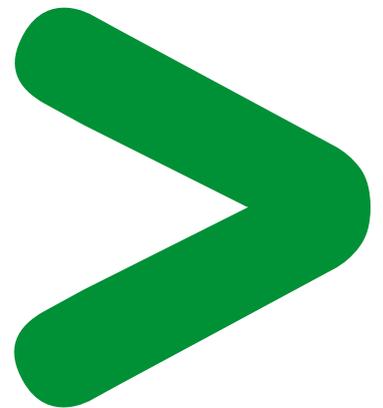


Product Environmental Profile

MV vacuum circuit breaker
Evolis 17.5 kV



Product Environmental Profile - PEP

Product Overview

The main purpose of the EVOLIS 17.5 kV vacuum circuit breaker product range is to protect operators and equipments in Medium Voltage power distribution systems. This range consists of frontal operating mechanism fixed or withdrawable circuit breakers and accessories associated with these products.

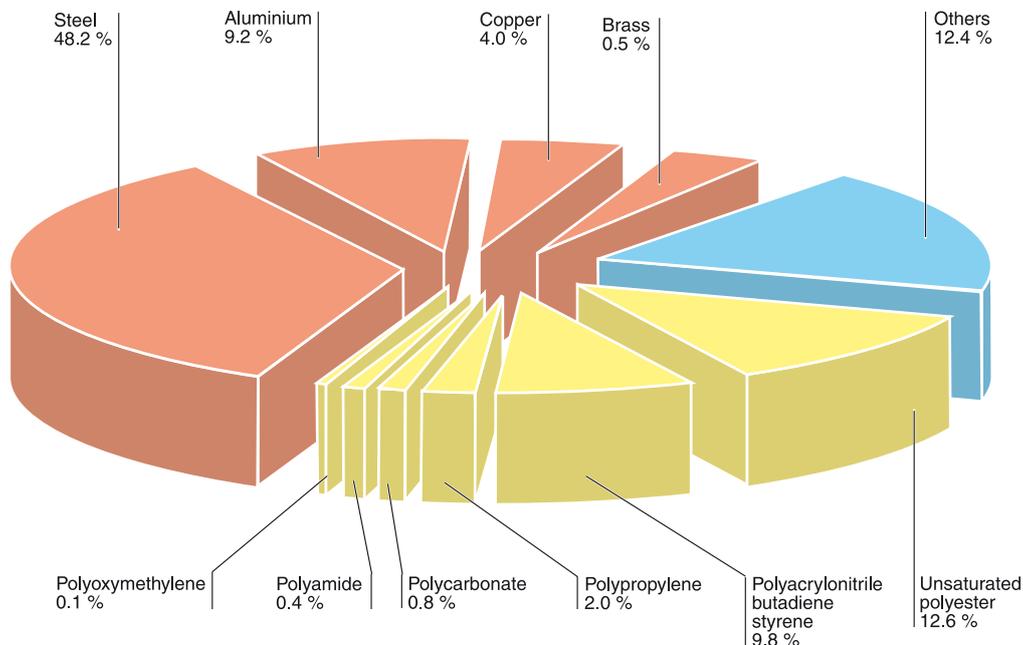
The representative product used for the analysis is the Evolis 17P2-1250 frontal operating mechanism 31.5 kA 1250 A withdrawable circuit breaker fitted with withdrawability accessories (arms, clips, drive device), a motor drive, a shunt closing release and a shunt opening release. The environmental impacts of this referenced product are representative of the impacts of the other products in the range for which the same technology is used.

The environmental analysis was performed in conformity with ISO 14040 "Environmental management: Life cycle assessment – Principle and framework".

This analysis takes the stages in the life cycle of the product into account.

Constituent materials

The mass of the Evolis 17P2-1250 circuit breaker analysed is 100.4 kg. The constituent materials are distributed as follows:



Substance assessment

Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2002/95/EC of 27 January 2003) and do not contain, or in the authorised proportions, lead, mercury, cadmium, chromium hexavalent, flame retardant (polybromobiphenyles PBB, polybromodiphenylthers PBDE) as mentioned in the Directive.

Manufacturing

The EVOLIS 17.5 kV vacuum circuit breaker product range is manufactured at a Schneider Electric production site on which an ISO 14001 certified environmental management system has been established.

Distribution

The weight and volume of the packaging have been reduced in compliance with the European Union's packaging directive. The weight of the Evolis 17P2-1250 primary packaging for land transport is 41 kg. It consists of a lower pallet, a cardboard cover and an upper wooden cover. The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

Product Environmental Profile - PEP

Utilization

The products in the EVOLIS 17.5 kV vacuum circuit breaker range do not generate any environmental pollution requiring special precautionary measures (noise, emissions, etc.).

The dissipated power depends on the conditions under which the product is implemented and used.

This dissipated power (loss of wattage due to the Joule effect) for a utilisation rate of 30 % is 14.8 W for the Evolis 17P2-1250 referenced.

The heat dissipation accounts for less than 0.001 % of the power passing through the product.

End of life

At end of life, the products in the EVOLIS 17.5 kV vacuum circuit breaker range can either be dismantled or crushed to facilitate the recovery of the various constituent materials.

The recycling potential is more than 70 %.

The percentage includes the metals used in the composition of the product.

The end of life data is listed in the product end-of-life recovery booklet.

Environmental impacts

The EIME (Environmental Impact and Management Explorer) software was used for the Life Cycle Assessment (LCA).

The assumed service life of the product is 20 years, the utilisation rate of the installation is 30 % and the European electrical power model is used.

The scope of the analysis was limited to the Evolis 17P2-1250 frontal operating mechanism 31.5 kA 1250 A withdrawable circuit breaker fitted with withdrawability accessories (arms, clips, drive device), a motor drive, a shunt closing release and a shunt opening release.

This analysis takes the product usage and emissions into account in all the life cycle phases: Manufacturing "M" including the processing of raw materials, Distribution "D" and Utilisation "U".

Presentation of product environmental impacts

Data calculated for product utilisation of 20 years.

Environmental indicators	Unit	For a Evolis 17P2-1250			
		S = M + D + U	M	D	U
Raw Material Depletion	Y-1	5.20 10 ⁻¹³	4.95 10 ⁻¹³	9.92 10 ⁻¹⁶	2.43 10 ⁻¹⁴
Energy Depletion	MJ	3.48 10 ⁴	6.20 10 ³	1.33 10 ³	2.73 10 ⁴
Water Depletion	dm ³	6.75 10 ³	2.85 10 ³	3.44 10 ²	3.56 10 ³
Global Warming Potential	g≈CO ₂	2.19 10 ⁶	4.20 10 ⁵	5.65 10 ⁴	1.71 10 ⁶
Ozone Depletion	g≈CFC-11	3.46 10 ⁻¹	9.96 10 ⁻²	3.48 10 ⁻²	2.12 10 ⁻¹
Photochemical Ozone Creation	g≈C ₂ H ₄	8.03 10 ²	1.31 10 ²	67.1	6.05 10 ²
Air Acidification	g≈H ⁺	4.31 10 ²	1.26 10 ²	13.7	2.91 10 ²
Hazardous Waste Production	kg	25.3	7.38 10 ⁻¹	4.48 10 ⁻²	24.5

The utilisation phase (phase U) has the greatest impact on all the life cycle phases of the product. It corresponds to the impacts associated with electricity production during this phase. Schneider Electric takes all the necessary measures required to optimise this parameter.

Product Environmental Profile - PEP

System approach

As the product of the range are designed in accordance with the RoHS Directive (European Directive 2002/95/EC of 27 January 2003), they can be incorporated without any restriction within an assembly or an installation submitted to this Directive.

*N.B.: please note that the environmental impacts of the product depend on the use and installation conditions of the product.
Impacts values given above are only valid within the context specified and cannot be directly used to draw up the environmental assessment of the installation.*

Glossary

Raw Material Depletion (RMD)

This indicator quantifies the consumption of raw materials during the life cycle of the product. It is expressed as the fraction of natural resources that disappear each year, with respect to all the annual reserves of the material.

Energy Depletion (ED)

This indicator gives the quantity of energy consumed, whether it be from fossil, hydroelectric, nuclear or other sources.
This indicator takes into account the energy from the material produced during combustion. It is expressed in MJ.

Water Depletion (WD)

This indicator calculates the volume of water consumed, including drinking water and water from industrial sources. It is expressed in dm³.

Global Warming (GW)

The global warming of the planet is the result of the increase in the greenhouse effect due to the sunlight reflected by the earth's surface being absorbed by certain gases known as "greenhouse-effect" gases. The effect is quantified in gram equivalent of CO₂.

Ozone Depletion (OD)

This indicator defines the contribution to the phenomenon of the disappearance of the stratospheric ozone layer due to the emission of certain specific gases. The effect is expressed in gram equivalent of CFC-11.

Photochemical Ozone Creation (POC)

This indicator quantifies the contribution to the "smog" phenomenon (the photochemical oxidation of certain gases which generates ozone) and is expressed in gram equivalent of ethylene (C₂H₄).

Air Acidification (AA)

The acid substances present in the atmosphere are carried by rain. A high level of acidity in the rain can cause damage to forests. The contribution of acidification is calculated using the acidification potentials of the substances concerned and is expressed in mode equivalent of H⁺.

Hazardous Waste Production (HWP)

This indicator calculates the quantity of specially treated waste created during all the life cycle phases (manufacturing, distribution and utilization). For example, special industrial waste in the manufacturing phase, waste associated with the production of electrical power, etc. It is expressed in kg.

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We are committed to safeguarding our planet by "Combining innovation and continuous improvement to meet the new environmental challenges".

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