Product Environmental Profile

C264 – 80TE

Modular substation computer

Schneider Electric

Product Environmental Profile

Product overview

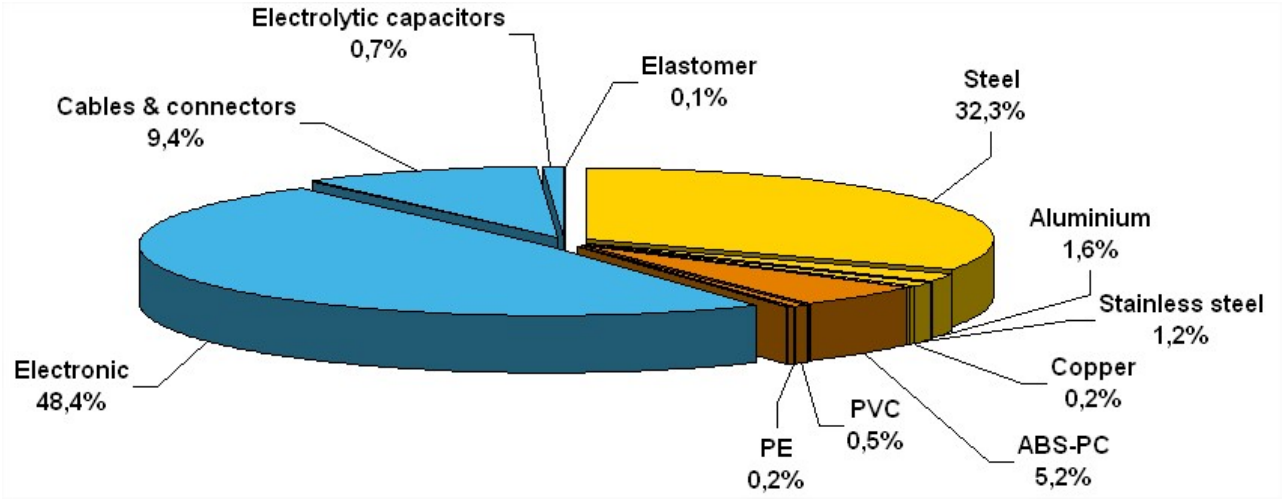
MiCOM C264 is a modular substation computer that can, in addition to traditional input/output management, act as a IEC61850 computer, an Ethernet gateway, a measurement centre and a fast automation processor.

As a remote terminal unit (RTU), a bay controller, a data concentrator, a protocol converter or a voltage regulator, MiCOM C264 is the solution to applications installed in demanding electromagnetic conditions.

The representative product used for the analysis is an 80TE version of the C264. 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.

Constituent materials

The mass of the MiCOM C264 is between 4 kg and 12 kg (it's 11.5kg for the 80TE under study).
The constituent materials are distributed as follows:



Substance assessment

This product contains lead (0.02%) and hexavalent chromium (0.002%). These percentages are relative to the total mass of the product.

Manufacturing

The MiCOM products are manufactured at a Schneider Electric production sites on which ISO14001 certified environmental management systems have been established.

Distribution

MiCOM C264 are highly configurable products that are used in conjunction with other equipments. Whenever possible, they are integrated into cubicles on the very same site they have been assembled, and shipped directly to the final location where they will be in use, saving unnecessary transportation.

Use

The products of the MiCOM range do not generate environmental pollution (noise, emissions) requiring special precautionary measures in standard use.
The electrical power consumption depends on the conditions under which the product is implemented and used. The electrical power consumed by a MiCOM C264 is between 20W and 40W. Most of the time, C264 will run at its nominal burden, which is 30W.

End of life

At end of life, products in the MiCOM range have been optimized to decrease the amount of waste and allow recovery of the product components and materials.
This product range contains leaded electronic boards & electrolytic capacitors 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.
The recyclability potential of the products has been evaluated using the “ECO-DEEE recyclability and recoverability calculation method” (version V1, 20 Sep. 2008 presented to the French Agency for Environment and Energy Management: ADEME).
According to this method, the potential recyclability ratio is: 49%.
As described in the recyclability calculation method this ratio includes only metals and plastics which have proven industrial recycling processes.

Environmental impacts

Life cycle assessment has been performed on the following life cycle phases: Materials and Manufacturing (M), Distribution (D), Use (U), and End of life (E).
Modelling hypothesis and method:
- The calculation was performed on a MiCOM C264 with an 80TE case with a detachable front panel, powered at 220V.
- Scenario for the Use phase: This product range is included in the "energy using products" category.
MiCOM C264 is designed for a maintenance-free 20 years service-life, and is considered to run 100% of the time at it's nominal consumption of 30W, corresponding to half of the outputs activated and detachable HMI unplugged (*i.e.* no maintenance operation ongoing)
The electrical power model used for calculation is the 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	MiCOM C264				
		S=M+D+U+E	M	D	U	E
Raw Material Depletion	Y-1	3,28E-12	3,21E-12	6,64E-17	6,83E-14	2,05E-17
Energy Depletion	MJ	6,45E+04	4,26E+03	4,87E+01	6,02E+04	1,50E+01
Water depletion	dm^3	1,13E+04	2,61E+03	4,62E+00	8,70E+03	1,43E+00
Global Warming	g≈CO_2	3,29E+06	2,46E+05	3,86E+03	3,04E+06	1,19E+03
Ozone Depletion	g≈CFC-11	1,97E-01	2,84E-02	2,73E-03	1,65E-01	8,41E-04
Air Toxicity	m^3	5,87E+08	8,26E+07	7,27E+05	5,04E+08	2,24E+05
Photochemical Ozone Creation	g≈C_2H_4	1,09E+03	5,96E+01	3,30E+00	1,03E+03	1,02E+00
Air acidification	g≈H^+	4,63E+02	5,19E+01	4,91E-01	4,10E+02	1,52E-01
Water Toxicity	dm^3	8,99E+05	3,22E+04	4,82E+02	8,67E+05	1,49E+02
Water Eutrophication	g≈PO_4	1,60E+01	8,82E+00	6,41E-02	7,14E+00	1,98E-02
Hazardous waste production	kg	6,22E+01	1,18E+01	1,43E-03	5,04E+01	4,42E-04

Life cycle assessment has been performed with the EIME software (Environmental Impact and Management Explorer), version 4, with its database version 11.
The Use phase is the life cycle phase which has the greatest impact on the majority of environmental indicators.

System approach

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 V4.9 and TT02 V15 procedures

PEP established according to PCR PEPecopassport PEP- PCR-ed 2-EN-2011 12 09

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