COL GROUP COL GIOVANNI PAOLO S.p.A.

EPD ITALY

ENVIRONMENTAL PRODUCT DECLARATION

PRODUCT NAME:
MV Pole Mounted Switch-disconnector SF_6 24kV 16kA GSCM003/2 SDL-E24

PRODUCTION SITE:
Via Antonio Chiribiri, 1,
10028 Trofarello (TO)

in compliance with ISO 14025 and EN 50693

Program operator	EPDItaly
Publisher	EPDItaly

Declaration number	COL-TO-162122
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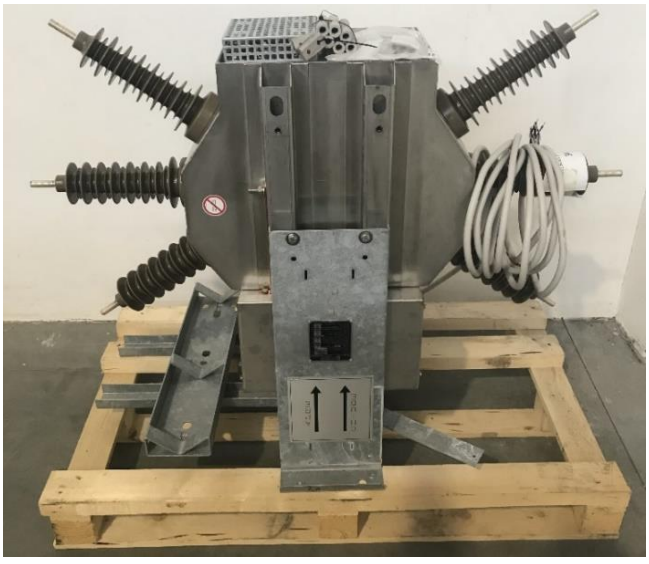

1. GENERAL INFORMATION

EPD owner	Col Giovanni Paolo S.p.A. (www.colgp.it) Via Antonio Chiribiri, 1, 10028 Trofarello (TO)
Reference production site	Via Antonio Chiribiri, 1, 10028 Trofarello (TO)
Scope of application	This is a product-specific EPD referring to the SF_6 gas-insulated medium voltage (MV) pole mounted three-pole switch-disconnectors belonging to the type GSCM003/2 with an electrical command and a rated voltage of 24kV, that were manufactured at the COL GROUP production plant in Torino and installed outdoors for use in overhead bare conductor lines (SDL-E24) of the Enel Group within the geographical scope of Italy.
Programme operator	EPDItaly – info@epditaly.it Via Gaetano De Castillia, 10, 20124 Milano (MI)
Independent verification	This declaration has been developed in accordance with the regulations of EPDItaly; further information and the same regulations are available at: www.epditaly.it Independent verification of the declaration and data carried out in accordance with ISO 14025: 2010 ☐ Internal ☑ External Third party verification done by: ICMQ S.p.A. (www.icmq.it), Via Gaetano De Castillia, 10, 20124 Milano (MI) – Italia. Accredited by ACCREDIA, Accreditation number 002H REV. 19
CPC code	46211 – "Electrical apparatus for switching or protecting electrical circuits, or for making connections to or in electrical circuits, for a voltage exceeding 1000 V"
Company contact	Ivana RIZZI, Marketing & Tender Manager, COL GROUP e-mail: ivana.rizzi@colgp.it
Technical support	Emmanuel NYERO, Environmental Specialist, COL GROUP e-mail: emmanuel.nyero@teamware.it
PCR – Product Category Rules	Core PCR: EPDItaly007 – PCR for Electronic and Electrical Products and Systems, REV.2-21/10/2020, Issue date 20/01/2020 Sub-category PCR: EPDItaly012, Electronic and electrical products and systems – Switches, REV.0, Issue date 16/03/2020
Reference documents	EN ISO 14025:2010, Environmental labels and declarations – Type III environmental declarations – Principles and procedures EN 50693:2019 - Product category rules for life cycle assessments of electronic and electrical products and systems. Regulations of the EPDItaly Programme. Revision 5.2. Issue date 16/02/2022

Comparability	EPDs published within the same product category though originating from different programs may not be comparable. Full conformance with a PCR allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible.
Liability	The EPD owner relieves EPDItaly from any non-compliance with the environmental legislations. The holder of the declaration will be liable for the supporting information and evidence. EPDItaly disclaims any liability regarding the manufacturer's information, data, and results of the life cycle assessment.

2. THE COMPANY

Col Giovanni Paolo S.p.A. (COL GROUP) is a leading Italian company owned by Oaktree Capital Management, L.P. in the fast-growing global energy transmission and distribution market. It specializes in the development and production of critical components and advanced solutions for smart grid applications in medium and high voltage electrical infrastructure with sustainability at the heart of all its activities. COL GROUP has been working to support the sustainable future of our planet and the long-term success of its customers as well as the company's own business. Testament to that are the ambitions embodied in two of COL GROUP's Strategy 2030 goals i.e., to lead with low-carbon circular economy solutions, and to enhance sustainability across the value chain. The company possesses numerous certifications according to international standards, among which are UNI EN ISO 9001:2015, UNI EN ISO 14001:2015, UNI ISO 45001:2018, UNI EN ISO 50001:2018, and ISO 27001: 2013. Established in 1920, COL GROUP has accumulated valuable experience in the electro-technical and plant engineering fields for over a century, and it is one of the few authorized suppliers for major utility companies in Europe, Middle East, South America, and Southeast Asia. The company has developed a highly innovative technology portfolio in medium voltage switchgear, substation automation, battery control systems and several other smart grid and high-voltage applications in collaboration with other dominant global utilities and industrial players. Over the years, COL GROUP has registered significant growth through the acquisition of several companies in the electronic, energy systems, railway, and electromechanical sectors. The ever-expanding company now has contemporary production sites in Torino, Catania, Milano, and Cremona, with over 150 highly skilled, specialized, and efficient employees led by an adept management team.

3. THE PRODUCT

The product is the pole SF_6 gas-insulated MV pole mounted three-pole switch-disconnector with a rated voltage of 24kV used in overhead bare conductor lines (SDL-E24) of the Enel Group throughout the Italian territory. The product type code is GSCM003/2, and it is manufactured at the COL GROUP production plant in Torino (COL-TORINO), according to the Enel Global standard GSCM003 Rev.00 and reference national laws of Italy. The MV pole mounted switch-disconnector is an outdoor installation capable of

operating normally, carrying their rated normal current, making and breaking their rated current, in systems with isolated neutral, resonant neutral, solidly or impedance earthed neutral. This switch-disconnector for bare conductors (including covered conductors) has a motorised command which relies on an outdoor phase-to-phase voltage transformer (not supplied with the switch-disconnector) for giving the power supply to the Peripheral Unit. In addition to that, the motorised command is compliant to the technical specification DY1050, with the a few modifications regarding two connection cables i.e., between the switch-disconnector and Peripheral Unit, and between the voltage transformer and Peripheral Unit. The enclosure of the switch-disconnector and the command cover is made of stainless steel AISI 316, and it doesn't need a protective coating. The enclosures are filled with SF_6 gas meeting the requirements of IEC 60376, exclusively in the factory and they form a sealed pressure system as per IEC 62271-200. All the external metallic parts which are not in stainless steel are protected with a galvanization process according to ISO 1461. The photograph on the cover of this EPD document is that of a fully assembled MV pole mounted switch-disconnector, and **Table 1** summarizes the product identification details and some of the technical characteristics of the product and its packaging.

Table 1. Technical characteristics of the product (Adapted from GSCM003 Rev.00 dated 21/01/2016)

COL-TORINO Product code		GSCM003/26/A-TO
Matricola ENEL		162122
Product type code		GSCM003/2
Product weight [kg]		132,381
Rated voltage [kV]		24
Rated frequency [Hz]		50 (or 60)
Rated normal current [A]		630
Rated short-time withstand current [kA]		16
Crest value of the rated short-time withstand current [kA_c]		40 (or 41,6)
Minimum creepage distance [mm]		744
Rated short-circuit duration [s]		1
Rated breaking current	**- of a mainly active load [A]**	630
	- of a no-load transformer [A]	6,3
	- of a no-load line [A]	10
	- of a no-load cable [A]	31,5
	- in case of earth fault [A]	50
	- with cable-charging in case of earth fault [A]	16
Packaging materials	**PE-film [kg]**	1,00
	Wooden pallet [kg]	21,00

Material composition

The declaration on the content of materials for the product was done by the manufacturer in accordance with EN IEC 62474. The unique ID and percentage mass share of all the materials and declarable substances contained in the fully assembled product plus its packaging are reported in **table 2.**

Table 2. Material composition for the fully assembled product plus its packaging

Material class name	ID	Mass share (%)
Stainless steel	M-100	26,6580
Other ferrous alloys, non-stainless steels	M-119	32,4146
Copper and its alloys	M-121	9,6670
Polyethylene (PE)	M-201	0,6477
Polycarbonate (PC)	M-204	2,5910
Epoxy resin (EP)	M-302	9,4442
Wood	M-340	13,6027
Refrigerant gases and cryogens and other greenhouse gases	M-400	0,3886
Other	OTHER	4,5861

Reference service life

The reference service life (RSL) of the product was 20 years as stipulated in PCR EPDItaly012 – Switches.

4. SCOPE AND TYPE OF EPD

This is a product-specific EPD for the SF_6 gas-insulated MV pole mounted three-pole switch-disconnector of type GSCM003/2 used in overhead bare conductor lines (SDL-E24) of the Enel Group Distribution companies, produced at COL-TORINO, in compliance with ISO 14025 and EN 50693 under the EPDItaly program regulations. It is based on a cradle to grave life cycle assessment (LCA) methodology in accordance with the ISO 14040 and 14044 standards considering the current technological level worldwide. The spatio-temporal scope for the data considered in this study are summarized in **table 3.** The results of the LCA study were automatically generated using the excel-based LCA tool "LCA-COL GROUP Tool 2.0 Version 2.0" of 31/05/2023., and they were intended for internal R&D, as well as external B2B and B2C communication. In effect, these results facilitated prudent corporate decisions through comparison of the environmental attributes of products that have similar functional requirements.

Table 3. The spatio-temporal scope considered in the LCA study at the current global level of technology

Representativeness	Scope
Spatial	Italian territory
Temporal	January 1st to December 31st, 2021

Functional unit

The functional unit (FU) of the studied system was a fully assembled, tested, and packaged SF_6 gas-insulated MV pole mounted three-pole switch-disconnector of type GSCM003/2 with an electrical command as previously described under **section 3** of this document and the technical specifications stated in **table 1**, produced at COL-TORINO, distributed and pole mounted outdoors, and used in overhead bare conductor lines (SDL-E24) of the Enel Group outdoors in various sites throughout the Italian territory, during a 20 year RSL operating nonstop.

System boundary

The system boundary implemented in this LCA covered the entire lifecycle of the product i.e., from cradle to grave as shown in **table 4** with the life cycle stages for all the major activities involved, grouped into three distinct modules i.e., upstream, core, and downstream with reference to EN 50693. The product life cycle and inventory analysis describing all the activities, simplifying assumptions, and modelling scenarios used in the LCA has been exhaustively executed under **section 5** of this document.

Table 4. The life cycle stages, geographical scope, and modules declared in the system boundary

Manufacturing		Distribution	Installation	Use	End of life
Upstream	Core	Downstream			
✓	✓	✓	✓	✓	✓

✓ = Lifecycle stages and modules declared in the LCA

Cut-off criteria

The mandatory cut-off for mass and energy flows in this LCA study was set at 1% as defined and modelled in the LCA TOOL "LCA-COL GROUP Tool 2.0 Version 2.0" of 31/05/2023. Accordingly, cut-off was applied to potential impacts that could have resulted from packaging wastes of the raw materials (e.g., metallic sheets, electronics components, screws, metal carpentry, etc.) transported to COL-TORINO for processing and later assembling of the final product were excluded as it was assumed that such impacts were negligible. What's more is that cut-offs were similarly applied to the following flows i.e., impacts associated with the skilled labour required during installation and dismantling the product at its end-of-life, and impacts corresponding to any form of maintenance e.g., applying grease on some parts of the command during use phase of the product. However, all the material and energy flows within the system boundary known to have potential to cause significant impacts on the LCA results were considered accounted for in the LCA model.

Allocation rules

The allocation criteria adopted for the LCA model was guided by the reference PCR of the product being studied. Since many other products are produced at the reference site, the "multi-output" allocation rule was applied to distribute the environmental burden among these multiple products. The primary data relating to waste generation, water, and energy consumption (petrol, electricity, and natural gas) used was provided for the reference year, and these were allocated based on economic value (revenue generated in euro) to obtain the allocation factor for the product under study, this was computed using the total annual revenue of the company, annual revenue from selling the product being studied, and the number of the studied product sold in the reference year.

Data quality

The most recent and verifiable site-specific data collected in 2021 was used in this study, and the International System of Units (SI) was adopted while recording the data. The initial primary data forming the basis for the LCA were the production specifications i.e., BOMs conspicuously indicating gross and net weights, mechanical drawings, and technical standards from ENEL provided by COL-TORINO to its external

suppliers for each sub-assembly of the final product, and these were analyzed using Microsoft excel. The weight of the heavier structural components was calculated using the Solid Edge software. For the lighter components, they were manually weighed on the weighing scale and recorded. Additional primary data used included the water and energy (petrol, electricity, and natural gas) consumption for the core activities at COL-TORINO premises during the reference year, and these were downloaded from the company's reference production site account on the website of the service providers. A similar approach was applied to download annual data for fuel consumption by company vehicles that use electronic fuel cards. In addition to that, the distances from external suppliers to COL-TORINO were evaluated with the aid of Google Maps. The same technique was applied to determine the distributing distance from COL-TORINO to the reference installation sites in the various regions within Italy, and justification was provided for all the simplifying assumptions stated. In terms of secondary data, databases from legitimate sources already embedded in the LCA TOOL "LCA-COL GROUP Tool 2.0 Version 2.0" of 31/05/2023 were used to obtain generic data for some up- and down-stream processes in the life cycle of the product.

5. PRODUCT LIFE CYCLE AND INVENTORY ANALYSIS

The life cycle inventory (LCI) lists and quantifies all the flows entering and leaving all the declared life cycle stages of the product within the system boundary considered in relation to the scope of the study. The reference flow for the LCI is 1 piece of a fully assembled MV pole mounted three-pole switch-disconnector and its packaging, weighing **154,381 kg** taken as a whole.

Manufacturing

This first life cycle stage covers all the activities classified under the upstream and core modules. The supply chain processes commence with the extraction of raw materials to produce sub-assemblies comprising of electronic and structural components which are constituents of the MV pole mounted switch-disconnector, and its packaging materials. The electronic components are ordinarily comprised of cables for the motorised command, and electronic boards on which smaller components are mounted, whereas the structural component consists of metallic sheets (which produce some scrap wastes after processing), bolts, and screws. The production of these various components was done by external suppliers on their manufacturing sites based in Italy except for the SF_6 gas with excellent dielectric properties which was delivered from Germany. All these components were produced in accordance with the specifications stated in the Enel Global standard GSCM003 Rev.00 of 21/01/2016, and they were assumed to be transported by road in a 16 - 32 tonne EURO5 lorry to COL-TORINO where the core activities of assembling, testing, and final packaging of the MV pole mounted switch-disconnector were done. The fully assembled MV pole mounted three-pole switch-disconnector was then packaged by mounting it on a wooden pallet and then covering it in a PE-film on which the product identification and distribution details printed on a piece of paper was attached. All the wastes generated on-site not necessarily from assembly and testing are documented by category in the production site register (except packaging wastes) and declared annually in the MUD "*Modello Unico di Dichiarazione ambientale*" following the applicable regulations and deadlines. Furthermore, these wastes were assumed to be transported periodically in a 16 - 32 tonne ACI mix lorry to a waste treatment plant located **50 km** away.

Distribution

From this point forth, all the activities are classified under the downstream module. The fully assembled and packaged product is loaded onto a 16 - 32 tonne EURO5 lorry for last mile delivery to the various installation sites throughout the Italian territory. For purposes of simplification, the distribution process was assumed to be solely done by road despite the ferry routes connecting mainland Italy to the islands. All the sites where the product was distributed and installed during the reference year were used and their distances (in kilometres) from COL-TORINO considering the fastest route were obtained from Google Maps. However, since the distribution of the product was not homogeneous across the entire Italian territory, these distances were weighted against the quantity of the product distributed in each of the installation sites, and the sum of the various weighted distances **(908,233 km)** was taken as the distribution distance.

Installation

Upon arrival at any of the installation sites, the product is unloaded, carefully removed from its packaging, and pole mounted by skilled technicians for outdoor use. The three-pole switch disconnector is maintenance free for the first 36 months from its delivery date and the subsequent maintenance schedules have a frequency that is not less than 36 months. However, it was assumed that the impacts from all the maintenance activities throughout the RSL were negligible thanks to the numerous quality control tests performed during and after assembling. In addition to that, the switch disconnector operated reliably even in the harshest of climatic conditions such as snow and ice. It is exactly after the installation process that the wooden pallets used as part of packaging are delicately preserved and returned for reuse. At the end of life of the packaging materials, they are assumed to be transported in a 7 - 16 tonne EURO5 lorry to a waste treatment plant **50 km** away.

Use

During use phase, the nominal power $\mathbf{P_{use}}$ (in Watts) of the switch-disconnector considering a three **(3)** phase system was computed using formula in **Equation 1**, where **R** is the electrical resistance (ohms) and **i** is the nominal current (amps). The perfectly installed MV switch-disconnector operated continuously during its RSL of 20 year consuming **2821,407 kWh** of electricity. The electricity consumed by the product during its RSL, $\mathbf{E_{use}}$ is computed considering the current and alpha factors defined as power calculation parameters for the MV switch group in PCR EPDItaly012 – Switches as modelled in the LCA TOOL "LCA-COL GROUP Tool 2.0 Version 2.0" of 31/05/2023, and the formula shown below in **Equation 2**, where; $\mathbf{P_{use}}$ is the power consumed by the switch at a given value of current; **RSL** is the service life of the product, assumed to be 20 years; **8760** is the number of hours in a year; **α** is a coefficient describing the amount of time in which the switch is requested to operate its function; and **1000** is the conversion factor that allows the energy consumed in kWh over the product's service life to be expressed.

$$\boldsymbol{P_{use}}[\mathbf{W}] = \mathbf{3} * \mathbf{R} * \boldsymbol{i}^{\mathbf{2}} \qquad (\mathbf{1})$$

$$\boldsymbol{E_{use}}[\mathbf{kWh}] = \frac{\boldsymbol{P_{use}} * \mathbf{8760} * \mathbf{RSL} * \boldsymbol{\alpha}}{\mathbf{1000}} \qquad (\mathbf{2})$$

An additional environmental information is that during the use phase, the MV switch disconnector emitted SF_6 gas to the environment, and the actual leakage in weight per year did not exceed the 0,1% value stated in IEC 62271-1 making it acceptable. Furthermore, the manufacturer made sure that at the end of the expected life of the equipment (30 years), the gas pressure remained higher than (or equal to) the minimum necessary pressure to ensure the performances prescribed for the device.

End of life

At the end of the RSL of the product, the dismantling process and separation of the MV pole mounted switch disconnector components was done following guidelines given by the manufacturer, and the resulting wastes were assumed to be transported using a 7,5 - 16 tonne EURO5 lorry to a waste treatment plant located **50 km** away from the installation site.

6. LCA RESULTS

The environmental performance results of the product for the different lifecycle stages per FU accounting for all the mandatory environmental impact indicators **(Table 5),** descriptive parameters for resource use **(Table 6),** and waste production **(Table 7)** calculated as per Core PCR: EPDItaly007 and EN 50693 were automatically generated using the LCA-TOOL "LCA-COL GROUP Tool 2.0 Version 2.0" of 31/05/2023.

Environmental impacts

Table 5. LCA results for the environmental impact indicators

Impact categories	Unit of measurement	Manufacturing	Distribution	Installation	Use	End of life	TOTAL
GWP-total	kg CO_2 eq.	7,41E+02	2,19E+01	2,48E+00	1,23E+03	1,51E+02	2,15E+03
GWP-fossil	kg CO_2 eq.	7,39E+02	2,19E+01	1,81E+00	1,22E+03	1,51E+02	2,13E+03
GWP-biogenic	kg CO_2 eq.	1,43E+00	1,59E-03	6,66E-01	1,67E+01	1,80E-02	1,88E+01
GWP-luluc	kg CO_2 eq.	8,13E-01	4,20E-04	4,12E-05	7,49E-02	1,44E-02	9,03E-01
ODP	kg CFC-11 eq.	2,01E-05	4,63E-07	6,81E-09	2,28E-05	1,37E-07	4,35E-05
AP	mol H^+ eq.	1,38E+01	5,57E-02	7,73E-03	3,64E+00	6,83E-02	1,76E+01
EP-freshwater	kg P eq.	7,16E-02	1,68E-05	6,81E-06	1,82E-02	3,21E-04	9,02E-02
POCP	kg NMVOC eq.	4,19E+00	9,00E-02	1,06E-02	3,05E+00	7,03E-02	7,41E+00
ADP-min & met	kg Sb eq.	1,55E-01	7,36E-07	7,83E-08	1,64E-05	1,75E-06	1,55E-01
ADP-fossil	MJ	1,08E+04	2,80E+02	4,31E+00	1,96E+04	1,47E+02	3,08E+04
WDP	m^3 eq. deprived	3,26E+02	2,62E-01	7,57E-02	6,89E+02	3,28E+00	1,02E+03

Caption: GWP-total = Climate change – total; **GWP-fossil** = Climate change – fossil; **GWP-biogenic** = Climate change – biogenic; **GWP-luluc** = Climate change – land use and land use change; **ODP** = Ozone Depletion; **AP** = Acidification; **EP-freshwater** = Eutrophication aquatic freshwater; **POCP** = Photochemical ozone formation; **ADP-min & met** = Depletion of abiotic resources – minerals and metals; **ADP-fossil** = Depletion of abiotic resources – fossil fuels; **WDP** = Water use.

Resource use

Table 6. LCA results for the environmental parameters describing resource use

Parameters	Unit of measurement	Manufacturing	Distribution	Installation	Use	End of life	TOTAL
PENRE	MJ	9,94E+03	2,88E+02	4,41E+00	1,96E+04	1,49E+02	3,00E+04
PERE	MJ	1,46E+03	7,48E-01	6,11E-01	4,38E+03	9,41E+00	5,85E+03
PENRM	MJ	9,32E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,32E+02

PERM	MJ	3,55E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,55E+02
PENRT	MJ	1,09E+04	2,88E+02	4,41E+00	1,96E+04	1,49E+02	3,10E+04
PERT	MJ	1,81E+03	7,48E-01	6,11E-01	4,38E+03	9,41E+00	6,20E+03
FW	m^3	3,73E+04	4,45E+01	5,89E+00	3,96E+05	5,42E+02	4,34E+05
MS	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption: PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw material; **PERE** = Use of renewable primary energy excluding renewable primary energy resources used as raw material; **PENRM** = Use of non-renewable primary energy resources used as raw material; **PERM** = Use of renewable primary energy resources used as raw material; **PENRT** = Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials); **PERT** = Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials); **FW** = Net use of fresh water; **MS** = Use of secondary materials; **RSF** = Use of renewable secondary fuels; **NRSF** = Use of non-renewable secondary fuels.

Waste production

Table 7. LCA results for the environmental parameters describing waste production

Parameters	Unit of measurement	Manufacturing	Distribution	Installation	Use	End of life	TOTAL
HWD	kg	9,20E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,20E-03
NHWD	kg	0,00E+00	0,00E+00	1,02E+01	0,00E+00	3,88E+01	4,90E+01
RWD	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	1,24E+00	0,00E+00	9,29E+00	1,05E+01
MFR	kg	1,22E+01	0,00E+00	1,08E+01	0,00E+00	7,97E+01	1,03E+02
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption: HWD = Hazardous waste disposed; **NHWD** = Non-hazardous waste disposed; **RWD** = Radioactive waste disposed; **MER** = Materials for energy recovery; **MFR** = Material for recycling; **CRU** = Components for reuse; **ETE** = Exported thermal energy; **EEE** = Exported electricity energy

7. REFERENCES

1. Col Giovanni Paolo S.p.A. website, accessed 19 May 2023, <https://colgp.it/en/>
2. Core-PCR: PCR EPDItaly007 "Electronic and electrical product and systems" Revision REV.2– 21/10/2020, Issue date 20/01/2020
3. EN 50693:2019-08 Product category rules for life cycle assessments of electronic and electrical products and systems
4. EN IEC 62474:2019 Material declaration for products of and for the electrotechnical industry
5. ENEL, Global Standard MV Pole Mounted Switch-disconnectors, GSCM003 Rev.00 21/01/2016
6. ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations – Principles and procedures
7. ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework
8. ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines
9. Regulations of the EPDItaly Programme. Revision 5.2. Issue date 16/02/2022
10. Sub-category PCR: EPDItaly012, Electronic and electrical products and systems – Switches, REV.0, Issue date 16/03/2020