Product Environmental Profile

Lexium BCH040 to BCH180
Range: 0.1kW to 7.5 kW

Schneider Electric

Product Environmental Profile - PEP

Product overview

The main purpose of the BCH0401 to BCH1805 range is to provide in combination with the servo drive offer Lexium23 our customer a servo motor product range starting from standstill torque 0.3Nm to 48Nm.

This range consists of: BCH040 to BCH180 from 0.1kW to 7.5kW.

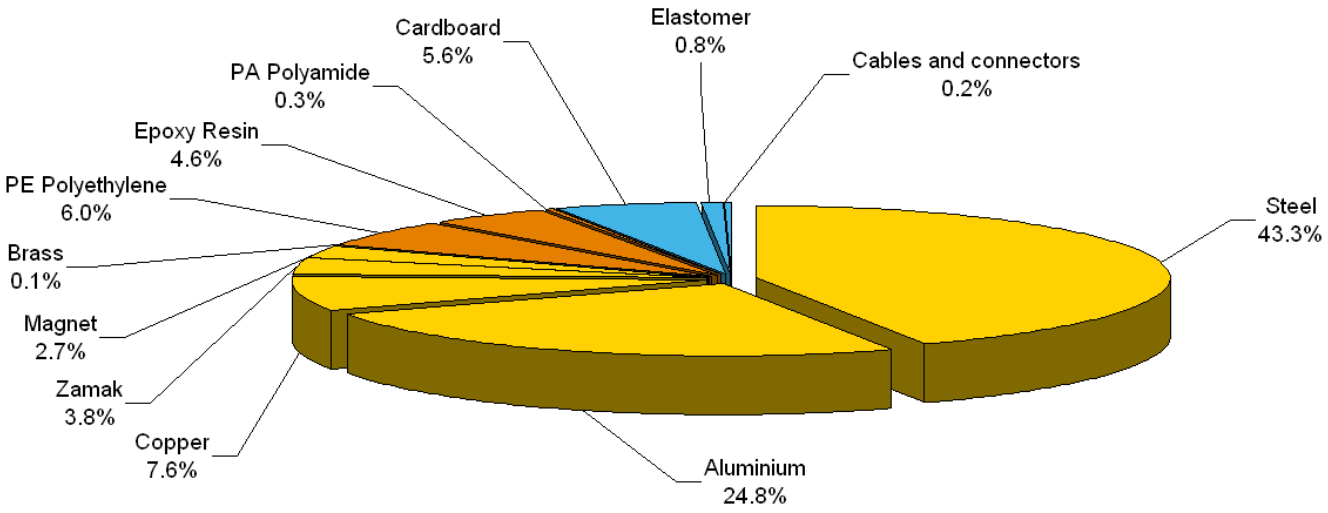
The representative product used for the analysis is the BCH1303N11A1C with 1.5kW.

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 800 g and 34500 g including packaging. It is 9180 g for the BCH1303N11A1C.
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 BCH0401 to BCH1805 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 BCH0401 to BCH1805 packaging weight is *1065 g*. It consists of 515g recyclable cardboard and 550g polyethylene film.

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Use

The products of the BCH0401 to BCH1805 range do not generate environmental pollution (noise, emissions) requiring special precautionary measures in standard use and do not need special maintenance.
The electrical power consumption depends on the conditions under which the product is implemented and used. The electrical power consumed by the BC 0401 to BCH1805 range is between 30 W and 305 W. It is 154 W in active mode and 1.5 W in standby mode for the referenced BCH1303N11A1C.
The product range does not require special maintenance operations.

End of life

At end of life, the products in the BC 0401 to BCH1805 range have been optimized to decrease the amount of waste and allow recovery of the product components and materials.
This product range doesn't need any special end-of-life treatment. According to countries' practices this product can enter the usual end-of-life treatment process.
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: 42 %.
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), Installation (I) Use (U), and End of life (E).
Assumed service life is 10 years and use scenario is:

- Active phase: consumed power 154 W during 50 % uptime
- Idle phase: consumed power 1.5 W during 20 % uptime
- Off phase: consumed power 0 W during 30 % uptime
- 24 hours per day, during 10 years

The geographical representative area of the assessment is Europe and 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 BCH1303N11A1C					
		S = M + D + I + U + E	M	D	I	U	E
Raw Material Depletion	Y-1	1.41E-12	1.33E-12	1.50E-17	0	8.80E-14	1.87E-17
Energy Depletion	MJ	7.83E+04	7.81E+02	1.10E+01	0	7.75E+04	1.37E+01
Water depletion	dm^3	1.15E+04	3.14E+02	1.05E+00	0	1.12E+04	1.30E+00
Global Warming	g≈CO_2	3.97E+06	5.12E+04	8.72E+02	0	3.91E+06	1.09E+03
Ozone Depletion	g≈CFC-11	2.21E-01	7.04E-03	6.16E-04	0	2.13E-01	7.69E-04
Air Toxicity	m^3	6.68E+08	1.88E+07	1.64E+05	0	6.49E+08	2.05E+05
Photochemical Ozone Creation	g≈C_2H_4	1.34E+03	1.69E+01	7.45E-01	0	1.32E+03	9.29E-01
Air acidification	g≈H^+	5.40E+02	1.11E+01	1.11E-01	0	5.28E+02	1.39E-01
Water Toxicity	dm^3	1.13E+06	1.15E+04	1.09E+02	0	1.12E+06	1.36E+02
Water Eutrophication	g≈PO_4	1.11E+01	1.89E+00	1.45E-02	0	9.19E+00	1.81E-02
Hazardous waste production	kg	6.76E+01	2.71E+00	3.24E-04	0	6.49E+01	4.04E-04

Life cycle assessment has been performed with the EIME software (Environmental Impact and Management Explorer), version 4.1, and 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

The synchronous motor offer BCH0401 to BCH1805 saves energy by an optimized usage of the energy to create the rotary torque. Compared with an asynchronous IE3 motor (rated power = 1.5kW) the energy efficiency is 10% better
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.

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 and TT02 procedures
PEP established according to PEPecopassport PEP-AP011 rules

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