Canalis
KTA 2500 A

Product Environmental Profile
Product Environmental Profile - PEP

Product overview
The main purpose of the Canalis KTA product range is to transport and distribute electrical energy for high power applications.
This range consists of: Canalis KTA, 800 to 4000 A, IP55.
The representative product used for the analysis is the typical product, KTA 2500 A, which consists of:
- 2 x 2500 A power feed boxes (cat. no. KTA2500ER41),
- 8 x 4 m transport components (cat. no. KTA2500ET440),
- 8 x 4 m distribution components (cat. no. KTA2500ED440),
- 11 components for changing direction (cat. no. KTA2500LP4A1, KTA2500LP4B2, KTA2500LC4A, KTA2500LC4B, KTA2500TC4, KTA2500ZP4, KTA2500ZC41)
- 20 enclosures (cat. no. KSB400DC4, KSB160DC4, KSB160SF4, KSB400SE4)
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 total mass of the typical product, KTA 2500 A, is 3259.471 kg, not including the packaging for the product analysed.
The constituent materials are distributed as follows:

Steel 46.3%
Aluminium 43.2%
Polyamide 1.9%
Polyester 2.0%
Non-ferrous 0.8%
Copper 5.6%
Other thermoplastics 0.2%

All necessary steps have been taken with our services, suppliers and subcontractors to ensure that the materials used in the composition of the Canalis KTA product range do not contain any substances prohibited by the legislation that was in force(1) when it was put on the market.
(1) according to the list available on request.

Manufacturing
The Canalis KTA 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 packaging of the typical product, KTA, is 71130 g.
It consists of 44190 g of cardboard, 2400 g of polyethylene and 24540 g of steel.
The product distribution flows have been optimised by setting up the internal Distribution Centre on the production site and Local Distribution Centres close to the market areas.

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Utilization

The products in the Canalis KTA 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. The dissipated power is 22,400 W for the typical product, KTA, referenced, i.e. 350 W/metre.

This heat dissipation accounts for less than 0.1 % of the total power passing through the product.

End of life

At end of life, the products in the Canalis KTA range can either be dismantled or crushed to facilitate the recovery of the various constituent materials. The recycling potential is higher than 95 %. This percentage includes ferrous metals, copper, aluminium and marked thermoplastic resins, not reinforced with glass fibres.

Environmental impacts

The EIME (Environmental Impact and Management Explorer) software, version 1.6 and its database were used for the Life Cycle Assessment (LCA).

The assumed service life of the product is 20 years with an installation utilisation rate of 30 % and a load rate of 50 %. The EUROPEAN electrical power model is used.

The analysis focused on a “typical product”, the KT consisting of 8 KTA transport components, 8 KTA distribution components, 2 KTA power feed boxes, 27 KTA FOUR-POLE tap-off units, 11 components for changing direction and 20 KSB plug in units.

The environmental impacts were analysed for the Manufacturing (M) phase including the processing of raw materials, the Distribution (D) phase including transport and the Utilisation (U) phase including energy consumption.

Presentation of product environmental impacts

<table>
<thead>
<tr>
<th>Environmental indicators</th>
<th>Unit</th>
<th>For Canalis KTA 2500 A (1,000 unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>S = M + D + U</td>
</tr>
<tr>
<td>Raw Material Depletion</td>
<td>Y-1</td>
<td>1.18 (\times) 10^{11}</td>
</tr>
<tr>
<td>Energy Depletion</td>
<td>MJ</td>
<td>1.39 (\times) 10^{7}</td>
</tr>
<tr>
<td>Water Depletion</td>
<td>(\text{dm}^3)</td>
<td>2.82 (\times) 10^{4}</td>
</tr>
<tr>
<td>Global Warming</td>
<td>(\text{g}\text{-C}_\text{O}_2)</td>
<td>1.11 (\times) 10^{6}</td>
</tr>
<tr>
<td>Ozone Depletion</td>
<td>(\text{g}\text{-CFC-11})</td>
<td>13.6</td>
</tr>
<tr>
<td>Photochemical Ozone Creation</td>
<td>(\text{g}\text{-C}_\text{H}_4)</td>
<td>5.31 (\times) 10^{4}</td>
</tr>
<tr>
<td>Air Acidification</td>
<td>(\text{g}\text{-H}^+)</td>
<td>2.17 (\times) 10^{4}</td>
</tr>
<tr>
<td>Hazardous Waste Production</td>
<td>kg</td>
<td>1.14 (\times) 10^{3}</td>
</tr>
</tbody>
</table>

The life cycle analysis showed that the Utilisation phase is the life cycle phase that has the greatest impact (4/5 of the total impact) on the majority of the environmental indicators and the environmental parameters of this phase were optimised at the design stage, with the specific aim of reducing energy losses.

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System approach

The environmental impacts of the product depend on the conditions under which it is installed and used. The environmental impact values listed in the above table are only valid within the specified context and cannot be used directly in the environmental report on 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 dm$^3$.

Global Warming Potential (GWP)

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.

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 methane (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 milliequivalent 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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