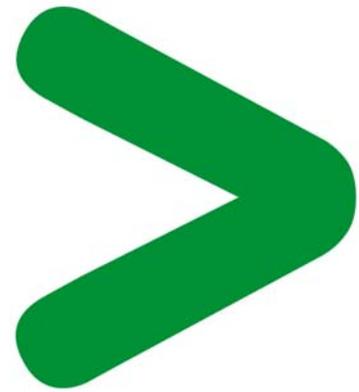


Product Environmental Profile

Varset - LV power factor correction banks



Product Environmental Profile - PEP

Product overview

The main purpose of the Varset automatic capacitor bank is to correct Power Factor in Low Voltage electrical network

This range consists of 590 products from 7,5 Kvar to 1200 Kvar, Voltage 230 and 400 and frequency 135, 190, 215 Hz

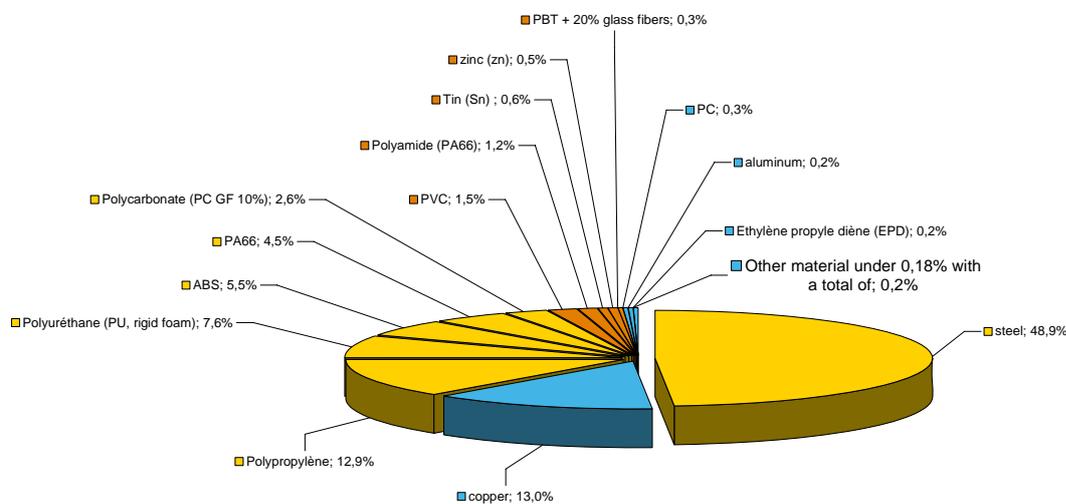
The representative product used for the analysis is a Varset capacitor bank equivalent to 240 Kvar

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 20 kg and 1580 kg including packaging. It is 1,987 kg for the Varset capacitor bank equivalent to 240Kvar
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 Varset 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 Varset packaging weight is 1,987 kg. It consists of cardboard is 94,6%, paper 5% and polypropylene 0,4%.

The weight gain of the packaging is 50% weight gained with previous product family

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 Varset 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. It is 300 W for the referenced Varset equivalent to 240 Kvar. This thermal dissipation represents 0,125% of the power which passes through the product.

End of life

At end of life, the products in the Varset have been optimized to decrease the amount of waste and allow recovery of the product components and materials.

This product range contains electronic boards that should be separated from the stream of waste so as to optimize end-of-life treatment by special treatments. The location of these components and other recommendations are given in the End of Life Instruction document which is available for this product range.

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 Varset range
- 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 5913 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 | 1,20E-12 | 9,76E-13 | 1,01E-15 | 2,22E-13 |
| Energy Depletion | MJ | 2,32E+05 | 6,30E+03 | 7,19E+02 | 2,25E+05 |
| Water depletion | dm ³ | 3,69E+04 | 3,68E+03 | 1,17E+02 | 3,31E+04 |
| Global Warming | g≈CO ₂ | 1,28E+07 | 4,16E+05 | 5,73E+04 | 1,24E+07 |
| Ozone Depletion | g≈CFC-11 | 1,36E+00 | 5,35E-02 | 3,69E-02 | 1,27E+00 |
| Air Toxicity | m ³ | 2,46E+09 | 1,17E+08 | 2,10E+07 | 2,32E+09 |
| Photochemical Ozone Creation | g≈C ₂ H ₄ | 4,45E+03 | 1,30E+02 | 7,03E+01 | 4,25E+03 |
| Air acidification | g≈H ⁺ | 2,02E+03 | 9,55E+01 | 1,35E+01 | 1,91E+03 |
| Water Toxicity | dm ³ | 2,62E+06 | 7,98E+04 | 7,68E+03 | 2,54E+06 |
| Water Eutrophication | g≈PO ₄ | 9,00E+01 | 4,50E+01 | 1,78E+00 | 4,32E+01 |
| Hazardous waste production | kg | 1,72E+02 | 2,45E+00 | 2,20E-02 | 1,69E+02 |

Data from S1B66311_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.

Product Environmental Profile - PEP

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 ₂ H 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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