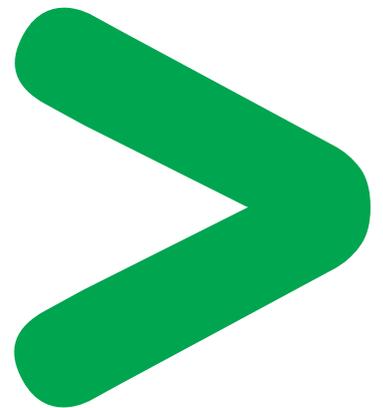


Product Environmental Profile

Altivar 32

Range: 0.18 to 4 kW



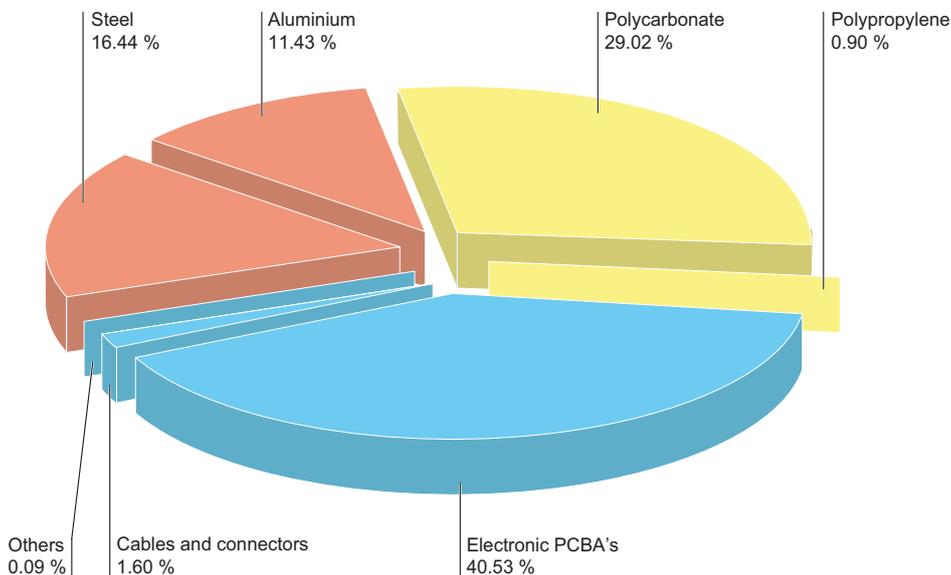
Product Environmental Profile - PEP

Product Overview

The main function of the Altivar 32 - 0.18 to 4 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 4 kW for operation on 200 and 400 V, 1 or 3 phases supplies. The representative product used for the analysis is the Altivar 32 with heatsink, 1.5 kW / 400 V / 3PH rating (ref. ATV32HU15N4). 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 ISO 14040. 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 1700 g and 2400 g no including packaging. It is 1745 g for the Altivar 32 - 1.5 kW, 400 V, 3PH. The constituent materials are distributed as follows:



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, polybromodiphenylthethers PBDE) as mentioned in the Directive.

Manufacturing

The Altivar 32 - 0.18 to 4 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 weight and volumes of the packaging have been reduced, in compliance with the European Union's packaging directive. The Altivar 32 - 0.18 to 4 kW packaging weight is 580 g which mainly consists of recyclable cardboard and polyethylene bags for accessories. No foam chock, or staple is used.

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Use

The products of the Altivar 32 - 0.18 to 4 kW range do not generate any 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 25 to 125 W.

It is 63 W for the Altivar 32 - 1.5 kW / 400 V / 3PH and accounts for 3.1 % of the total power flowing through the product.

End of life

At end of life, the products in the Altivar 32 - 0.18 to 4 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: 67 %.

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: 63 W for 60 % uptime,
- idle phase: consumed power: 15 W during for 10 % uptime,
- sleep phase: consumed power: 0 W for 30 % up time,
- 24 hours per day, during 10 years.

The EIME (Environmental Impact and Management Explorer) software version V4.0 and its database version V10 were used for the life cycle assessment (LCA).

The calculation has been done on Altivar 32 - 1.5kW / 400V / 3PH (ref. ATV32HU15N4).

The electric power model used is the European model.

Presentation of the product environmental impacts:

Environmental indicators	Unit	Altivar 32, range: 0.18 to 4 kW (1.000 unit)			
		S = M + D + U	M	D	U
Raw Material Depletion	Y-1	1.27 10 ⁻¹²	1.23 10 ⁻¹²	2.97 10 ⁻¹⁸	4.48 10 ⁻¹⁴
Energy Depletion	MJ	40105	662.6	2.20	39440
Water depletion	dm ³	6148.10	446.19	0.21	5701.70
Global Warming	g≈CO ₂	2.03 10 ⁶	41722	172.4	1.99 10 ⁶
Ozone Depletion	g≈CFC-11	1.15 10 ⁻¹	7.25 10 ⁻³	1.22 10 ⁻⁴	1.08 10 ⁻¹
Air Toxicity	m ³	3.40 10 ⁸	1.00 10 ⁷	3.25 10 ⁴	3.30 10 ⁸
Photochemical Ozone Creation	g≈C ₂ H ₄	687.72	13.78	0.15	673.79
Air acidification	g≈H ⁺	276.69	7.88	2.20 10 ⁻²	268.79
Water Toxicity	dm ³	5.78 10 ⁵	9822.60	21.55	5.68 10 ⁵
Water Eutrophication	g≈PO ₄	8.00	3.32	2.87 10 ⁻³	4.68
Hazardous waste production	kg	34.20	1.18	6.41 10 ⁻⁵	33.03

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.

The size and weight of this products range have been drastically optimized, as it is the predominant factor influencing the reduction of environmental impacts during Manufacturing and Distribution stages.

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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 dm³.

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 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.

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 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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