

Product Environmental Profile

Galaxy VX UPS System





General information

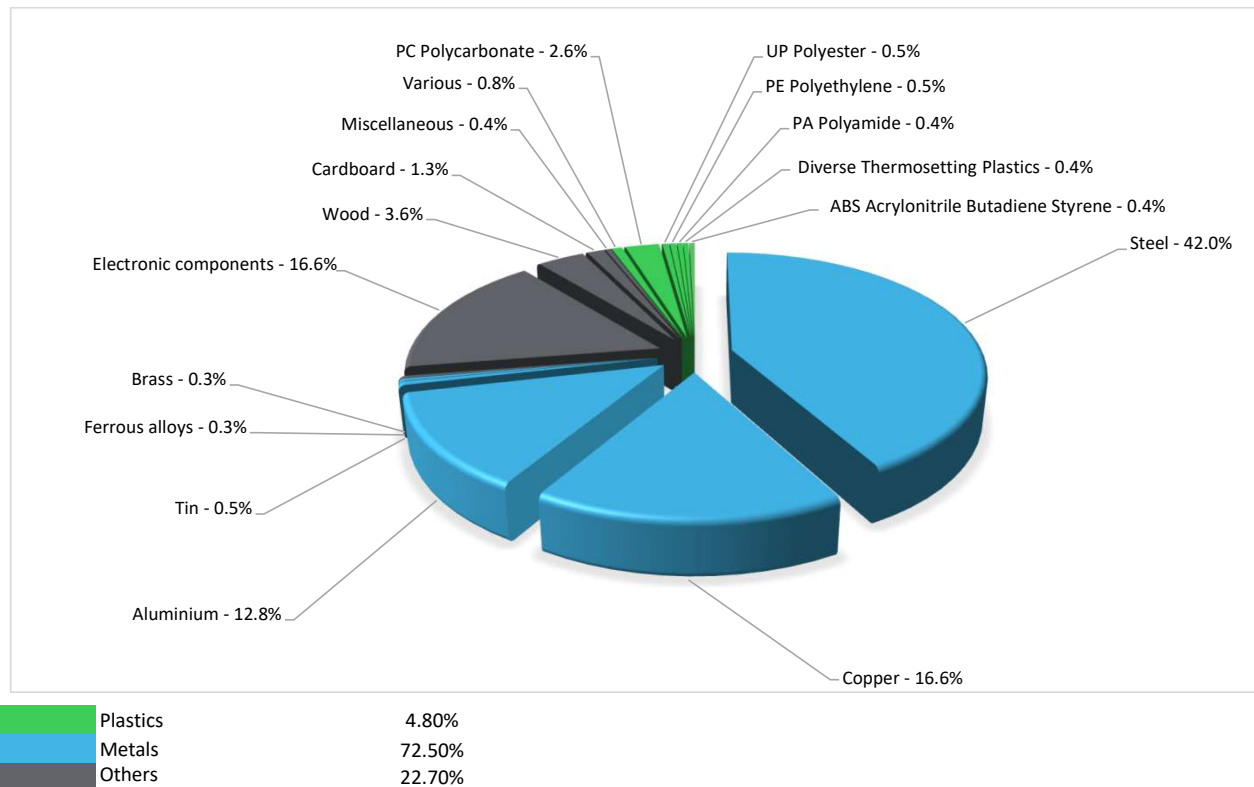
This document provides environmental impact and performance of the product based on Life Cycle Assessment (LCA), from cradle to grave (materials, manufacturing, distribution, installation, use and end of life).

Reference product	Galaxy VX 1250kVA, 400V, Start up 5x8 - GVX1250K1250NHS					
Description of the product	The Galaxy VX is a scalable, highly efficient 500 - 1500KVA 3 phase Uninterruptible Power Supply (UPS) system that provides seamless power protection for large sized data centers, industrial and facilities applications.					
Description of the range	Galaxy VX UPS System The representative product is 1250 kW rating (5 Power Cabinets) with 1250 kW I/O Cabinet (GVX1250K1250NHS).					
	Type	Net weight (kg)	Weight with packaging (kg)	Dimension (mm) HxWxD	Output performance classification	UPS rating (PF=1)
	500 kW with 1250 kW I/O Cabinet	1700	1920	1970×2400×900	VFI-SS-111	500 kW/kVA
	625 kW with 1250 kW I/O Cabinet	2240	2480	1970×3000×900		625 kW/kVA
	750 kW with 1250 kW I/O Cabinet	2240	2480	1970×3000×900		750 kW/kVA
	800 kW with 1250 kW I/O Cabinet	2780	3040	1970×3600×900		800 kW/kVA
	1000 kW with 1250 kW I/O Cabinet	2780	3040	1970×3600×900		1000 kW/kVA
	1100 kW with 1250 kW I/O Cabinet	3320	3600	1970×4200×900		1100 kW/kVA
	1250 kW with 1250 kW I/O Cabinet	3320	3600	1970×4200×900		1250 kW/kVA
	500 kW with 1500 kW I/O Cabinet	1956	2180	1970×3200×900		500 kW/kVA
	750 kW with 1500 kW I/O Cabinet	2496	2740	1970×3800×900		750 kW/kVA
	1000 kW with 1500 kW I/O Cabinet	3036	3300	1970×4400×900		1000 kW/kVA
	1250 kW with 1500 kW I/O Cabinet	3576	3860	1970×5000×900		1250 kW/kVA
1500 kW with 1500 kW I/O Cabinet	4116	4420	1970×5600×900	1500 kW/kVA		
Note: For N+1 UPS models the weight increases by +540 kg and the width increases by +600mm for the redundant power cabinet.						
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. Meanwhile, environmental details of other kVA ratings are available in supplementary information at the end of this document.						
Functional unit	To protect the load of 1250 kW against input power failure during 15 years and switch to the energy storage system to avoid power outage.					



Constituent materials

Reference product mass 3600 kg including the product, its packaging and additional elements and accessories





Substance assessment

RoHS compliance Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2011/65/EU of 8 June 2011) on restriction of lead, mercury, cadmium, hexavalent chromium or flame retardants -PBB&PBDE or phthalates-DEHP, BBP, DBP, DIBP.

REACH compliance Products of this range are designed in conformity with the requirements of the REACH 1907/2006 regulation and its latest updates.

Battery Directive compliance The battery within this product range are designed in conformity with the requirements of the Battery and Accumulator Directive (European Directive 2006/66/EC of 26 September 2006).

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: **76%** Recyclability rate has been calculated based on REEECYLAB tool developed by Ecosystem, for components/materials not covered by the tool, data from the "ECO'DEEE recyclability and recoverability calculation method" was taken. If no data was found a conservative assumption was used (0% recyclability).



Environmental impacts

Reference service life time 15 years

Installation elements The disposal of the packaging materials is accounted for 6% during the installation phase (including transport to disposal).

Power consumption conforms to the requirements in PSR0010-ed1.1-EN-2015_10_16_UPS:

Load rate	25%	50%	75%	100%
Proportion of time at specified load	0.25	0.5	0.25	0

The referent UPS can operate in 2 modes. It has an average energy efficiency of 95.8% in Double Conversion mode and 98.6% in eConversion mode. Total energy losses are calculated to be 3418454 kWh in Double Conversion and 1047094 kWh in eConversion after 15 years.

Use scenario

Type (400V UPS system)	Double conversion		eConversion	
	Average energy efficiency	Electricity consumption (kWh over 15 years)	Average energy efficiency	Electricity consumption (kWh over 15 years)
500 kW with 1250 kW I/O Cabinet	95.6%	1.45E+06	98.6%	4.52E+05
625 kW with 1250 kW I/O Cabinet	95.6%	1.81E+06	98.2%	6.78E+05
750 kW with 1250 kW I/O Cabinet	95.6%	2.17E+06	98.4%	7.51E+05
800 kW with 1250 kW I/O Cabinet	95.7%	2.23E+06	98.3%	8.02E+05
1000 kW with 1250 kW I/O Cabinet	95.8%	2.76E+06	98.6%	8.71E+05
1100 kW with 1250 kW I/O Cabinet	95.9%	2.98E+06	98.6%	9.58E+05
1250 kW with 1250 kW I/O Cabinet	95.8%	3.42E+06	98.6%	1.05E+06
500 kW with 1500 kW I/O Cabinet	96.4%	1.19E+06	99.0%	3.20E+05
750 kW with 1500 kW I/O Cabinet	96.2%	1.90E+06	98.9%	5.05E+05
1000 kW with 1500 kW I/O Cabinet	96.0%	2.65E+06	98.9%	6.73E+05
1250 kW with 1500 kW I/O Cabinet	96.2%	3.20E+06	99.0%	7.60E+05
1500 kW with 1500 kW I/O Cabinet	96.2%	3.84E+06	99.0%	9.12E+05
Type (480V UPS system)	Double conversion		eConversion	
	Average energy efficiency	Electricity consumption (kWh over 15 years)	Average energy efficiency	Electricity consumption (kWh over 15 years)
500 kW with 1250 kW I/O Cabinet	95.7%	1.38E+06	98.0%	5.83E+05
625 kW with 1250 kW I/O Cabinet	95.9%	1.61E+06	98.2%	6.78E+05
750 kW with 1250 kW I/O Cabinet	95.9%	1.98E+06	98.4%	7.51E+05
800 kW with 1250 kW I/O Cabinet	95.9%	2.08E+06	98.3%	8.02E+05
1000 kW with 1250 kW I/O Cabinet	96.1%	2.51E+06	98.6%	8.46E+05
1100 kW with 1250 kW I/O Cabinet	96.2%	2.68E+06	98.5%	9.67E+05
1250 kW with 1250 kW I/O Cabinet	96.2%	3.08E+06	98.6%	1.06E+06
500 kW with 1500 kW I/O Cabinet	96.2%	1.23E+06	98.9%	3.20E+05
750 kW with 1500 kW I/O Cabinet	96.3%	1.80E+06	98.9%	5.05E+05
1000 kW with 1500 kW I/O Cabinet	96.3%	2.37E+06	98.9%	6.73E+05
1250 kW with 1500 kW I/O Cabinet	96.4%	2.92E+06	99.0%	7.60E+05
1500 kW with 1500 kW I/O Cabinet	96.3%	3.58E+06	99.0%	9.12E+05

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 in production.

Geographical representativeness Europe

Energy model used

[A1 - A3]	[A5]	[B6]	[C1 - C4]
Electricity Mix; Production mix; Low voltage; IN	Electricity Mix; Production mix; Low voltage; UE-27	Electricity Mix; Production mix; Low voltage; UE-27	Electricity Mix; Production mix; Low voltage; UE-27

Detailed results, including all the optional indicators mentioned in PCRed4, and the split of the Use Phase (B1 to B7), 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			Galaxy VX UPS System - GVX1250K1250NHS					
Impact indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life	Benefits**
			[A1 - A3]	[A4]	[A5]	[B1 - B7]	[C1 - C4]	[D]
Contribution to climate change	kg CO2 eq	1.50E+06	9.31E+04	1.04E+03	2.18E+02	1.40E+06	6.25E+03	-4.46E+05
Contribution to climate change-fossil	kg CO2 eq	1.50E+06	9.24E+04	1.04E+03	2.89E+02	1.40E+06	6.12E+03	-4.38E+05
Contribution to climate change-biogenic	kg CO2 eq	2.60E+03	6.69E+02	0*	0*	1.87E+03	1.31E+02	-7.38E+03
Contribution to climate change-land use and land use change	kg CO2 eq	2.27E-03	5.00E-05	0*	1.20E-04	0*	2.10E-03	0.00E+00
Contribution to ozone depletion	kg CFC-11 eq	1.99E-02	1.29E-02	9.16E-04	8.90E-06	5.99E-03	1.08E-04	-7.02E-02
Contribution to acidification	mol H+ eq	8.89E+03	8.50E+02	4.51E+00	0*	8.00E+03	3.55E+01	-5.07E+03
Contribution to eutrophication, freshwater	kg (PO4) ³⁻ eq	8.49E+00	1.77E-01	0*	2.19E-03	3.84E+00	4.48E+00	-9.84E-01
Contribution to eutrophication marine	kg N eq	1.01E+03	9.22E+01	2.07E+00	1.66E-01	9.08E+02	7.38E+00	-2.70E+02
Contribution to eutrophication, terrestrial	mol N eq	1.49E+04	1.18E+03	2.25E+01	0*	1.36E+04	6.43E+01	-3.10E+03
Contribution to photochemical ozone formation - human health	kg COVNM eq	3.26E+03	3.15E+02	7.36E+00	4.29E-01	2.92E+03	1.94E+01	-1.20E+03
Contribution to resource use, minerals and metals	kg Sb eq	7.93E+00	7.70E+00	0*	0*	1.02E-01	1.26E-01	-1.07E+02
Contribution to resource use, fossils	MJ	3.68E+07	7.30E+05	1.26E+04	0*	3.57E+07	3.52E+05	-8.62E+06
Contribution to water use	m3 eq	1.06E+05	1.62E+04	5.26E+01	7.58E+01	4.96E+04	3.99E+04	-2.63E+05

*Net benefits and loads beyond the system boundaries stage (module D): potential for reuse, recovery and/or recycling, expressed as net benefits and impacts.

Additional indicators for the French regulation are available as well

Inventory flows Indicators			Galaxy VX UPS System - GVX1250K1250NHS					
Inventory flows	Unit	Total	Manufact.	Distribution	Installation	Use	End of Life	Benefits**
			[A1 - A3]	[A4]	[A5]	[B1 - B7]	[C1 - C4]	[D]
Contribution to use of renewable primary energy excluding renewable primary energy used as raw material	MJ	6.88E+06	1.90E+04	0*	0*	6.85E+06	3.17E+03	-1.91E+05
Contribution to use of renewable primary energy resources used as raw material	MJ	3.89E+03	3.89E+03	0*	0*	0*	0*	-7.67E+03
Contribution to total use of renewable primary energy resources	MJ	6.88E+06	2.29E+04	0*	0*	6.85E+06	3.17E+03	-1.99E+05
Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material	MJ	3.68E+07	7.18E+05	1.26E+04	0*	3.57E+07	3.52E+05	-8.61E+06
Contribution to use of non renewable primary energy resources used as raw material	MJ	1.19E+04	1.19E+04	0*	0*	0*	0*	-9.45E+03
Contribution to total use of non-renewable primary energy resources	MJ	3.68E+07	7.30E+05	1.26E+04	0*	3.57E+07	3.52E+05	-8.62E+06
Contribution to use of secondary material	kg	1.27E+00	1.27E+00	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	m³	2.56E+03	3.77E+02	1.23E+00	1.76E+00	1.15E+03	1.03E+03	-6.12E+03
Contribution to hazardous waste disposed	kg	3.04E+05	2.75E+05	0*	0*	2.62E+04	3.11E+03	-8.73E+06

Contribution to non hazardous waste disposed	kg	2.33E+05	3.07E+04	0*	4.30E+02	2.02E+05	1.86E+02	-4.45E+05
Contribution to radioactive waste disposed	kg	8.72E+01	4.47E+01	2.06E-01	4.74E-02	4.22E+01	3.11E-02	-2.72E+02
Contribution to components for reuse	kg	0.00E+00	0*	0*	0*	0*	0*	0.00E+00
Contribution to materials for recycling	kg	2.78E+03	2.87E+00	0*	1.18E+02	0*	2.66E+03	0.00E+00
Contribution to materials for energy recovery	kg	4.30E-07	4.30E-07	0*	0*	0*	0*	0.00E+00
Contribution to exported energy	MJ	9.26E+01	8.71E+00	0*	8.39E+01	0*	0*	0.00E+00
Contribution to biogenic carbon content of the product	kg de C	0.00E+00	0*	0*	0*	0*	0*	0.00E+00
Contribution to biogenic carbon content of the associated packaging	kg de C	0.00E+00	0*	0*	0*	0*	0*	0.00E+00

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

** Net benefits and loads beyond the system boundaries stage (module D): potential for reuse, recovery and/or recycling, expressed as net benefits and impacts. **Not accounted in the Total.**

Life cycle assessment performed with EIME version v5.9.4, database version 2022-01 in compliance with ISO14044.

Detailed results, including all the optional indicators mentioned in PCRed4, and the split of the Use Phase (B1 to B7), are available in the LCA report and on demand in a digital format - Country Customer Care Center - <http://www.schneider-electric.com/contact>

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.



Extrapolated data

		Referent product											
		400V UPS system						Galaxy VX UPS (kVA) with 1250 kW I/O Cabinet					
		Product type						Galaxy VX UPS (kVA) with 1500 kW I/O Cabinet					
Product information	I/O Cabinet	500	625	750	800	1000	1100	1250	500	750	1000	1250	1500
	Power Cabinets (250 kW/3U)	1	1	1	1	1	1	1	1	1	1	1	1
	Weight with Packaging (kg)	2	3	3	4	4	5	5	2	3	4	5	6
Compulsory environmental indicators - 'Total' of Life Cycle Phases (UPS in Double conversion mode)	Weight with Packaging (kg)	1920	2480	2480	3040	3040	3600	3600	2180	2740	3300	3860	4420
	Contribution to climate change (kg CO2 eq)	6.37E+05	8.00E+05	9.48E+05	9.86E+05	1.20E+06	1.31E+06	1.50E+06	5.42E+05	8.46E+05	1.17E+06	1.41E+06	1.68E+06
	Contribution to Ozone depletion (kg CFC11 eq)	8.86E-03	1.15E-02	1.21E-02	1.42E-02	1.52E-02	1.76E-02	1.99E-02	9.37E-03	1.26E-02	1.59E-02	1.89E-02	2.21E-02
	Contribution to Acidification (mol H+ eq)	3.79E+03	4.76E+03	5.61E+03	5.87E+03	7.12E+03	7.76E+03	8.89E+03	3.26E+03	5.05E+03	6.93E+03	8.34E+03	9.97E+03
	Contribution to eutrophication, freshwater (kg PO43-eq)	3.74E+00	4.82E+00	5.23E+00	5.96E+00	6.56E+00	7.48E+00	8.49E+00	3.78E+00	5.25E+00	6.76E+00	8.05E+00	9.44E+00
	Contribution to eutrophication marine (kg N eq)	4.30E+02	5.41E+02	6.37E+02	6.68E+02	8.09E+02	8.83E+02	1.01E+03	3.71E+02	5.74E+02	7.88E+02	9.49E+02	1.13E+03
	Contribution to eutrophication, terrestrial (mol N eq)	6.35E+03	7.98E+03	9.42E+03	9.84E+03	1.20E+04	1.30E+04	1.49E+04	5.44E+03	8.45E+03	1.16E+04	1.40E+04	1.67E+04
	Contribution to photochemical ozone formation - human health (kg COVNM eq)	1.39E+03	1.75E+03	2.05E+03	2.15E+03	2.61E+03	2.85E+03	3.26E+03	1.20E+03	1.85E+03	2.54E+03	3.06E+03	3.66E+03
	Contribution to resource use, minerals and metals (kgSbeq)	3.61E+00	4.75E+00	4.76E+00	5.90E+00	5.91E+00	7.05E+00	7.93E+00	4.14E+00	5.29E+00	6.44E+00	7.59E+00	8.74E+00
Environmental indicators- 'Total' of Life Cycle Phases (UPS in eConversion mode)	Total use of primary energy (MJ)	1.85E+07	2.32E+07	2.77E+07	2.86E+07	3.52E+07	3.81E+07	3.68E+07	1.55E+07	2.44E+07	3.39E+07	4.09E+07	4.91E+07
	Contribution to water use (m3 eq)	4.66E+04	6.00E+04	6.52E+04	7.42E+04	8.19E+04	9.33E+04	1.06E+05	4.68E+04	6.52E+04	8.42E+04	1.00E+05	1.18E+05
Environmental indicators- 'Total' of Life Cycle Phases (UPS in eConversion mode)	Contribution to climate change (kg CO2 eq)	2.29E+05	3.36E+05	3.66E+05	4.01E+05	4.29E+05	4.79E+05	5.26E+05	1.83E+05	2.72E+05	3.55E+05	4.04E+05	4.80E+05

		480V UPS system						Galaxy VX UPS (kVA) with 1250 kW I/O Cabinet					
		Product type						Galaxy VX UPS (kVA) with 1500 kW I/O Cabinet					
Product information	I/O Cabinet	500	625	750	800	1000	1100	1250	500	750	1000	1250	1500
	Power Cabinets (250 kW/3U)	1	1	1	1	1	1	1	1	1	1	1	1
	Weight with Packaging (kg)	2	3	3	4	4	5	5	2	3	4	5	6
Compulsory environmental indicators - 'Total' of Life Cycle Phases (UPS in Double conversion mode)	Weight with Packaging (kg)	1920	2480	2480	3040	3040	3600	3600	2180	2740	3300	3860	4420
	Contribution to climate change (kg CO2 eq)	6.09E+05	7.18E+05	8.72E+05	9.27E+05	1.10E+06	1.19E+06	1.35E+06	5.57E+05	8.03E+05	1.05E+06	1.29E+06	1.58E+06
	Contribution to Ozone depletion (kg CFC11 eq)	8.74E-03	1.12E-02	1.18E-02	1.40E-02	1.47E-02	1.71E-02	1.78E-02	9.44E-03	1.24E-02	1.55E-02	1.84E-02	2.16E-02
	Contribution to Acidification (mol H+ eq)	3.62E+03	4.29E+03	5.17E+03	5.53E+03	6.54E+03	7.07E+03	7.99E+03	3.35E+03	4.80E+03	6.28E+03	7.67E+03	9.37E+03
	Contribution to eutrophication, freshwater (kg PO43-eq)	3.66E+00	4.60E+00	5.02E+00	5.80E+00	6.29E+00	7.15E+00	7.59E+00	3.82E+00	5.13E+00	6.45E+00	7.73E+00	9.15E+00
	Contribution to eutrophication marine (kg N eq)	4.12E+02	4.88E+02	5.88E+02	6.29E+02	7.44E+02	8.03E+02	9.09E+02	3.81E+02	5.46E+02	7.13E+02	8.72E+02	1.06E+03
	Contribution to eutrophication, terrestrial (mol N eq)	6.07E+03	7.18E+03	8.68E+03	9.26E+03	1.10E+04	1.18E+04	1.34E+04	5.58E+03	8.03E+03	1.05E+04	1.29E+04	1.57E+04
	Contribution to photochemical ozone formation - human health (kg COVNM eq)	1.33E+03	1.58E+03	1.90E+03	2.03E+03	2.40E+03	2.59E+03	2.93E+03	1.23E+03	1.76E+03	2.30E+03	2.81E+03	3.43E+03
	Contribution to resource use, minerals and metals (kgSbeq)	3.61E+00	4.74E+00	4.76E+00	5.89E+00	5.90E+00	7.04E+00	7.05E+00	4.14E+00	5.29E+00	6.44E+00	7.58E+00	8.74E+00
Environmental indicators- 'Total' of Life Cycle Phases (UPS in eConversion mode)	Total use of primary energy (MJ)	1.76E+07	2.07E+07	2.54E+07	2.68E+07	3.21E+07	3.44E+07	3.93E+07	1.59E+07	2.31E+07	3.05E+07	3.74E+07	4.59E+07

	Contribution to water use (m3 eq)	4.56E+04	5.71E+04	6.25E+04	7.21E+04	7.83E+04	8.90E+04	9.47E+04	4.73E+04	6.37E+04	8.02E+04	9.62E+04	1.14E+05
Environmental indicators- 'Total' of Life Cycle Phases (UPS in eConversion mode)	Contribution to climate change (kg CO2 eq)	2.83E+05	3.36E+05	3.66E+05	4.01E+05	4.19E+05	4.83E+05	5.20E+05	1.83E+05	2.72E+05	3.55E+05	4.05E+05	4.81E+05

Other Additional information

Operating the Galaxy VX in eConversion mode results in significantly reduced environmental impact, in particular Carbon emissions (up to 65% reduction) compared to operation in Double Conversion mode. This is mainly due to an improved energy efficiency in eConversion of 98.6% (average) compared to an efficiency of 95.8% (average) in Double Conversion mode.

For details about eConversion, consult the Schneider-Electric eConversion page: <https://www.se.com/ww/en/work/products/product-launch/econversion-high-efficiency-ups-mode/>

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Date of issue	2023/12/20	Information and reference documents	www.pep-ecopassport.org
		Validity period	5 years
Independent verification of the declaration and data, in compliance with ISO 14021 : 2016			
Internal	X	External	
The PCR review was conducted by a panel of experts chaired by Julie ORGELET (DDemain)			
PEP are compliant with XP C08-100-1 :2016 or EN 50693:2019			
The elements of the present PEP cannot be compared with elements from another program.			
Document in compliance with ISO 14021 : 2016 « Environmental labels and declarations. Type II environmental declarations »			

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