td></tr>
<tr><td>CGC-CdD USA</td><td>0.00%</td><td>Sì</td></tr>
<tr><td>CGC-CdD Canada</td><td>0.00%</td><td>Sì</td></tr>
<tr><td>CGC-CdD Singapore</td><td>0.00%</td><td>Sì</td></tr>
</table>
• transportation from Gavazzi's CdD to the specific customer (Company Name, Country)
• disposal of secondary packaging</td></tr>
<tr><td>Installation</td><td>• End of life of primary packaging.</td></tr>
<tr><td>Use and maintenance phase</td><td>• Product Category: Fieldbus
• usage scenario: 10-year service life, continuous operation at 100% rated load, rated power 0.0164 W.</td></tr>
<tr><td>End of life</td><td>• Device End of Life Scenario (WEEE).</td></tr>
</table>

Table 5. Processes considered at various stages of the study

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Environmental Product Declaration

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The LCA study was carried out according to ISO 14040/14044 standards, following the guidelines of IS EN 50693:2019.
The software used for impact assessment is SimaPro 9.6.0.1; Ecoinvent 3.10 database.
The methods used to calculate impacts refer to the CML baseline and IPCC method for the climate change impact category.

Site-specific data were used for all of the following processes:

- production and transportation of device raw materials, auxiliary materials and packaging materials;
- manufacturing processes, plant energy consumption, air emissions and waste;
- weight, power of the device;
- transportation to the distribution center (last logistics platform).

Generic data were used for:

- recycling, energy recovery and disposal rates for primary and secondary packaging materials and WEEE (global data).

Default scenarios described in PCR 007 were used for:

- transportation to the point of sale: intercontinental and local transportation scenario.
- Lifetime (RLS) of the device: 10 years.

Environmental impact assessment

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SHSUT

The potential environmental impacts assessed through an LCA of the **SHSUT** device are given in Table 6 below.

Impacts were calculated using SimaPro Developer 9.6.0.1 software and the Ecoinvent 3.10 database.

ENVIRONMENTAL IMPACT								
Impact indicators	**Unit of measurement**	**PRODUCTION phase**		**DISTRIBUTION phase**	**INSTALLATION Phase**	**Use and Maintenance Phase**	**END OF LIFE phase**	**TOTAL**
		UPSTREAM module	**CORE module**	**DOWNSTREAM module**				
GWP (TOT)	kg CO2 eq	2.82E+00	6.98E-01	3.60E-02	2.83E-03	7.95E-01	2.90E-02	**4.38E+00**
GWP - Fossil	kg CO2 eq	2.84E+00	7.15E-01	3.40E-02	1.60E-03	7.93E-01	2.90E-02	**4.41E+00**
GWP - Biogenic	kg CO2 eq	-2.46E-02	-1.63E-02	2.00E-03	1.23E-03	1.99E-03	-1.05E-05	**-3.58E-02**
GWP - Luluc Land use and Land use change	kg CO2 eq	5.45E-03	2.85E-04	1.47E-05	2.26E-06	1.64E-04	1.34E-05	**5.93E-03**
ODP (Ozone depletion)	kg CFC11 eq	7.48E-08	1.69E-08	6.44E-10	1.45E-11	1.39E-08	7.42E-11	**1.06E-07**
AP (Acidification)	mol H+ eq	2.04E-02	2.09E-03	9.82E-05	4.14E-06	3.45E-03	3.97E-05	**2.61E-02**
EP (Eutrophication, freshwater)	kg P eq	2.31E-03	1.02E-04	2.73E-06	1.37E-07	3.40E-04	2.35E-06	**2.76E-03**
EP (Eutrophication, marine)	kg N eq	3.68E-03	4.37E-04	3.14E-05	1.66E-06	6.12E-04	1.23E-05	**4.78E-03**
EP (Eutrophication, terrestrial)	mol N eq	3.63E-02	4.52E-03	3.40E-04	1.73E-05	6.08E-03	1.21E-04	**4.73E-02**
POCP (Photochemical ozone formation)	kg NMVOC eq	1.19E-02	2.20E-03	1.49E-04	5.83E-06	1.99E-03	3.60E-05	**1.62E-02**
ADPE (Resource use, minerals and metals)	kg Sb eq	5.19E-04	1.15E-06	1.40E-07	2.24E-09	6.13E-06	4.55E-08	**5.26E-04**
ADPF (Resource use, fossils)	MJ	4.01E+01	1.20E+01	4.56E-01	1.22E-02	1.59E+01	9.10E-02	**6.85E+01**
WDP (Water use)	m3 depriv.	8.15E-01	1.79E-01	2.21E-03	2.32E-04	1.32E-01	1.24E-03	**1.13E+00**

Table 6. Results for various environmental impact categories for device SHSUT

USE OF RESOURCES

Gavazzi Controls S.p.A.,
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Environmental Product Declaration

SHSUT

Impact indicators	Unit of measurement	PRODUCTION phase		DISTRIBUTION phase	INSTALLATION Phase	Use and Maintenance Phase	END OF LIFE phase	Total
		UPSTREAM module	CORE module	DOWNSTREAM module				
PENRE	MJ	3.67E+01	1.19E+01	4.56E-01	1.22E-02	1.59E+01	9.10E-02	**6.50E+01**
PENRM	MJ	3.43E+00	1.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**3.53E+00**
PENRT	MJ	4.35E+01	1.21E+01	4.56E-01	1.22E-02	1.59E+01	9.10E-02	**7.20E+01**
PERE	MJ	3.28E+00	-2.82E-01	1.05E-02	1.78E-04	9.20E-01	7.43E-03	**3.94E+00**
PERM	MJ	6.34E-01	7.23E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**1.36E+00**
PERT	MJ	3.91E+00	4.41E-01	1.05E-02	1.78E-04	9.20E-01	7.43E-03	**5.29E+00**
FW (Net use of fresh water)	m3	2.53E-02	5.35E-03	7.96E-05	6.11E-06	1.14E-02	4.40E-05	**4.22E-02**
MS (use of secondaty materials)	kg	5.74E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**5.74E-04**
RSF (use of renewable secondary fuels)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
NRSF (Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**

Legend: ***PENRE*** *= Use of non-renewable primary energy resources excluding non-renewable primary energy resources used as raw materials;* ***PENRM*** *= Use of non-renewable primary energy resources as raw materials;* ***PENRT*** *= Total use of non-renewable primary energy resources;* ***PERE*** *= Use of renewable primary energy resources excluding renewable primary energy resources used as raw materials;* ***PERM*** *= Use of renewable primary energy resources as raw materials;* ***PERT*** *= Total use of renewable primary energy resources.*

Table 7 . Environmental impacts related to resource consumption for the SHSUT device.

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WASTE PRODUCTION								
Impact indicators	Unit of measurement	PRODUCTION phase		DISTRIBUTION phase	INSTALLATION Phase	Use and Maintenance Phase	END OF LIFE phase	TOTAL
		UPSTREAM module	CORE module	DOWNSTREAM module				
Hazardous waste disposal (HWD)	kg	2.27E-03	3.81E-04	6.39E-04	3.90E-04	4.72E-04	1.79E-03	**5.94E-03**
Non-hazardous waste disposal (NHWD)	kg	1.39E-01	2.77E-02	3.90E-02	1.89E-02	1.89E-02	2.66E-03	**2.46E-01**
Radioactive waste disposal (RWD)	kg	6.53E-05	7.07E-06	2.11E-07	2.64E-09	2.64E-09	1.40E-07	**7.27E-05**
Materials for energy recovery (MER)	kg	0.00E+00	0.00E+00	2.72E-03	1.68E-03	0.00E+00	0.00E+00	**4.40E-03**
Materials for recycling (MFR)	kg	0.00E+00	2.70E-02	1.37E-02	1.90E-02	0.00E+00	2.44E-02	**8.41E-02**
Components for reuse (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
ETE (exported thermal energy)	MJ	0.00E+00	0.00E+00	7.74E-03	4.80E-03	0.00E+00	0.00E+00	**1.25E-02**
EEE (exported electricity energy)	MJ	0.00E+00	0.00E+00	3.77E-03	2.34E-03	0.00E+00	0.00E+00	**6.12E-03**

Table 8 . Waste-related environmental impacts for the SHSUT device.

References

Gavazzi Controls S.p.A.,
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Environmental Product Declaration

SHSUT

- ISO 14040:2021 Environmental management - Life cycle assessment - Principles and framework
- ISO 14044:2021 Environmental management - Life cycle assessment - Requirements and guidelines
- ISO 14020:2000 Environmental labels and declarations - General principles
- ISO 14025:2010, Environmental labels and declarations - Type III environmental statements - Principles and procedures
- EN 50693:2019 Product category rules for life cycle assessments of electronic and electrical products and systems
- EPDItaly Program Regulations Rev. 6 of 30/10/2023
- Core-PCR: EPDITALY007 " Electronic and electrical product and systems" Rev. 3 of 13/01/2023

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