Product Environmental Profile

Varplus² - Low Voltage Capacitor

Schneider Electric

Product Environmental Profile - PEP

Product overview

The main purpose of the Varplus² LV Capacitor is to compensate the reactive energy losses in electrical network .

This range consists of 28 products from 2,5 Kvar to 22,4 Kvar, Voltage from 230 to 690 and frequency from 50 to 60

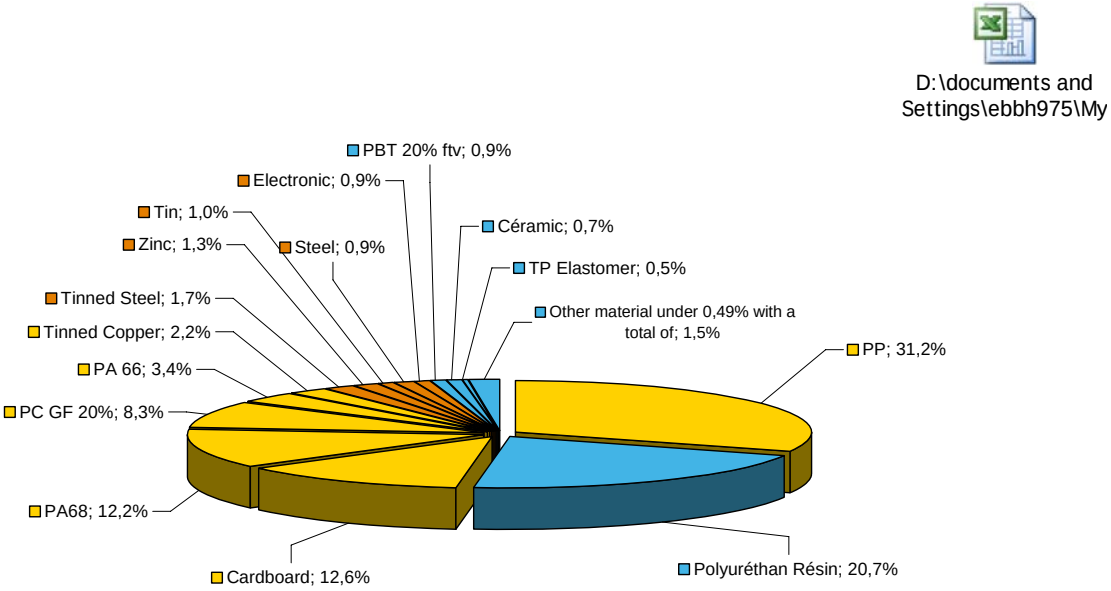
The representative product used for the analysis is a set of capacitors equivalent to 50 Kvar

The environmental impacts of this referenced product are representative of the impacts of the other products of the range which are developed with a similar technology.

The environmental analysis was performed in conformity with ISO 14040.

Constituent materials

The mass of the product range is from 1876 g and 2306 g including packaging. It is 6892 g for the set of capacitor equivalent to 50Kvar
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 only contain in the authorised proportions, lead, mercury, cadmium, hexavalent chromium or flame retardants (polybrominated biphenyls - PBB, polybrominated diphenyl ethers - PBDE) as mentioned in the Directive

Manufacturing

The Varplus² capacitor product range is manufactured at a Schneider Electric production site on which an ISO14001 certified environmental management system has been established.

Distribution

The weight and volume of the packaging have been optimized, based on the European Union's packaging directive.
The Varplus² capacitor packaging weight is 894 *g*. It consists of cardboard is 97% and Paper 3%.

The weight gain of the packaging is 33% weight gained with previous product family

The weight of recycled materials used is 50% of total packaging mass.
The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

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Use

The products of the Varplus² LV Capacitor range do not generate environmental pollution (noise, emissions) requiring special precautionary measures in standard use.

The dissipated power depends on the conditions under which the product is implemented and used. This dissipated power is between 1,2 W and 11,6 W for the Varplus² LV Capacitor product range. It is 24 W for the referenced Varplus² LV set of Capacitor equivalent to 50 Kvar This thermal dissipation represents 0,048% of the power which passes through the product.

End of life

In end of life, the Varplus 2 range products can be either dismantle, or grind in order to better enhance the value of the different components. More of 50% of the product can be recyclable.

Environmental impacts

Life cycle assessment has been performed on the following life cycle phases: Materials and Manufacturing (M), Distribution (D), Installation (I) Use (U),
Modeling hypothesis and method:
- the calculation was performed on the Varplus² LV Capacitor
- product packaging: is included
- scenario for the Use phase: this product range is included in the category Power Factor correction: (assumed service life is 15 years energy dissipation 345,5 KW at 30% of nominal current and service uptimes: 50%)

The electrical power model used for calculation is European model.
End of life impacts are based on a worst case transport distance to the recycling plant (1000km)

Presentation of the product environmental impacts

Environmental indicators	Unit	For give the name and commercial reference or description of the representative product			
		S = M + D + U	M	D	U
Raw Material Depletion	**Y-1**	1,37E-13	1,18E-13	1,38E-16	1,87E-14
Energy Depletion	**MJ**	1,96E+04	6,27E+02	9,14E+01	1,89E+04
Water depletion	**dm^3**	3,15E+03	3,33E+02	2,90E+01	2,79E+03
Global Warming	**g≈CO_2**	1,08E+06	3,05E+04	5,72E+03	1,04E+06
Ozone Depletion	**g≈CFC-11**	1,12E-01	1,41E-03	3,45E-03	1,07E-01
Air Toxicity	**m^3**	2,07E+08	8,66E+06	2,00E+06	1,96E+08
Photochemical Ozone Creation	**g≈C_2H_4**	3,75E+02	1,12E+01	6,54E+00	3,57E+02
Air acidification	**g≈H^+**	1,69E+02	6,22E+00	1,30E+00	1,61E+02
Water Toxicity	**dm^3**	2,24E+05	1,02E+04	1,13E+03	2,13E+05
Water Eutrophication	**g≈PO_4**	1,23E+01	8,22E+00	4,44E-01	3,64E+00
Hazardous waste production	**kg**	1,45E+01	2,28E-01	2,72E-03	1,43E+01

Data from S1B6125600_00 EIME calculation

System approach

Optimize energy consumption, increase power availability, insure efficiency and productivity

As the products 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 in an assembly or an installation subject to this Directive.
Please note that the values given above are only valid within the context specified and cannot be used directly to draw up the environmental assessment of an 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 dm^3.
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 CO_2.
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.
Air Toxicity (AT)	This indicator represents the air toxicity in a human environment. It takes into account the usually accepted concentrations for several gases in the air and the quantity of gas released over the life cycle. The indication given corresponds to the air volume needed to dilute these gases down to acceptable concentrations.
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 (C_2H_4).
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^+.
Water Toxicity (WT)	This indicator represents the water toxicity. It takes into account the usually accepted concentrations for several substances in water and the quantity of substances released over the life cycle. The indication given corresponds to the water volume needed to dilute these substances down to acceptable concentrations.
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.

PEP in compliance with Schneider-Electric TT01 V3 and TT02 V13 procedures

PEP established according to PEPecopassport PEP-AP011 rules

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Published by: Schneider Electric