Product Environmental Profile

Variable speed drive, Altivar Machine ATV320, 2.2 kW, 200...240 V, 3 phases, compact

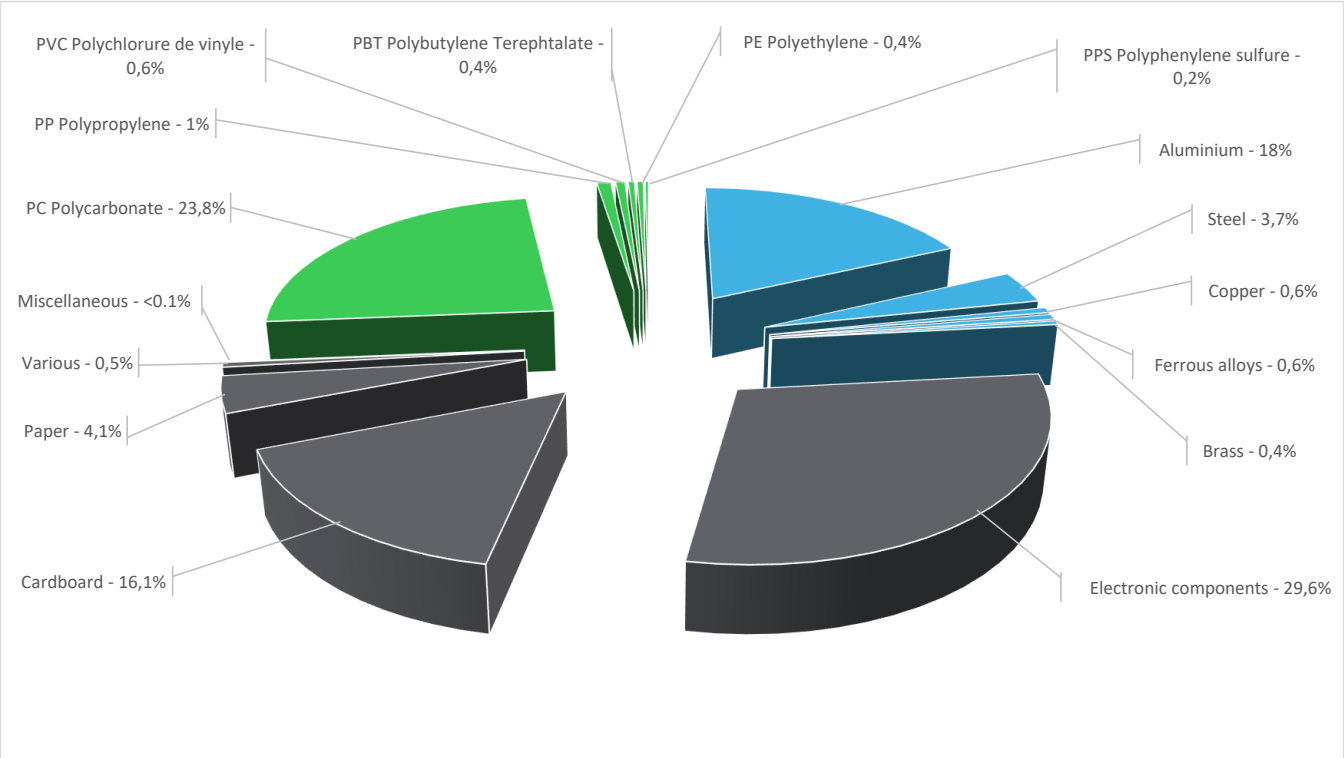
Altivar Machine ATV320

General information

Reference product	Variable speed drive, Altivar Machine ATV320, 2.2 kW, 200...240 V, 3 phases, compact - ATV320U22M3C
Description of the product	The main function of the Altivar Machine product range is the speed control and variation of a synchronous, asynchronous or reluctance electric motor for fluid management and industrial applications.
Description of the range	This PEP refer to a range of products assimilated to a reference product by an extrapolation rule.This range consists of products Altivar Machine ATV320, a variable speed drive designed for Original Equipment Manufacturers (OEMs) that meets simple and advanced application requirements for 3 Phase synchronous and asynchronous motors from 1,1 to 2,2 kW (1,5 to 3 HP) The environmental impacts of this reference product are representative of the impacts of the other products of the range which are developed with a similar technology.
Functional unit	To adapt the speed and torque of synchronous, asynchronous or reluctance motor to the machine's operating point for 2,2 kW for heavy duty electric motors for fluid management and industrial applications in IP20/UL type 1 conditions, at 200V to 240V rated 3-phase voltage supply. 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.

Constituent materials

Reference product mass	1,74 g	including the product, its packaging, additional elements and accessories



	Plastics	26,40%
	Metals	23,30%
	Others	50,30%

Substance assessment

Details of ROHS and REACH substances information are available on the Schneider-Electric Green Premium website
https://www.se.com/ww/en/work/support/green-premium/

Additional environmental information

End Of Life	Recyclability potential:	**58%**	The recyclability rate was calculated from the recycling rates of each material making up the product based on REEECY'LAB tool developed by Ecosystem, for components/materials not covered by the tool, data from the EIME database and the related PSR was taken. If no data was found a conservative assumption was used (0% recyclability).

Environmental impacts

Reference service life time	10 years
Product category	Other equipments - Active product
Life cycle of the product	The manufacturing, the distribution, the installation, the use and the end of life were taken into account in this study.
Electricity consumption	The electricity consumed during manufacturing processes is considered for each part of the product individually, the final assembly generates a negligable consumtion.
Installation elements	The product does not require any special installation operations
Use scenario	The product is in active phase 80% of the time at 75% loading rate with a power use of 65 W and in stand-by phase 20% of the time with a power use of 6 W, for 10 years. Drive efficiency according to IEC/EN 61800-9-2 (supersedes EN 50598-2).
Time representativeness	The collected data are representative of the year 2024
Technological representativeness	The Modules of Technologies such as material production, manufacturing process and transport technology used in this PEP analysis (LCA EIME in this case) are Similar and representative of the actual type of technologies used to make the product
Final assembly site	Batam Indonesia
Geographical representativeness	Europe

Energy model used	[A1 - A3]	[A5]	[B6]	[C1 - C4]
	Electricity Mix; Low voltage; 2022; Indonesia, ID (A1-A3) 2020; China, CN (A1-A2) 2018; Europe, EU-27 (A1-A2)	Electricity Mix; Low voltage; 2018; Europe, EU-27	Electricity Mix; Low voltage; 2018; Europe, EU-27	Electricity Mix; Low voltage; 2018; Europe, EU-27

Detailed results of the optional indicators mentioned in PCRed4 are available in the LCA report and on demand in a digital format - Country Customer Care Center - http://www.schneider-electric.com/contact

Mandatory Indicators		**Variable speed drive, Altivar Machine ATV320, 2.2 kW, 200...240 V, 3 phases, compact - ATV320U22M3C**						
Impact indicators	**Unit**	**Total (without Module D)**	**[A1 - A3] - Manufacturing**	**[A4] - Distribution**	**[A5] - Installation**	**[B1 - B7] - Use**	**[C1 - C4] - End of life**	**[D] - Benefits and loads**
Contribution to climate change	kg CO2 eq	1,95E+03	3,18E+01	3,40E-01	3,70E-01	1,91E+03	2,68E+00	-1,67E+00
Contribution to climate change-fossil	kg CO2 eq	1,94E+03	3,14E+01	3,40E-01	3,52E-01	1,91E+03	2,68E+00	-1,60E+00
Contribution to climate change-biogenic	kg CO2 eq	2,94E+00	3,71E-01	0*	1,75E-02	2,55E+00	4,26E-03	-6,88E-02
Contribution to climate change-land use and land use change	kg CO2 eq	6,31E-04	6,31E-04	0*	0*	0*	9,87E-08	-5,45E-04
Contribution to ozone depletion	kg CFC-11 eq	1,29E-05	4,60E-06	0*	4,78E-09	8,17E-06	1,21E-07	-6,10E-08
Contribution to acidification	mol H+ eq	1,12E+01	2,61E-01	2,15E-03	0*	1,09E+01	6,45E-03	-5,82E-03
Contribution to eutrophication, freshwater	kg $(PO4)^{3-}$ eq	5,48E-03	1,19E-04	0*	8,46E-06	5,23E-03	1,20E-04	-9,00E-06
Contribution to eutrophication marine	kg N eq	1,27E+00	3,20E-02	1,01E-03	4,70E-04	1,24E+00	1,72E-03	-8,14E-04
Contribution to eutrophication, terrestrial	mol N eq	1,90E+01	3,45E-01	1,11E-02	3,27E-03	1,86E+01	1,82E-02	-8,84E-03
Contribution to photochemical ozone formation - human health	kg COVNM eq	4,10E+00	1,13E-01	2,79E-03	7,49E-04	3,98E+00	4,99E-03	-3,06E-03
Contribution to resource use, minerals and metals	kg Sb eq	6,10E-03	5,96E-03	0*	0*	1,38E-04	3,42E-06	-6,71E-05
Contribution to resource use, fossils	MJ	4,92E+04	5,28E+02	0*	0*	4,87E+04	2,53E+01	-4,07E+01
Contribution to water use	m3 eq	7,96E+01	1,16E+01	0*	2,86E-02	6,76E+01	3,31E-01	-1,83E-01

Inventory flows Indicators		Variable speed drive, Altivar Machine ATV320, 2.2 kW, 200...240 V, 3 phases, compact - ATV320U22M3C						
Inventory flows	Unit	Total (without Module D)	[A1 - A3] - Manufacturing	[A4] - Distribution	[A5] - Installation	[B1 - B7] - Use	[C1 - C4] - End of life	[D] - Benefits and loads
Contribution to use of renewable primary energy excluding renewable primary energy used as raw material	MJ	9,36E+03	1,48E+01	0*	0*	9,34E+03	0*	-2,17E+00
Contribution to use of renewable primary energy resources used as raw material	MJ	2,73E+00	2,73E+00	0*	0*	0*	0*	-1,52E-01
Contribution to total use of renewable primary energy resources	MJ	9,36E+03	1,75E+01	0*	0*	9,34E+03	0*	-2,33E+00
Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material	MJ	4,92E+04	5,05E+02	0*	0*	4,87E+04	2,53E+01	-2,83E+01
Contribution to use of non renewable primary energy resources used as raw material	MJ	2,24E+01	2,24E+01	0*	0*	0*	0*	-1,25E+01
Contribution to total use of non-renewable primary energy resources	MJ	4,92E+04	5,28E+02	0*	0*	4,87E+04	2,53E+01	-4,07E+01
Contribution to use of secondary material	kg	3,17E-01	3,17E-01	0*	0*	0*	0*	0,00E+00
Contribution to use of renewable secondary fuels	MJ	0,00E+00	0*	0*	0*	0*	0*	0,00E+00
Contribution to use of non renewable secondary fuels	MJ	0,00E+00	0*	0*	0*	0*	0*	0,00E+00
Contribution to net use of freshwater	m^3	1,86E+00	2,78E-01	0*	6,65E-04	1,57E+00	7,70E-03	-1,07E-02
Contribution to hazardous waste disposed	kg	1,23E+02	8,68E+01	0*	0*	3,57E+01	5,35E-01	-5,52E+00
Contribution to non hazardous waste disposed	kg	2,94E+02	1,79E+01	0*	1,58E-01	2,75E+02	1,02E+00	-1,23E+00
Contribution to radioactive waste disposed	kg	7,14E-02	1,30E-02	8,50E-06	1,95E-05	5,75E-02	7,70E-04	-6,50E-04
Contribution to components for reuse	kg	0,00E+00	0*	0*	0*	0*	0*	0,00E+00
Contribution to materials for recycling	kg	8,48E-01	5,97E-02	0*	0*	0*	7,89E-01	0,00E+00
Contribution to materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Contribution to exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

* represents less than 0.01% of the total life cycle of the reference flow

Contribution to biogenic carbon content of the product	kg de C	0,00E+00	According to
Contribution to biogenic carbon content of the associated packaging	kg de C	1,04E-01	ADEME - EN 16485 - APESA/RECORD

Mandatory Indicators		Variable speed drive, Altivar Machine ATV320, 2.2 kW, 200...240 V, 3 phases, compact - ATV320U22M3C							
Impact indicators	Unit	[B1 - B7] - Use	[B1]	[B2]	[B3]	[B4]	[B5]	[B6]	[B7]
Contribution to climate change	kg CO2 eq	1,91E+03	0*	0*	0*	0*	0*	1,91E+03	0*
Contribution to climate change-fossil	kg CO2 eq	1,91E+03	0*	0*	0*	0*	0*	1,91E+03	0*
Contribution to climate change-biogenic	kg CO2 eq	2,55E+00	0*	0*	0*	0*	0*	2,55E+00	0*
Contribution to climate change-land use and land use change	kg CO2 eq	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to ozone depletion	kg CFC-11 eq	8,17E-06	0*	0*	0*	0*	0*	8,17E-06	0*
Contribution to acidification	mol H+ eq	1,09E+01	0*	0*	0*	0*	0*	1,09E+01	0*
Contribution to eutrophication, freshwater	kg $(PO4)^{3-}$ eq	5,23E-03	0*	0*	0*	0*	0*	5,23E-03	0*
Contribution to eutrophication marine	kg N eq	1,24E+00	0*	0*	0*	0*	0*	1,24E+00	0*
Contribution to eutrophication, terrestrial	mol N eq	1,86E+01	0*	0*	0*	0*	0*	1,86E+01	0*
Contribution to photochemical ozone formation - human health	kg COVNM eq	3,98E+00	0*	0*	0*	0*	0*	3,98E+00	0*
Contribution to resource use, minerals and metals	kg Sb eq	1,38E-04	0*	0*	0*	0*	0*	1,38E-04	0*
Contribution to resource use, fossils	MJ	4,87E+04	0*	0*	0*	0*	0*	4,87E+04	0*
Contribution to water use	m3 eq	6,76E+01	0*	0*	0*	0*	0*	6,76E+01	0*

Inventory flows Indicators		Variable speed drive, Altivar Machine ATV320, 2.2 kW, 200...240 V, 3 phases, compact - ATV320U22M3C							
Inventory flows	**Unit**	**[B1 - B7] - Use**	**[B1]**	**[B2]**	**[B3]**	**[B4]**	**[B5]**	**[B6]**	**[B7]**
Contribution to use of renewable primary energy excluding renewable primary energy used as raw material	MJ	9,34E+03	0*	0*	0*	0*	0*	9,34E+03	0*
Contribution to use of renewable primary energy resources used as raw material	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to total use of renewable primary energy resources	MJ	9,34E+03	0*	0*	0*	0*	0*	9,34E+03	0*
Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material	MJ	4,87E+04	0*	0*	0*	0*	0*	4,87E+04	0*
Contribution to use of non renewable primary energy resources used as raw material	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to total use of non-renewable primary energy resources	MJ	4,87E+04	0*	0*	0*	0*	0*	4,87E+04	0*
Contribution to use of secondary material	kg	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to use of renewable secondary fuels	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to use of non renewable secondary fuels	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to net use of freshwater	m³	1,57E+00	0*	0*	0*	0*	0*	1,57E+00	0*
Contribution to hazardous waste disposed	kg	3,57E+01	0*	0*	0*	0*	0*	3,57E+01	0*
Contribution to non hazardous waste disposed	kg	2,75E+02	0*	0*	0*	0*	0*	2,75E+02	0*
Contribution to radioactive waste disposed	kg	5,75E-02	0*	0*	0*	0*	0*	5,75E-02	0*
Contribution to components for reuse	kg	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to materials for recycling	kg	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to materials for energy recovery	kg	0,00E+00	0*	0*	0*	0*	0*	0*	0*
Contribution to exported energy	MJ	0,00E+00	0*	0*	0*	0*	0*	0*	0*

** represents less than 0.01% of the total life cycle of the reference flow*

Life cycle assessment performed with EIME version v6.1, database version 2023-02 in compliance with ISO14044, EF 3.0 method is applied, for biogenic carbon storage, assessment methodology 0/0 is used

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of other products of this range, ratios to apply can be provided upon request

Please note that the values given above are only valid within the context specified and cannot be used directly to draw up the environmental assessment of an installation.

To extrapolate the impact to another product from the range, apply the following extrapolation rules to each indicator per life cycle stage:
MANUFACTURING(i) = Mass of (product+packaging) in grams / Mass of (reference product+reference packaging) in grams
DISTRIBUTION (i) = Mass of (product+packaging) in grams / Mass of (reference product+reference packaging) in grams
INSTALLATION (i) = Mass of (packaging) in grams / Mass of (reference packaging) in grams
USE (i) = Power dissipated in Watts / Power dissipated of the reference product in Watts
END OF LIFE (i))= Mass of (product) in grams / Mass of (reference product) in grams
TOTAL (i) = Σ Life Cycle Stages (i)

Registration number :	SCHN-01125-V01.01-EN	*Drafting rules*	PCR-4-ed4-EN-2021 09 06
		Supplemented by	PSR-0005-ed3-EN-2023 06 06
Verifier accreditation N°	VH42	*Information and reference documents*	www.pep-ecopassport.org
Date of issue	07-2024	*Validity period*	5 years

Independent verification of the declaration and data, in compliance with ISO 14025 : 2006

Internal External X

The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)

PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500 :2022

The components of the present PEP may not be compared with components from any other program.

Document complies with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"

Schneider Electric Industries SAS

Country Customer Care Center
http://www.se.com/contact

Head Office

35, rue Joseph Monier

CS 30323

F- 92500 Rueil Malmaison Cedex

RCS Nanterre 954 503 439
Capital social 928 298 512 €

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