

Altivar 11

From 0.2 to 2.2 kW

Product Environmental Profile



Product Environmental Profile - PEP

Product overview

The Altivar 11 range is primarily intended for the control and variation of the rotational speed of an asynchronous electric motor.

This range comprises products with ratings from 0.2 to 2.2 kW for operation on 100 and 200 V single-phase or 3-phase supplies.

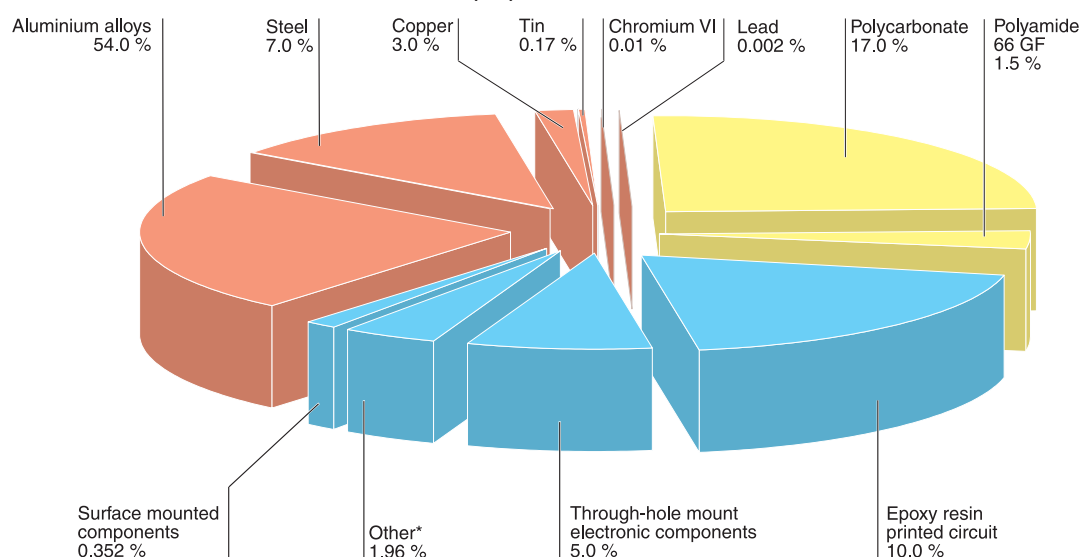
The product used for the study is the Altivar 11 with a 0.75 kW, 200 V rating (ref. ATV11HU18M2E). It is representative of the entire range. The same technology and manufacturing process is used for other products within the range.

The environmental analysis has been performed in conformity with standard ISO 14040 "Environmental management: life cycle assessment, principle and framework". It takes into account the life cycle stages of the product.

Constituent materials

The weights of the products included in the range are between 900 g and 1800 g. For the Altivar 11 - 0.75 kW 200 V drive analysed, the weight is 990 g (excluding packaging).

The proportional values of the various materials used are as follows:



(*) The "Other" category includes all items that constitute less than 1% of the product, such as heat shrink tubing, EPDM elastomer, etc.

All necessary steps have been taken with our services, suppliers and subcontractors to ensure that the materials used throughout the Altivar 11 - 0.2 to 2.2 kW product range do not contain any substances prohibited ⁽¹⁾ by the legislation that was in force when it was put on the market.

The design of this range does not include the use of batteries or accumulators.

The site where this product range was designed is ISO 14001 certified for its Eco-design process.

(1) List available on request.

Manufacturing

This range is manufactured at a Schneider Electric production site that has established an ISO 14001 certified environmental management system. Continuous improvement of processes has led to an average reduction in annual energy consumption for the site of 5 %.

Thorough sorting of waste has achieved a 99 % recovery rate.

Distribution

The packaging has been designed with the intention of reducing both its weight and volume, in compliance with the European Union packaging directive 94/62/EC.

The total weight of the packaging for the Altivar 11 is 177 g. Cardboard is the only material used.

A Life Cycle Assessment has been performed on the packaging of the ATV 11 in comparison with other types of containers.

It appears to be more environmentally friendly regarding the uncontrollable criteria such as the greenhouse effect and ozone depletion.

In addition, the use of recyclable and/or recycled materials also contributes to its very limited impact on the environment.

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Utilization

The products in the Altivar 11 - 0.2 to 2.2 kW range do not generate environmental pollution that requires special precautions to be taken (noise, emissions, etc.).

The electrical energy consumed depends on the installation and operating conditions for the product.

Their power consumption ranges from 12 W to 96 W. It is 37 W for the Altivar 11 - 0.75 kW 200 V and accounts for less than 5 % of the total power flowing through the product.

End of life

On end of life, products of the Altivar 11 - 0.2 to 2.2 kW range must be dismantled in order to obtain the best recovery value of the various materials used.

The recycling potential is more than 70 %.
This percentage includes ferrous metals, copper and aluminium alloys and marked plastics.

The products in this range also include electronic cards that are to be extracted and sent to specialised processing sites.

End of life data is detailed in the product end of life sheet.

Environmental impacts



The Life Cycle Assessment (LCA) has been established with the aid of EIME (Environmental Impact and Management Explorer) software version 1.6 and its database version 5.4.

The assumed service life of the product is 10 years and the electrical energy model used is the European model.

The scope of the analysis was limited to an Altivar 11 - 0.75 kW 200 V.

The environmental impacts have been analysed for the Manufacturing (M) stage, including the processing of raw materials, and for the Distribution (D) and Usage (U) stages.

Presentation of product environmental impacts

Environmental indicators	Unit	For a ATV11 (Manufacture + Distribution + Use)			
		S = M + D + U	M	D	U
Raw Material Depletion	Y-1	$3.64 \cdot 10^{-14}$	$1.79 \cdot 10^{-14}$	$2.67 \cdot 10^{-19}$	$1.86 \cdot 10^{-14}$
Energy Depletion	MJ	$3.19 \cdot 10^3$	14.4	6.90	$3.17 \cdot 10^3$
Water Depletion	dm ³	$3.26 \cdot 10^3$	92.5	$1.84 \cdot 10^{-2}$	$3.17 \cdot 10^3$
Global Warming Potential	g=CO ₂	$1.50 \cdot 10^6$	$5.86 \cdot 10^3$	22.0	$1.49 \cdot 10^6$
Ozone Depletion	g=CFC-11	$2.74 \cdot 10^{-1}$	$3.21 \cdot 10^{-3}$	$1.55 \cdot 10^{-5}$	$2.71 \cdot 10^{-1}$
Photochemical Ozone Creation	g=C ₂ H ₄	$1.07 \cdot 10^3$	4.70	$3.84 \cdot 10^{-2}$	$1.06 \cdot 10^3$
Air Acidification	g=H ⁺	$2.62 \cdot 10^2$	2.68	$1.35 \cdot 10^{-2}$	$2.59 \cdot 10^2$
Hazardous Waste Production	kg	21.19	$8.61 \cdot 10^{-3}$	$6.59 \cdot 10^{-6}$	21.9

The Life Cycle Assessment of the product indicates that the usage stage (stage U) is the stage that has the greatest impact on the majority of the environmental indicators.

It also shows that the indicators of this stage are strongly influenced by the "heat dissipation" parameter of the product.

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System approach

The variable speed drive saves energy by optimising the operating cycles of the asynchronous electric motors.

Under transient conditions, products in the Altivar 11 - 0.2 to 2.2 kW range can more than halve the energy consumption of an installation.

The environmental impact values stated above are only valid within the context specified. They cannot be directly used to compile the environmental report on 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.

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 methane (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.



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

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