

Altivar 21

0.75 to 18.5 kW - IP20 range

Product Environmental Profile



Product Environmental Profile - PEP

Product overview

The main function of the Altivar 21 range is control and rotation speed variation of an asynchronous electric motor, mainly for HVAC applications.

This range comprises products from 0.75 to 75 kW, operating at voltages from 200 and 480 V, single or three-phase.

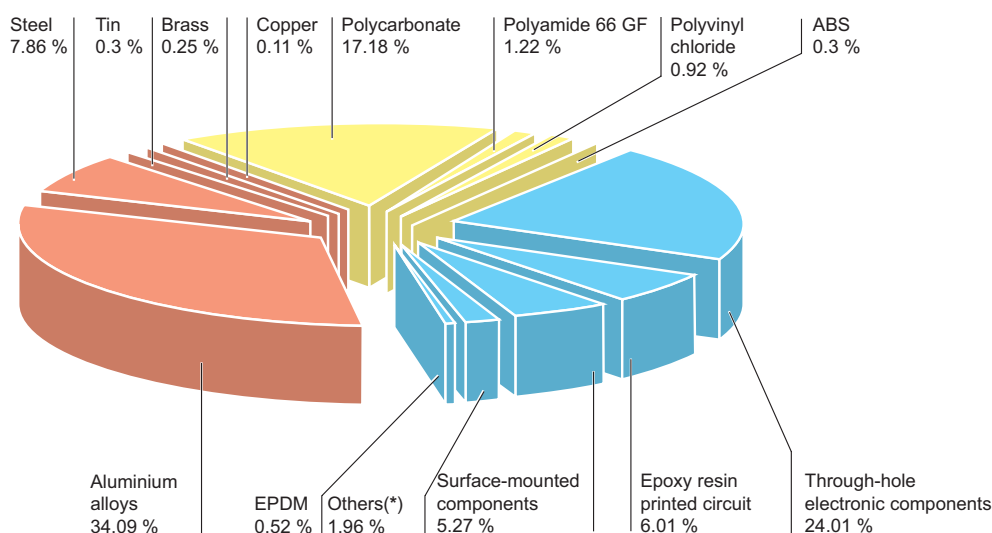
The representative product used for carrying out assessment is the complete Altivar 21 of rating 0.75 kW 200 V (ref ATV21H075M3X).

It is representative of the entire ATV21 0.75 to 18.5 kW IP20 range. Other products of the range are produced using the same technology and on the same production process.

Environmental assessment was carried out conforming to standard ISO 14040 "Environmental management: life cycle assessment, principle and framework". This assessment takes account of product life cycle stages.

Constituent materials

Weight of products in the range is from 1 200 g to 8 850 g. It is 1 266 g excluding packaging for the Altivar 21 – 0.75 kW 200 V assessed. Constituent materials are broken down as follows:



(*) The category "Others" includes all elements present in quantity of less than 1%

All precautions are taken with our services, suppliers and sub-contractors to ensure that materials used in production of the Altivar 21 range do not contain any substances prohibited by regulations in force ⁽¹⁾ at the time of marketing.

By design, this range does not include batteries or accumulators.

The site of design of this range of products is certified ISO 14001 for its eco-design process.

(1) List available on request

Manufacturing

This range is manufactured on a Schneider Electric production site operating to an ISO 14001 certified environmental management system. Constant process improvement enables reduction by an average 5 % of annual energy consumption of the site.

Complete waste sorting enables achievement of a recovery rate of 99 %.

Distribution

Packaging has been designed with a view to reducing its weight and volume, respecting the packaging directive of the European Union. The weight of packaging of the 340 g, consisting of cardboard. Product distribution flows are optimised by location of local distribution centres in close proximity to market areas.

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Utilization

Products of the Altivar 21- 0.75 to 18.5 kW IP20 range present no environmental stress requiring particular use precautions (noise, emissions, etc.).

Electrical energy consumed depends on product installation and use conditions.

Power consumed varies from 55 W to 698 W. It is 63 W for the Altivar 21 – 0.75 kW 200 V and represents less than 8 % of total power through the product.

End of life

At end-of-life, products of the Altivar 21 range can either be dismantled or ground to recover maximum value of the various constituent materials. Recovery potential is greater than 71 %.

This percentage consists of ferrous metals, copper and aluminium alloys and marked plastics.

Products of this range also include electronic cards to be extracted and directed towards specialised processing channels.
End-of-life data is detailed in the product end-of-life sheet.

Environmental impacts



Life cycle assessment (LCA) was produced using EIME (Environmental Impact and Management Explorer) software, version 1.6 and its database version 5.4.

Product use duration is estimated as 10 years and the electrical energy model used is the European model.

Scope of assessment is the Altivar 21 – 0.75 kW 200 V.

Environmental impacts have been assessed on phases of Manufacturing (M) including conversion of raw materials, Distribution (D) and Use (U).

Presentation of product environmental impacts:

Environmental impacts	Unit	ATV21 IP20 0.75 kW 200 V S6 (1.000 units)			
		S = M + D + U	M	D	U
Depletion of natural resources	Y-1	$2.66 \cdot 10^{-13}$	$2.36 \cdot 10^{-13}$	$1.13 \cdot 10^{-17}$	$2.94 \cdot 10^{-14}$
Energy Depletion	MJ	$3.36 \cdot 10^4$	$5.45 \cdot 10^2$	16.4	$3.30 \cdot 10^4$
Water depletion	dm ³	$4.61 \cdot 10^3$	$3.07 \cdot 10^2$	16	$4.29 \cdot 10^3$
Destruction of the ozone layer	g _≈ CO ₂	$2.10 \cdot 10^6$	$3.54 \cdot 10^4$	$3.44 \cdot 10^2$	$2.06 \cdot 10^6$
Atmospheric ozone creation	g _≈ CFC-11	$2.61 \cdot 10^{-1}$	$5.07 \cdot 10^{-3}$	$1.43 \cdot 10^{-4}$	$2.56 \cdot 10^{-1}$
Atmospheric ozone creation	g _≈ C ₂ H ₄	$7.52 \cdot 10^2$	21.9	$2.42 \cdot 10^{-1}$	$7.30 \cdot 10^2$
Air acidification	g _≈ H ⁺	$3.57 \cdot 10^2$	6.66	$1.40 \cdot 10^{-1}$	$3.50 \cdot 10^2$
Hazardous waste production	kg	30.2	$5.30 \cdot 10^{-1}$	$6.34 \cdot 10^{-4}$	29.7

Life cycle assessment has shown that Use phase (phase U) has the greatest impact on the majority of environmental indicators. Assessment also shows that indicators of this phase are highly influenced by the “product thermal dissipation” parameter.

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System approach

The variable speed drive enables energy economy by optimising operating cycles of asynchronous electrical motors.
In transient state, products of the Altivar 21 range can reduce energy consumption of an installation by more than half.

The environmental impact values listed in the above table are valid only within the specified framework and cannot be used directly to determine installation environmental assessment.

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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