Product Environmental Profile

Harmony XB5R

PEP ecoPASSPORT®

Schneider Electric

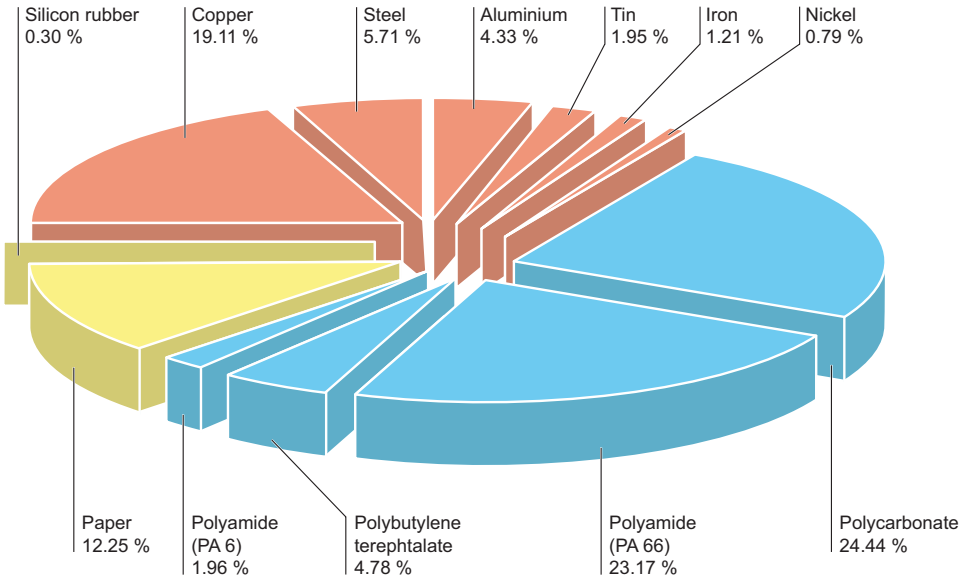
Product Environmental Profile - PEP

Product Overview

The main function of the Harmony XB5R product range is to command an action on a machine.
This range consists of: Packages "ready to use" with transmitter and a receiver already paired, and components such as transmitters, receivers, push buttons and relay antennas.
The representative product used for the analysis is the package XB5RFA02 with a wireless and battery less push button ZB5 22 mm and a programmable AC/DC receiver.
The environmental impacts of this referenced product are representative of the impacts of the other products of the range which are developed with the similar technology.
The environmental analysis was performed in conformity with ISO 14040.
This analysis takes in account the complete life cycle of the product.

Constituent materials

The mass of the product range is from 150 g and 250 g not including packaging. It is 182 g for the XB5RFA02.
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 in the authorised proportions, lead, mercury, cadmium, chromium hexavalent, flame retardant (polybromobiphenyles PBB, polybromodiphenylthers PBDE) as mentioned in the Directive.

Manufacturing

The Harmony XB5R 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 Harmony XB5R packaging weight is 40 g. It consists of cardboard.
The weight of recycled materials used is 100 % 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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Utilization

The products of the Harmony XB5R range do not generate environmental pollution requiring special precautionary measures (noise, emissions, and so on) in using phase. The dissipated power depends on the conditions under which the product is implemented and used.
The electrical power consumed by the Harmony XB5R range spreads out 4 W. It is 4 W in active mode and 0.9 W in standby mode for the referenced XB5RFA02.
This thermal dissipation represents 100 % of the power which passes through the product.

End of life

At end of life, the products in the Harmony XB5R range have been optimized to decrease the amount of waste and valorise the components and materials of the product.
This product range contains 2 printed circuits boards in the receiver that should be separated from the stream of waste so as to optimize the end of life treatment by a special treatment. The location of these components and the other recommendations are given in the End of Life Instruction available for this product range.
The potential of recyclability of the products has been evaluated using the Codde "recyclability and recoverability calculation method" (version V1, 20 Sep. 2008) and published by ADEME (French Agency for Environment and Energy Management).
According this method, the potential recyclability ratio is: 30.9 %.
As described in the recyclability calculation method, this ratio includes metals and plastics chosen for their proven industrial recycling processes, but do not include materials which don't have such proven treatment processes (ie most type of plastics which are not recycled…).

Environmental impacts

The life cycle assessment has been achieved on the following life phases: Materials and Manufacturing (M) , Distribution (D), Utilization (U).
Modelling hypothesis and impact results:
- The calculation has been done on XB5RFA02.
- Product packaging: is included
- Installation components: no special components included,
- Scenario for the use phase: this product range is included in the category "energy consuming product" (assumed lifetime service is 10 years and using scenario: 4 W in active mode and 0.9 W in standby mode, 4 W is for less than 1 % uptime.
- The electrical power model used is European model.

Presentation of the environmental impacts

Environmental indicators	Unit	XB5R			
		S = M + D + U	M	D	U
Raw Material Depletion	Y-1	**8.75 . 10^{-14}**	8.74 . 10^{-14}	1.75.10^{-18}	1.60 . 10^{-16}
Energy Depletion	MJ	**772**	625	3.67	143
Water depletion	dm^3	**179**	155	1.94	22.2
Global Warming	g≈CO_2	**39.8 . 10^3**	32.36 . 10^3	119	73.3 . 10^2
Ozone Depletion	g≈CFC-11	**4.52 . 10^{-3}**	3.86 . 10^{-3}	3.67 . 10^{-5}	6.3 . 10^{-4}
Air Toxicity	m^3	**1.26 . 10^7**	1.11 . 10^7	7.92 . 10^4	1.41 . 10^6
Photochemical Ozone Creation	g≈C_2H_4	**14.8**	12.2	5.72 . 10^{-2}	2.54
Air acidification	g≈H^+	**6.57**	5.35	6.2 . 10^{-2}	1.16
Water Toxicity	dm^3	**94.9 . 10^2**	76.8 . 10^2	31.1	17.8 . 10^2
Water Eutrophication	g≈PO_4	**0.59**	5.52 . 10^{-1}	1.28 . 10^{-2}	2.09 . 10^{-2}
Hazardous waste production	kg	**1.29**	1.18	1.2 . 10^{-4}	1.17 . 10^{-1}

The life cycle assessment has been achieved with the EIME software (Environmental Impact and Management Explorer), version 4.0, and with its database, version 10.0.
The manufacturing phase is the life cycle phase which has the greatest impact on the majority of environmental indicators.
Impacts have been taken in account so as to optimize impacts at the design stage. This product range benefits from reduction of weight and electricity consumption by removing any battery in the button, which allows reducing its impact on environment.

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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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We are committed to safeguarding our planet by "Combining innovation and continuous improvement to meet the new environmental challenges".

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