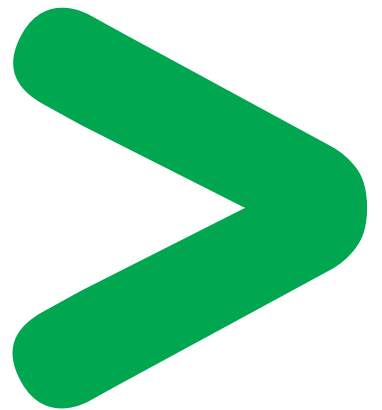


Product Environmental Profile

Altivar 312 range 0.18 to 15KW



Schneider
Electric

Product Environmental Profile - PEP

Product Overview

The main function of the Altivar 312 - 0.18 to 15 kW product range is to intend for the control and variation of the rotational speed of an asynchronous electric motor.

This range consists of products with ratings from 0.18 to 15 kW for operation on 200-240 V, 380-500 V et 525-600 V, single or three phases supplies

The representative product used for the Altivar 312 / 0.75 kW / 200 V / 1PH (ref. ATV312H075M2).

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.

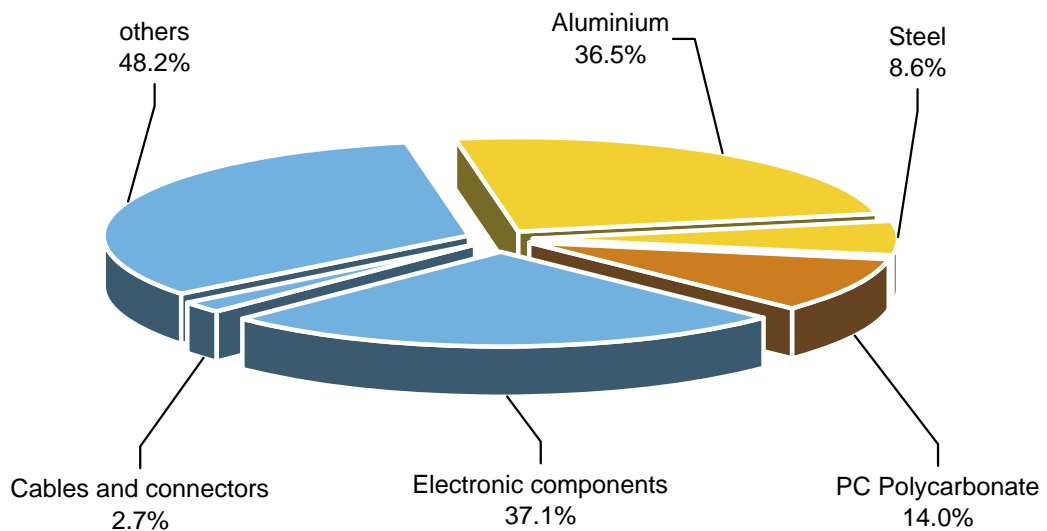
The environmental analysis was performed in conformity with standard ISO14040.

This analysis takes the stages of the life cycle of the product into account.

Constituent materials

The mass of the product range included in this analysis is from 1 090 g to 10000 g no including packaging. It is 1155 g for the Altivar 312 / 0.18 kW / 200 V / 1PH.

The constituent materials are distributed as follows:



Products of this range are designed in conformity with the requirements of the RoHS directive (directive 2002/95/CE of 27 of January 2003) and do not contain, or in the authorised proportions, lead, mercury, cadmium, hexavalent chromium, flame retardant (polybromobiphenyles PBB, polybromodiphenylethers PBDE) as mentioned in the directive.

Manufacturing

The Altivar 312 – 0.18 to 15 kW product range is manufactured at a Schneider Electric production site on which an ISO 14001 certified environmental management system has been established.

Distribution

The mass and volumes of the packaging have been reduced, in compliance with the European Union's packaging directivee. The Altivar 312 – 0.18 to 15 kW packaging mass is 405 g which mainly consists of recyclable cardboard and polyethylene bags for accessories. No foam chock, or staple is used.

Utilisation

The products of the Altivar 312 – 0.18 to 15 kW 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. Their internal power consumption ranges from 23 W to 628 W. It is 60 W for the Altivar 312 / 0.18kW / 200V / 1PH and accounts for 8 % of the total power flowing through the product.

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End of life

At end of life, the products in the Altivar 312 – 0.18 to 15 kW range have been optimized to decrease the amount of waste and valorise the components and materials of the product in the usual end of life treatment process.

The design has been achieved so as components are able to enter the usual end of life treatment processes as appropriate: depollution if recommended, reuse and/or dismantling if recommended so as to increase the recycling performances and shredding for separating the rest of materials

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: 65 %.

The recommendations to optimize the recycling performance are detailed in the “End of Life Instructions” of this product range.

Environmental impacts

The environmental impacts were analysed for the Manufacturing (M), the Distribution (D) and the Utilisation U) phases.

This product range is included in the category Energy consuming products (assumed life time is 10 years)

The scenario taken into account in this analysis for the Using phase (U) is as follows:

- Active phase: consumed power: 60 W for 60 % uptime
- Idle phase: consumed power: 10 W for 10 % uptime,
- Sleep phase: consumed power: 0 W for 30 % uptime,
- 24 hours per day, during 10 years.

The EIME (Environmental Information and Management Explorer) software version V4.0 and its database version V11 were used for the life cycle assessment (LCA)

The calculation has been done on Altivar 312 / 0.75 kW / 200 V / 1PH (ref ATV312H075M2).

The electric power model used is the European model.

Presentation of the environmental impacts

Presentation of the environmental impacts	Unit	ATV312H075M2			
		S = M + D + U	M	D	U
Raw Material Depletion	Y-1	$3.37 \cdot 10^{-13}$	$2.95 \cdot 10^{-13}$	$9.59 \cdot 10^{-18}$	$4.21 \cdot 10^{-14}$
Energy Depletion	MJ	$3.74 \cdot 10^4$	312	7.03	$3.71 \cdot 10^4$
Water Depletion	dm ³	5500	137	0,667	5360
Global Warming Potential	g≈CO ₂	$1.89 \cdot 10^6$	$1.71 \cdot 10^4$	557	$1.87 \cdot 10^6$
Ozone Depletion	mg≈CFC-11	0,105	0,0031	$3.94 \cdot 10^{-4}$	0,102
Air Toxicity	m ³	$3.17 \cdot 10^8$	$6.31 \cdot 10^6$	$1.05 \cdot 10^5$	$3.11 \cdot 10^8$
Photochemical Ozone Creation	g≈C ₂ H ₄	641	6.51	0.476	634
Air Acidification	g≈H ⁺	256	3.44	0.071	253
Water Toxicity	dm ³	$5.38 \cdot 10^5$	3740	69.59	$5.34 \cdot 10^5$
Water Eutrophication	g≈PO ₄	5.43	1.02	$9.25 \cdot 10^{-3}$	4.40
Hazardous Waste Production	kg	31.79	0.720	$2.07 \cdot 10^{-4}$	31.07

The Life Cycle Analysis of the product shows that the usage phase (stage U) is the life cycle phase that has the greatest impact on the majority of the environmental indicators.

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System approach

The variable speed drive saves energy by optimising the operating cycles of the machines used for various applications.

Under transient conditions, products in the Altivar 312 range can usually reduce up to 50% the energy consumption of an installation and for certain applications, saving can rise up to 70%.

As the products of the range Altivar 312 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. Impact 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 dm³.

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 CO₂.

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)

The AT indicator is representing the air toxicity in a human environment, taking into account the usually accepted concentrations tolerated for several gases and the quantity released. The given indication corresponds to the air volume necessary to dilute "contaminated air"

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 (C₂H₄).

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 mole equivalent of H⁺.

Water Eutrophication (WE)

This indicator is representing the water eutrophication (enrichment in nutritive elements) of lakes and marine waters by the release of specific substances in the effluents. It is expressed in grams of PO₄³⁻, as if all substances were PO₄³⁻, using equivalency in their nitrification potential.

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. Expressed in kg.



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

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This document is based on ISO 14020 which relates to the general principles of environmental declarations and the ISO 14025 technical report relating to type III environmental declarations. Product Environmental Profiles Drafting Guide version 12.

It has to be noticed that the data of this PEP cannot be directly compared with datas of programs which don't use the same LCA rules