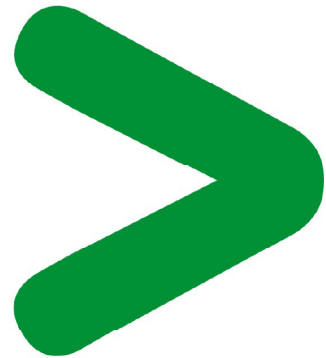


Product Environmental Profile

Smart-UPS Online[®] - Marine



Product Environmental Profile – PEP

Product overview

The main purpose of the Smart-UPS Online® - Marine product range is to provide clean, uninterrupted power to on-board ship applications such as communication, navigations, network and server protection and computer power protection.

The functional unit is the protection of a load of 800 W, of on-board ship applications, against input power failure by providing clean, uninterruptible power during 10 years of operation and provide a backup time of 97 minutes in case of a power outage.

This product range includes Smart-UPS Online® - Marine products with different capacities, protecting between 4,500 W to 10,000 W. These Smart-UPS Online® - Marine products are specifically used to retain power integrity on board large vessels. The product range includes products with the following model numbers:

- Smart-UPS Online® SRT(XXXXX)(RM)XL(Y)M where XXXX is a number between 5K and 10K, Y is “I”, “T” or “J” and RM is optional.

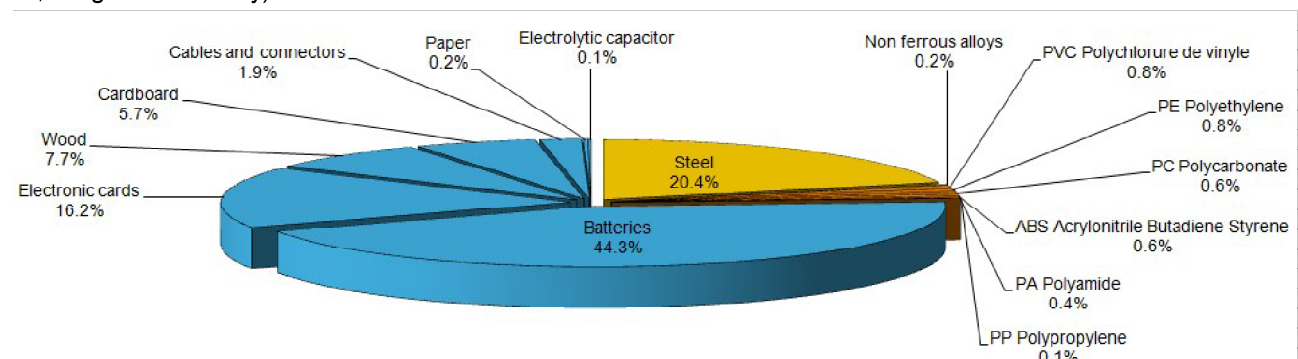
The representative product used for the analysis is the SRT10KRMXLIM APC Smart-UPS® SRT 10000VA RM 230V Marine product(10,000 VA / 10,000 W). The UPS configuration is Single UPS with bypass and the UPS performance classification is VFI SS 111 pursuant to the UPS Configuration and Classification System described in IEC 62040-3:2011. The product dimensions are 26.3 cm high x 43.2 cm wide x 71.5 cm deep. The Input Dependency Characteristics of the reference product is VFI and monomode; its power factor is 0.9 and there is no redundancy.

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 66,860 g and 130,000 g including packaging. It is 130,000 g for the SRT10KRMXLIM APC Smart-UPS® SRT Marine reference product (54,027 g for the non-battery portion and 57,600 g for the battery). 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

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The battery pack(s) within this product range are designed to conform with the requirements of the Battery and Accumulator Directive (European Directive 2006/66/EC of 26 September 2006) and do not contain, or only contain in authorized proportions, the regulated substances lead (Pb), mercury (Hg) and cadmium (Cd) as mentioned in the Directive. Additionally, the non-spillable, valve regulated lead acid batteries used in the battery pack(s) within this product range are certified by their manufacturers as capable of withstanding the IATA/ICAO Vibration and Pressure Differential Test and that at a temperature of 55 degrees Centigrade, there is no free electrolyte to flow from a ruptured or cracked case.

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) . (<http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page>)

Manufacturing

The Smart-UPS Online® - Marine 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 SRT10KRMXLIM APC Smart-UPS® SRT Marine packaging weight is 18,373 g. It consists of 9,979 g wood, 7,354 g cardboard, 988 g polyethylene and 252 g paper.

The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

Use

The products of the Smart-UPS Online® - Marine range do not generate environmental pollution (noise, emissions) requiring special precautionary measures in standard use.

The electrical power consumption depends on the energy losses at various loading rates and the applicable loading rate profile based on the size of the UPS. The electrical power consumed by the Smart-UPS Online® - Marine product range is between 203.4 W and 412.9 W. It is 412.9 W in the weighted average active mode at 100% of the time for the SRT10KRMXLIM APC Smart-UPS® SRT Marine reference product.

No maintenance operations are specified for this product range by the product manufacturer. However, some parts that are said to require replacement based on the requirements of the PSR0010, and that exist within the product range, are modelled as being replaced during the use phase. These parts include the batteries (replaced once) and the fan motor (replaced twice).

End of life

At end of life, the products in the Smart-UPS Online® - Marine range have been optimized to decrease the amount of waste and allow recovery of the product components and materials.

This product range contains the following items which should be separated from the stream of waste so as to optimize end-of-life treatment: lead acid batteries, plastic parts with brominated flame retardant, external cables and printed circuit board >10cm². 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)

(<http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page>).

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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: 65%.

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 SRT10KRMXLIM APC Smart-UPS® SRT Marine product.
- Product packaging is included.
- Installation components: no special components included.
- Scenario for the Use phase: this product range is included in the category >5,000 W to ≤10,000 Watt output power range within the PSR0010-ed1-EN-2014_02_11 for uninterrupted power supplies. Assumed service lifetime is 10 years and use scenario is based on a single mode UPS at the proscribed proportion of time spent at the reference test loads according to table 2 of the PSR0010 ed1-EN-2014_02_11. The average efficiency is 95.9%. Production and transport of one set of batteries and two fan motors, plus their packaging, is accounted for in the use phase as maintenance.
- The geographical representative area for the assessment is European for transportation purposes. However, given this product is used at sea, the electrical power is supplied by diesel generators and is calculated using the Diesel oil combustion; in engine, RER 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 APC Smart-UPS SRT 10000VA RM 230V Marine, commercial reference SRT10KRMXLIM					
		S = M + D + I + U + E	M	D	I	U	E
Air Acidification (AA)	g H+ eq	9.55E+03	2.23E+02	1.81E+00	0.00E+00	9.32E+03	1.68E+00
Air toxicity (AT)	m³	1.51E+10	4.82E+08	2.69E+06	0.00E+00	1.46E+10	2.51E+06
Energy Depletion (ED)	MJ	4.20E+05	1.86E+04	1.37E+02	0.00E+00	4.01E+05	1.21E+02
Global Warming Potential (GWP)	g CO ₂ eq.	3.17E+07	8.80E+05	9.74E+03	0.00E+00	3.08E+07	8.58E+03
Hazardous Waste Production (HWP)	Kg	3.13E+01	1.80E+01	1.21E-05	0.00E+00	1.33E+01	1.06E-05
Ozone Depletion Potential (ODP)	g CFC-11 eq.	2.24E+01	1.13E-01	1.85E-05	0.00E+00	2.23E+01	1.63E-05
Photochemical Ozone Creation Potential (POCP)	g C ₂ H ₄ eq.	5.23E+04	3.04E+02	2.17E+00	0.00E+00	5.20E+04	2.14E+00
Raw Material Depletion (RMD)	Y-1	2.16E-11	1.48E-11	1.99E-16	0.00E+00	6.83E-12	1.75E-16
Water Depletion (WD)	dm³	4.77E+04	8.29E+03	1.01E+00	0.00E+00	3.94E+04	8.91E-01
Water Eutrophication (WE)	g PO ₄ ³⁻ eq.	5.89E+02	5.97E+01	1.81E-02	0.00E+00	5.29E+02	1.59E-02
Water Toxicity (WT)	m³	4.62E+03	2.00E+02	4.17E+00	0.00E+00	4.41E+03	3.67E+00

Life cycle assessment has been performed with the EIME software (Environmental Impact and Management Explorer), version 5 and with its database version CODDE-2015-04.

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

This product range benefits from an eco-design process which is utilized in the design of all products. A design scorecard is generated for all new products to assist engineers in deploying eco-design and then comparing the

Product Environmental Profile – PEP

design features of the new product against the previous version of the product which help reduce its impacts on the environment.

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of other products of this range: For the HWP and RMD impact categories half of the impact may be proportional extrapolated based on the ratio of the product mass to that of the reference product mass and half may be proportional extrapolated based on the ratio of the product electricity use to that of the reference product. The remaining impact categories may be proportional extrapolated based on the ratio of the product electricity use to that of the reference product. The impacts for installation are zero across all products in the family.

System approach

Indicate the environmental gains which are brought by the product to the installation (e.g. reduction in the installation's energy consumption due to the product).

As the products of the range are designed in accordance with the European RoHS Directive 2011/65/EU, they can be incorporated without any restriction in an assembly or an installation subject to this Directive.


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.

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Glossary

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 ⁺ .
Air Toxicity (AT)	This indicator represents the air toxicity in a human environment. It takes into account the usually accepted concentrations for several gases in the air and the quantity of gas released over the life cycle. The indication given corresponds to the air volume needed to dilute these gases down to acceptable concentrations.
Energy Depletion (ED)	This indicator gives the quantity of energy consumed, whether it is from fossil, hydroelectric, nuclear or other sources. It takes into account the energy from the material produced during combustion. It is expressed in MJ.
Global Warming (GW)	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 CO ₂ .
Hazardous Waste Production (HWP)	This indicator quantifies 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.
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 ethylene (C ₂ H ₄).
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.
Water Depletion (WD)	This indicator calculates the volume of water consumed, including drinking water and water from industrial sources. It is expressed in dm ³ .
Water Eutrophication (WE)	Eutrophication is a natural process defined as the enrichment in mineral salts of marine or lake waters or a process accelerated by human intervention, defined as the enrichment in nutritive elements (phosphorous compounds, nitrogen compounds and organic matter). This indicator represents the water eutrophication of lakes and marine waters by the release of specific substances in the effluents. It is expressed in grams equivalency of PO43-(phosphate).
Water Toxicity (WT)	This indicator represents the water toxicity. It takes into account the usually accepted concentrations for several substances in water and the quantity of substances released over the life cycle. The indication given corresponds to the water volume needed to dilute these substances down to acceptable concentrations.

PEP achieved with Schneider-Electric TT01 V10 and TT02 V22 procedures in compliance with ISO14040 series standards

Registration N° : SCHN-2015-209			Applicable PCR : PEP-PCR-ed 2.1-EN-2012 12 11 completed by PSR-0010-ed1-EN-2014 02 11		
Verifier accreditation N° : VH08			Program information: www.pep-ecopassport.org		
Date of issue: 12-2015			Period of validity: 4 years		
Independent verification of the declaration and data, according to ISO 14025:2006					
Internal		X	External		
In compliance with ISO 14025:2006 type III environmental declarations					
PCR review was conducted by an expert panel chaired by J. Chevalier (CSTB).					
The elements of the actual PEP cannot be compared with elements from another program.					

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