Product Environmental Profile

XAC A empty or equipped pendant control station enclosures, except XAC A•••••H7

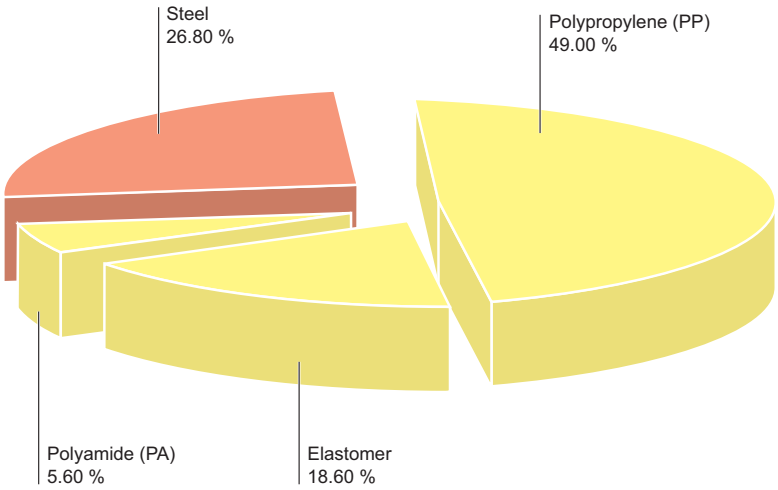
Product Environmental Profile - PEP

Product Overview

XAC A pendant control station enclosures are intended for auxiliary control circuits. They are ergonomically designed to allow easy movement for lifting applications. Their design ensures optimum protection against impacts and electrical protection by means of double insulation (class II).
The product chosen for the environmental analysis of the range is the XAC A04 enclosure with four cut-outs. It is representative of all the empty pendant control station enclosures in the XAC A range; the same manufacturing process is used for the other products in the range (2 to 8 cut-outs).
Products can be supplied empty or equipped with pushbuttons. In the second case, to determine the environmental impacts, use this PEP and add the impacts described in the buttons PEP.
The environmental analysis was performed in conformity with ISO 14040 "Environmental management: Life cycle assessment – Principle and framework". This analysis takes all the stages in the life cycle of the product into account: extraction of raw materials and manufacture of materials, manufacture of the product, utilisation, distribution (transport and packaging), end of life.

Constituent materials

The mass of the XAC A04 is 534 g, not including the packaging and it is 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 XAC A range of pendant control station enclosures is manufactured at a Schneider Electric production site operating an ISO 14001 certified environmental management system.

Distribution

The packaging was designed in compliance with the European Union's 94/62/EC packaging directive in order to reduce the weight and volume and consequently the environmental impact of the distribution phase of the life cycle of the product.
The packaging of the XAC A04 weighs 83 g and is made only of 100 % recyclable cardboard.
The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

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Utilization

The products in the XAC A range generate no environmental pollution requiring special precautionary measures (noise, emissions, etc.); they do not use any energy.

End of life

At end of life, no special depollution measures or manual dismantling are needed for any of the components or sub-assemblies. If they are to be dismantled manually, it is useful to separate the polypropylene parts and send them to the appropriate recycling system; these parts are the yellow plastic enclosure (cover and base) which are easy to remove and the black part used to reinforce the metal mounting plate. The product can also be crushed as is, without any special precautionary measures being required.
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: 75 %.
As described in the recyclability calculation method this ratio includes only metals and plastics which have proven industrial recycling processes.

Environmental impacts

The EIME (Environmental Impact and Management Explorer) software, version 1.6, and its database, version 5.4, were used for the Life Cycle Assessment (LCA) of the XAC A04 pendant control station enclosure chosen as representative of the range.
The analysis focused on an XAC A04 pendant control station enclosure. As the enclosure was empty, no energy consumption was modelled. For the purposes of the LCA, its estimated service life is 10 years.
The EIME software was used to model the environmental impacts on the Manufacturing phase (including the extraction of raw materials and processing of basic materials) and on the Distribution and Utilisation phases of the life cycle. The results of the LCA performed with the EIME software are as follows:

Presentation of product environmental impacts:

Environmental indicators	Unit	Impacts for 1 x XAC A04 (1.000 unit)			
		S = M + D + U	M	D	U
Raw Material Depletion	**Y-1**	**$1.55\ 10^{-16}$**	$1.39\ 10^{-16}$	$1.62\ 10^{-17}$	0
Water Depletion	**dm^3**	**22**	19.4	2.62	0
Global Warming Potential	**g≈CO_2**	**$2.79\ 10^{3}$**	$1.81\ 10^{3}$	$9.79\ 10^{2}$	0
Ozone Depletion	**g≈CFC-11**	**$3.01\ 10^{-4}$**	$5.32\ 10^{-5}$	$2.48\ 10^{-4}$	0
Photochemical Ozone Creation	**g≈C_2H_4**	**8.50**	6.82	1.68	0
Air Acidification	**g≈H^+**	**$4.19\ 10^{-1}$**	$2.84\ 10^{-1}$	$1.35\ 10^{-1}$	0
Hazardous Waste Production	**kg**	**$1.50\ 10^{-2}$**	$1.48\ 10^{-2}$	$1.78\ 10^{-4}$	0

Most of the environmental impacts are caused by the Manufacturing phase, but they are minimised because of the compact nature of the product. The Utilisation phase does not generate any such impacts, as the product does not use any electricity.

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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 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.

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^+.

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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