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PEP ecoPASSPORT®

Schneider Electric

Product overview

The functional unit of the Altivar Process product range is the speed control and variation of a synchronous, an asynchronous or reluctance electric motor for fluid management and industrial applications.

Calculation of the environmental impacts is based on 10 years of product service lifetime. The usage profile taken into account is 80% uptime in use phase at 75% loading rate and 20% uptime in stand by phase.

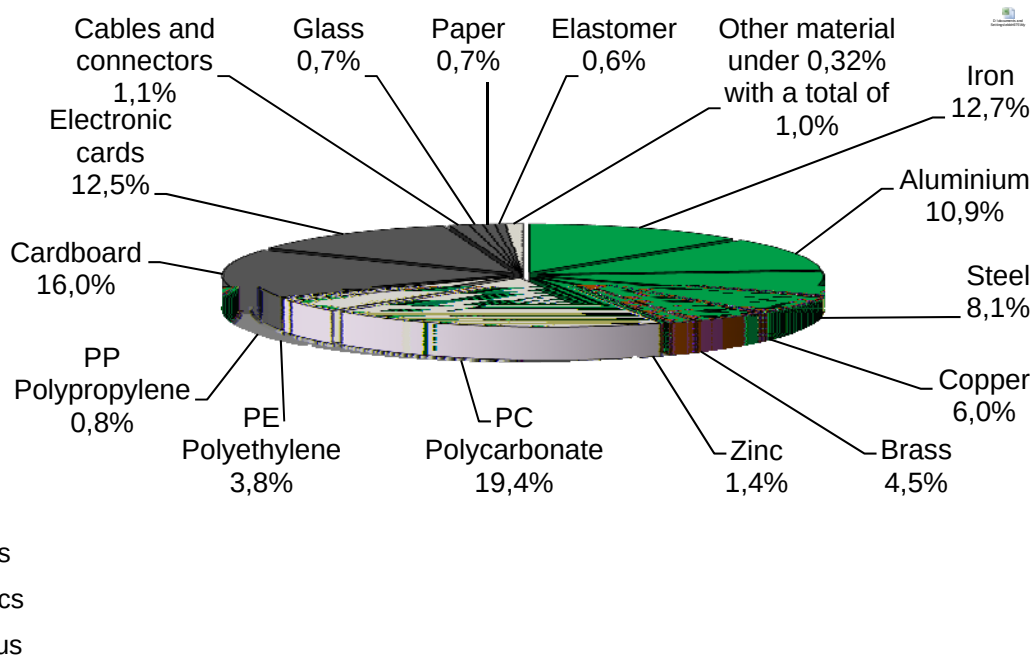
This range consists of products Altivar 630 and Altivar 930 with ratings from 7.5 to 11 kW for operation on 400V and 480V, 3-phase supplies, IP21 and 5.5 kW for operation on 200V and 240V 3-phase supplies, IP21. The representative product used for the analysis is the Altivar 630 – 7.5 kW / 400-480V / 3-ph rating / IP21 (ref. ATV630U75N4).

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 9650 g and 11115 g including packaging. It is 11124 g for the Altivar 630 – 7.5 kW / 400-480V / 3-ph rating / IP21. The constituent materials are distributed as follows:



Substance assessment

Products of this range are designed in conformity with the requirements of the European RoHS Directive 2011/65/EU 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.

Details of ROHS and REACH substances information are available on the Schneider-Electric Green Premium website. (http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page)

Manufacturing

The Altivar Process 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 Altivar 630 – 7.5 kW / 400-480V / 3PH / IP21 packaging weight is 1950 g. It consists of 1780 g recyclable cardboard, 20 g polyethylene film, 70 g paper and 80 g desiccant dryer.
The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

Use

The products of the Altivar Process product range do not generate environmental pollution (noise, emissions) requiring special precautionary measures in standard use.

The electrical power consumption depends on the conditions under which the product is implemented and used. The electrical power consumed by the Altivar Process product range is between 217 W and 302 W at 100% loading rate. It is 217 W in active mode at 100% loading rate and 15 W in standby mode for the referenced Altivar 630 – 7.5 kW / 400-480V / 3-ph rating / IP21.
The product range does not require special maintenance operations.

End of life

At end of life, the products in the Altivar Process product range have been optimized to decrease the amount of waste and allow recovery of the product components and materials.
This product range contains PCBAs, Electrolytic Capacitors and one Manganese Dioxide Lithium Coin Battery that should be separated from the stream of waste so as to optimize end-of-life treatment by special treatments. The location of these components and other recommendations are given in the End of Life Instruction document which is available for this product range on the Schneider-Electric Green Premium website Green Premium website
(http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page).

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 without packaging is: 73,6 %
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).

Modeling hypothesis and method:

- The calculation was performed on the Altivar 630 – 7.5 kW / 400-480V / 3-ph rating / IP21
- Product packaging is included.
- Installation components: no special components included.
- Scenario for the Use phase:
  - Energy consuming product: Assumed service lifetime is 10 years
  - Use scenario is the following:
    - Active mode

      Consumed power is 171 W

      (Supply voltage is 400V, switching frequency is 4 kHz, and loading rate is 75%)

      Service uptime percentage is 80%

    - Standby mode

      Consumed power is 15 W

      Service uptime percentage is 20%

- The geographical representative area for 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 the Altivar 630 – 7.5 kW / 400-480V / 3PH / IP21					
		S = M + D + I + U + E	M	D	I	U	E
Air Acidification (AA)	**g H+ eq**	**1,60E+03**	4,03E+01	3,59E-01	0,00E+00	1,56E+03	1,44E-01
Air toxicity (AT)	**m^3**	**1,87E+09**	6,04E+07	5,33E+05	0,00E+00	1,81E+09	2,14E+05
Energy Depletion (ED)	**MJ**	**1,51E+05**	4,15E+03	2,69E+01	0,00E+00	1,46E+05	1,03E+01
Global Warming Potential (GWP)	**g CO_2 eq.**	**7,50E+06**	2,61E+05	1,91E+03	0,00E+00	7,24E+06	7,34E+02
Hazardous Waste Production (HWP)	**kg**	**5,87E+00**	4,63E+00	2,36E-06	0,00E+00	1,24E+00	9,08E-07
Ozone Depletion Potential (ODP)	**g CFC-11 eq.**	**1,71E+00**	6,22E-02	3,62E-06	0,00E+00	1,65E+00	1,39E-06
Photochemical Ozone Creation Potential (POCP)	**g C_2H_4 eq.**	**5,00E+02**	5,18E+01	4,93E-01	0,00E+00	4,47E+02	1,83E-01
Raw Material Depletion (RMD)	**Y-1**	**1,80E-12**	1,70E-12	3,90E-17	0,00E+00	9,76E-14	1,50E-17
Water Depletion (WD)	**dm^3**	**2,12E+04**	2,30E+03	1,98E-01	0,00E+00	1,89E+04	7,61E-02
Water Eutrophication (WE)	**g PO_4^{3-} eq.**	**9,25E+01**	2,37E+01	3,55E-03	0,00E+00	6,88E+01	1,36E-03
Water Toxicity (WT)	**m^3**	**3,31E+03**	8,46E+01	8,16E-01	0,00E+00	3,22E+03	3,13E-01

Life cycle assessment has been performed with the EIME software (Environmental Impact and Management Explorer), version 5.5.0.4 and with its database version 2013-02.

The use phase is the life cycle phase which has the greatest impact on the majority of environmental indicators.

Depending on the impact analysis, the environmental indicators (without RMD and HWP) of other products in this family may be proportionally extrapolated by energy consumption values.
For RMD and HWP, impacts may be proportionally extrapolated by the products weights.