PRODUCT ENVIRONMENTAL PROFILE

Products family declaration

RPS S.p.A.

UNINTERRUPTIBLE POWER SUPPLIES (UPS)
M2S 1250 PC0 1250 kW

GENERAL INFORMATION

Program information	PEP-ecopassport®
Documents	www.pep-ecopaasport.org
Referent company	RPS S.p.A. (www.riello-ups.it)
Product name	M2S 1250 PC0 1250 kW
Company contacts	RPS S.p.A. Viale Europa, 7 ZAI 37045 Legnago (VR), Italy Paolo Cavaliere p.cavaliere@riello-ups.com
Product final assembly site(s)	Viale Europa, 7 - 37045 Legnago (VR) – Italy Via Somalia, 20 - 20032 Cormano (MI) - Italy

COMPANY

RPS S.p.A., a company based in Italy and part of the Riello Elettronica Group, is one of the main companies in the world in technological research, production, sales, and assistance. Under Riello UPS brand, it designs and produces Uninterruptible Power Supplies for Data Centres, offices, electromedical applications, security and emergency equipments, industrial complexes, transport monitoring and control, and communication systems.

Riello UPS offers a vast range of products, organized into 24 ranges of uninterruptible power supplies (UPS), based on several different state-of-the-art technological architectures. Thanks to its two research centers in Legnago (Verona, Italy) and Cormano (Milan, Italy), world-class examples of excellence for the design, development and testing of uninterruptible power supplies, Riello UPS constantly innovates its product portfolio, keeping it at the top in terms of performance, overall efficiency reliability and last not least sustainability.

“Reliable power for a sustainable world” is the Riello UPS philosophy condensed into a few simple words: it is a global brand always searching for the most innovative, energy-efficient solutions.

Through intensive R&D and technological innovation, it is constantly developing uninterruptible power supplies that increase power quality whilst being more energy efficient, reducing the amount of power consumed and wasted.

As a company it adheres to robust management systems that are certified to the international standards ISO 14001:2015, ISO 9001:2015 and ISO 45001:2018.

PRODUCT INFORMATION

Product description

Multi Power2 is the evolution of Riello's modular Uninterruptible Power Supplier (UPS), which aims to offer higher power density, simpler integration to both existing and new installations, enhanced operating efficiency and global flexibility to reduce both the upfront investment and the day-to-day operational costs.

Riello UPS's Multi Power2 protects the supply of critical applications. It is conceived for critical high density computing environments encompassing small, medium and large data centers, as well as any other critical power application. Thanks to its modular architecture, the system can be adapted to the load demands to avoid any oversizing and provide the best performance in every working condition. With a new extremely high-density power module, available in two different models, Multi Power2 scalable from 1000 to 1600 kW in a single UPS in M2S model.

UPS has a modular design and it can accept 19 modules MP2 67 PM Blue that have an efficiency of 98,1% in ON LINE mode. The power modules are designed to be fully independent, hot-swappable, mechanically segregated and with embedded selective disconnection at both the input and output stage. The bypass is modular and fully rated according to the maximum power of the system.

The main features of the UPS are:

- Power Module nominal power: 67 kW.
- Solution nominal power: 1250 kW.
- Power factor: 0.99.
- Output power factor: 1, parallel up to 4.
- Number phases: 3 + N.
- Operating temperature: 0 °C - +40 °C
- Input phases: 3
- Output phases: 3

Technical specification

M2S PC0 1250 kW	
Product type	Single UPS without bypass
Model	Multi Power2 1250 kW
Representative product name	Multi Power2 1250 kW
Commercial reference	UM2ST1300000RUA
Dimensions (mm)	2,000 x 2,400 x 1,025
Gross Weight (kg)	2,344.91
Net Weight (kg)	2,176.00
Rated Power (kVA)	1,250
Active Power (kW)	1,250
Input Dependency Characteristics	Multimode UPS (VFI, VFD, VI)
Performance classification	VFI SS 111
Reference Service Life (Years)	15

The UPS model M2S 1250 PC0 1250 kW the following modules.

Product code	Assembly	Sub-assembly	N°	Total mass (kg)
UM2ST1300000RUA	9APM2ST13BOSA	AMP20007A-ASM Cassetto Parallelo MP2	2	0.63
		AMP20010A-Asm Term. RJ45 BUS RT MP2 (AR)	10	0.10
		AMP20014A-Modulo Controllo Armadio MP2	1	15.22
		9APBOS001B-F-Asm Carp BOS 1250kVA	1	86.13
		9APM2SM40BM0B-Asm Modulo ByP M2S 400kVA	3	126.72
		9APM2S003A-Asm Frontale Fisso Modulo M2S	3	5.36
		Other	1	370.74
	9APM2ST13MISA	9APMIS001B-F-&Asm Carp MIS 1250kVA	0	0.00
		Other	0	0.00
	9APM2ST13PCCA	AMP20010A-Asm Term. RJ45 BUS RT MP2 (AR)	10	0.10
		9APPCC001B-F- Asm Carp PCC 1250kVA	2	174.90
		9APPCC002A-Asm Backplane UPS MP2	20	84.04
		9APPCC003A-Asm Modulo Controllo PCC M2S	2	20.99
		Other	1	315.84
	9APM2S001A	9APM2S001A-Asm Porta Display Riello UPS M2S	1	17.36
	9APM2S002A	9APM2S002A-Asm Porte Moduli Riello UPS M2S	3	23.33
	-	Not in assembly	1	250.54
	-	Packaging of power cabinet PC0	1	101.00
RDAPM603U001B	Power Module	MP2 67 PM Blue Power Module	19	684.00
		Packaging of power module	19	67.91
TOTAL				**2,344.91**

Other references covered by the product family

Type	Product included	Reference product
Switch's product family	M2S 1250 PC0 M2S 1600 PC0	M2S 1250 PC0

Declaration of homogenous family

Model	Power [W]	Backup Time [min]	UPS Efficiency [%]	Packaging mass [kg]	Product mass [kg]
M2S 1250 PC0	1,250,000	-	97.97	168.91	2,176.00
M2S 1600 PC0	1,600,000	-	97.97	273.22	2,666.00

Life cycle impacts for all products covered have been calculated by applying the extrapolation rules. Extrapolation rules have been obtained with following the specific rules in PCR-ed4-EN-2021 09 06 and PSR0010-ed2-EN-2023 02 08.

FUNCTIONAL UNIT

The functional and declared units of both UPS products object of this study are defined as follows:

- Functional unit: to ensure the supply of power to remain within specified characteristics to equipment with load of 100 watts for a RSL of 1 year.
- Declared unit: To ensure the supply of power to remain within specified characteristics to equipment with load of 1,250,000 watts for a RSL of 15 years.

The reference flow is represented by the whole mass of UPS M2S 1250 PC0 1250 kW, equal to 2,176.00 kg, the total mass of packaging needed for its distribution, equal to 168.91 kg and the components needed for the maintenance during the use phase of the UPS object of the study. No installation materials are required different than an electrical forklift and connecting cables.

For a declared unit of 1250 kW and 15 years RSL, the functional unit environmental impacts will be equal to declared unit data divided by 187,500.

Product category: UPS with P > 10,000 W.

CONSTITUENT MATERIALS

The M2S 1250 PC0 and its packaging weight approximately 2,344.91 kg.

Material	Incidence
Plastics	**3.9%**
Vetronite	1.8%
Polyurethane	1.6%
Polycarbonate	0.5%
Other plastics	< 0.1%
Metals	**71.7%**
Zinc coating steel	46.0%
Copper	11.0%
Aluminium	11.0%
Steel	3.7%
Others	**17.2%**
PCB	11.8%
Cables	5.4%
Packaging	**7.2%**
Cardboard	3.5%
Wood	3.3%
Eps	0.4%

LIFE CYCLE ASSESSMENT

The system boundaries include all the stages with an approach “from cradle to grave”. According to the PCR adopted for this study, sub-modules according to EN 15804:2012+A2:2019 (A1-A3, A4, A5, B1-B7, C1-C4) have been also adopted as reference for results reporting.

B1 (Use or application of the product installed), B3 (Repair), B4 (Replacement), B5 (Restoration), B6 (Energy requirements during the use stage), B7 (Water requirements during the use stage) are considered with null contribution since they are not applicable.

MANUFACTURING STAGE (A1 - A3)

The manufacturing stage consists of the production and transport of raw materials, production of product with its packaging and the transport of the product to the last logistics platform (warehouse) located in Cerea (Italy).

Assembly and testing of power module and power cabinet of M2S 1250 PC0 are held in Cormano plant. Assembling plant consumptions (electricity and gas) and waste production for the year 2023 have been allocated for one piece of UPS for each reference products.

DISTRIBUTION STAGE (A4)

The distribution stage includes the transport from RPS , Italy factory to the to the end customer located in Europe. An intracontinental transport scenario of 3,500 km was considered.

INSTALLATION STAGE (A5)

Installation stage (A5) involves handling of the UPS modules by an electrical forklift and connecting the cables. For modellization of this stage 1-hour operation of an electrical forklift has been considered . This phase also includes the disposal of the packaging of the M2S 1250 kW PC0 product. For its disposal, the statistical average data from Eurostat databases were considered [2019], relating to landfill, incineration and recycling rates, by type of waste treated.

USE STAGE (B1 - B7)

The use stage considers the product operation during 15 years of reference life time and includes energy consumption and production, distribution, installation and end-of-life of the components required to maintain the UPS over the reference life time.

Energy consumptions are calculated by following the reference PSR, considering a weighted average efficiency of 97.97%. The energy model used in this phase is a specific energy mix, based on European scenario, from ecoinvent v 3.8.

The maintenance operations include the substitution of the components. For the maintenance, the PSR indications and Riello’s technical specification have been followed.

END-OF-LIFE STAGE (C1 - C4)

The default end-of-life scenario provided by the IEC/TR 62635 document has been adopted, considering the product transport by lorry over 1,000 km and its disposal, since the distance to the disposal site is not known as it is stated in the PSR. The IEC/TR 62635 document has been chosen for the LCA analysis because it is a sector-specific guideline with end-of-life data for electric and electronic equipment.

Stage	Amount	Scenario
Deinstallation - C1	48 kWh / F.U.	Assumed an electrical forklift operating for 1 hour for the handling of the UPS modules.
Transport to EoL - C2	1,000 km	Assumed a distance from the treatment plant according to the local default distribution scenario of the PCR
Recycling/Recovery/Reuse EoL - C3	M2S 1250 PC0 : 1,332.98 kg Module power : 34.77 kg	Recycling and incineration rates for M2S 1250's materials from IEC/TR 62635 (Annex C)
		Assumed a distance from the recycling and incineration plant according to the local default distribution scenario of the PCR.
Disposal EoL - C4	M2S 1250 PC0 : 159.02 kg Module power : 1.23 kg	Landfill rates for M2S 1250's materials from IEC/TR 62635
		Assumed a distance from the landfill according to the local default distribution scenario of the PCR.

ENERGY MODEL USED

Life cycle stages	Energy models
Manufacturing stage	Residual mix – Medium voltage – IT The energy-related processes used for the remaining inputs of the manufacturing stage are those included in the ecoinvent 3.8 datasets selected for the analysis
Use	Electricity, low voltage {RER}| market group for electricity, low voltage | Cut-off, U
End-of-life	Electricity, medium voltage {RER}| market group for electricity, medium voltage | Cut-off, U

MAIN METHODOLOGICAL ASPECTS

Software: SimaPro v. 9.4.0.2
Database: Ecoinvent v. 3.8.

Primary data: In this study, both primary and secondary data are used. The following primary data are provided by RPS: Bill of Materials (BoM) of the product, components materials, weights and suppliers, company consumption related to the product assembly, and average power loss of the product during the use phase of the product.For all processes for which primary data are not available, generic data originating from the ecoinvent v3.8 database, allocation cut-off by classification, are used. The ecoinvent database is available in the SimaPro 9.4.0.2 software used for the calculations.

Time representativeness: All primary data collected from RPS are from 2023, which is a reference year. Secondary data refers to the ecoinvent database v3.8. published in 2021.

Geographical representativeness: The final assembly of the product occurs at RPS's plant located in Legnago, Italy. For the use and end-of-life stages of the product, the product is sold in Europe.

When the origin of the components is unknown, the selected ecoinvent processes in the LCA model have global representativeness. In this way, a conservative approach has been adopted.

Technological representativeness: Technological representativeness refers to the specific production process for primary data. For secondary data, it refers to the ecoinvent database v3.8. published in 2021.

Environmental impact indicators: The environmental impacts have been calculated according to the PCR-ed4-EN-2021 09 06 using the method EN 15804: 2012 + A2: 2019 reference package based on EF 3.0.

ALLOCATION RULES

There are no co-products in this product system, so no multi-output allocation of inputs and outputs is necessary.

Concerning the end-of-life allocation, the “polluter pay” principle is adopted as required by the PCR-ed4-EN-2021 09 06. This means that waste treatment processes are allocated to the product system that generates the waste until the end-of-waste state is reached. However, the potential benefits and avoided loads from recovery and recycling processes beyond the end-of-waste state are not considered.

ENVIRONMENTAL IMPACT RESULTS

The environmental impact for functional unit of M2S 1250 PC0 (VFI mode) is calculated for the mandatory and optional impact categories required by the PCR. These indicators are derived from EN 15804:2012+A2:2019.

Indicator	Unit	Manufacturing (A1-A3)	Distribution (A4)	Installation (A5)	Use (B1-B7)*	End of life (C1-C4)	TOTAL
GWP-total	kg CO_2 eq	5.82E-01	4.11E-03	4.57E-03	3.77E+00	1.45E-01	**4.50E+00**
GWP-fossil	kg CO_2 eq	5.79E-01	4.11E-03	2.32E-03	3.65E+00	1.42E-01	**4.37E+00**
GWP-biogenic	kg CO_2 eq	2.21E-03	3.14E-06	2.25E-03	1.15E-01	2.36E-03	**1.22E-01**
GWP-luluc	kg CO_2 eq	1.03E-03	1.52E-06	1.63E-06	8.45E-03	8.35E-05	**9.56E-03**
ODP	kg CFC-11 eq	5.03E-08	9.45E-10	1.04E-10	1.95E-07	4.85E-09	**2.51E-07**
AP	mol H+ eq	5.91E-03	1.74E-05	4.77E-06	2.06E-02	4.64E-04	**2.70E-02**
EP-freshwater	kg P eq	8.47E-04	2.99E-07	2.32E-07	3.59E-03	3.24E-05	**4.47E-03**
EP-marine	kg N eq	8.58E-04	5.22E-06	1.73E-06	3.46E-03	1.09E-04	**4.43E-03**
EP-terrestrial	mol N eq	1.09E-02	5.70E-05	1.61E-05	3.06E-02	7.76E-04	**4.24E-02**
POCP	kg NMVOC eq	2.47E-03	1.82E-05	4.85E-06	8.48E-03	2.66E-04	**1.12E-02**
ADP-minerals & metals	kg Sb eq	2.38E-04	9.37E-09	3.93E-09	3.46E-05	4.32E-06	**2.77E-04**
ADP-fossil	MJ	7.23E+00	6.28E-02	1.08E-02	7.70E+01	7.63E-01	**8.51E+01**
WDP	m^3 depriv.	8.56E-02	2.41E-04	1.20E-04	8.95E-01	3.63E-02	**1.02E+00**

* **Note:** B2 (Maintenance) and B6 (energy requirements during the use stage) are considered. Other sub modules in the use stage (B1,B3,B4,B5 and B7) are equal to zero.

INVENTORY FLOWS INDICATORS

Indicator	Unit	Manufacturing (A1-A3)	Distribution (A4)	Installation (A5)	Use (B1-B7)*	End of life (C1-C4)	TOTAL
RESOURCE USE							
Use of renewable primary energy resources used as energy carrier (PERE)	MJ	7.98E-01	6.96E-04	8.24E-04	1.56E+01	5.80E-02	**1.65E+01**
Use of renewable primary energy resources used as raw materials (PERM)	MJ	2.94E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**2.94E-02**
Total use of renewable primary energy resources (PERT)	MJ	8.28E-01	6.96E-04	8.24E-04	1.56E+01	5.80E-02	**1.65E+01**
Use of non-renewable primary energy resources used as energy carrier (PENRE)	MJ	7.21E+00	6.28E-02	1.08E-02	7.69E+01	7.63E-01	**8.50E+01**
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	2.53E-02	0.00E+00	0.00E+00	1.35E-02	0.00E+00	**3.88E-02**
Total use of non-renewable primary energy resources (PENRT)	MJ	7.23E+00	6.28E-02	1.08E-02	7.69E+01	7.63E-01	**8.50E+01**
Use of secondary material (SM)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Use of non renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Use of net fresh water (FW)	m^3	5.83E-03	7.71E-06	5.70E-06	6.62E-02	1.16E-03	**7.32E-02**
WASTE CATEGORIES							
Hazardous waste disposed (HWD)	kg	6.52E-05	1.52E-07	2.22E-08	6.30E-05	1.41E-05	**1.42E-04**
Non-hazardous waste disposed (NHWD)	kg	7.14E-02	5.81E-03	4.62E-04	3.11E-01	4.02E-02	**4.29E-01**
Radioactive waste disposed (RWD)	kg	2.09E-05	4.13E-07	6.79E-08	5.64E-04	2.69E-06	**5.88E-04**
OUTPUT FLOWS							
Components for reuse (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Materials for recycling (MFR)	kg	0.00E+00	0.00E+00	1.10E-02	1.53E-04	9.64E-02	**1.08E-01**
Materials for energy recovery (MER)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Exported energy (EE)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
OTHERS							
Biogenic carbon content of the product	kg of C	0.00E+00	-	-	-	-	-
Biogenic carbon content of the associated packaging	kg of C	3.80E-04	-	-	-	-	-

* **Note:** B2 (Maintenance) and B6 (energy requirements during the use stage) are considered. Other sub modules in the use stage (B1,B3,B4,B5 and B7) are equal to zero.

EXTRAPOLATION RULES

The PEP can cover products different from the reference product if they belong to a homogeneous environmental family. This means that the group of products must satisfy the following characteristics:

- Same main function;
- Same product standard;
- Same manufacturing technology: the same type of materials and same manufacturing processes.

The M2S 1250's product family satisfy these conditions, so extrapolation rules were applied to assess the environmental impact of the products belonging to the family, following the PCR indication.

After a documented sensitivity study, it has been proven that the environmental impacts of these systems on A1 to C4 stages are globally proportional to their mass. An extrapolation methodology applicable to all life cycle stages (A1-C4) has been established.

- For manufacturing stage, transportation stage and End-of-Life stage indicators are proportional to product mass;
- For installation stage indicators are proportional to packaging mass;
- For use stage indicators are proportional declared power in [W].

In the following tables, the reference product is identified by unit coefficients in all stages of its life cycle. The other products included in the family will have multiples or submultiples of it as coefficients.

Linear coefficients for the environmental impact calculation of the M2S 1250 PC0 products

	Manufacturing (A1-A3)		Distribution (A4)		Installation (A5)		Use (B1-B7)*		End of life (C1-C4)	
	M2S 1250 PC0	M2S 1600 PC0	M2S 1250 PC0	M2S 1600 PC0	M2S 1250 PC0	M2S 1600 PC0	M2S 1250 PC0	M2S 1600 PC0	M2S 1250 PC0	M2S 1600 PC0
GWP-total	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
GWP-fossil	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
GWP-biogenic	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
GWP-luluc	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
ODP	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
AP	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
EP-freshwater	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
EP-marine	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
EP-terrestrial	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
POCP	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
ADP-minerals & metals	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
ADP-fossil	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
WDP	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225

	Manufacturing (A1-A3)		Distribution (A4)		Installation (A5)		Use (B1-B7)*		End of life (C1-C4)	
	M2S 1250 PC0	M2S 1600 PC0	M2S 1250 PC0	M2S 1600 PC0	M2S 1250 PC0	M2S 1600 PC0	M2S 1250 PC0	M2S 1600 PC0	M2S 1250 PC0	M2S 1600 PC0
PERE	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
PERM	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
PERT	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
PENRE	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
PENRM	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
PENRT	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
SM	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
RSF	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
NRSF	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
FW	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
HWD	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
NHWD	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
RWD	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
CRU	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
MFR	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
MER	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225
EE	1.000	1.225	1.000	1.225	1.000	1.618	1.000	1.280	1.000	1.225

* **Note:** B2 (Maintenance) and B6 (energy requirements during the use stage) are considered. Other sub modules in the use stage (B1,B3,B4,B5 and B7) are equal to zero.

Above extrapolation factor needs to be multiplied to declared unit environmental impacts.

Biogenic carbon content of UPS and its packaging per declared unit of M2S 1600 PC0

The biogenic carbon content of wood-based products can be measured or calculated according to EN 16449:2014(15), Wood and wood-based products — Calculation of the biogenic carbon content of wood and conversion to carbon dioxide.

Parameter	Quantity (kg C/D.U.)
Biogenic carbon content in product (as C)	0.00E+00
Biogenic carbon content in accompanying packaging (as C)	1.27E+02

ADDITIONAL INFORMATION

In the following table information about the recoverable and recycling rate of M2S 1250 PC0 is reported. The calculation has been made by following the IEC / TR 62635.

Variant description	Recyclable mass (kg)	Recoverable mass (kg)	Recycling rate (%)	Recovery rate (%)
M2S 1250 PC0	1,670.95	322.71	76.79%	14.83%

Environmental impact of M2S 1250 PC0 (VFD mode) with an average weighted efficiency of 99.40%

Indicator	Unit	Manufacturing (A1-A3)	Distribution (A4)	Installation (A5)	Use (B1-B7)*	End of life (C1-C4)	TOTAL
GWP-total	kg CO_2 eq	5.82E-01	4.11E-03	4.57E-03	1.17E+00	1.45E-01	**1.91E+00**
GWP-fossil	kg CO_2 eq	5.79E-01	4.11E-03	2.32E-03	1.14E+00	1.42E-01	**1.86E+00**
GWP-biogenic	kg CO_2 eq	2.21E-03	3.14E-06	2.25E-03	3.38E-02	2.36E-03	**4.06E-02**
GWP-luluc	kg CO_2 eq	1.03E-03	1.52E-06	1.63E-06	2.52E-03	8.35E-05	**3.63E-03**
ODP	kg CFC-11 eq	5.03E-08	9.45E-10	1.04E-10	6.86E-08	4.85E-09	**1.25E-07**
AP	mol H+ eq	5.91E-03	1.74E-05	4.77E-06	6.33E-03	4.64E-04	**1.27E-02**
EP-freshwater	kg P eq	8.47E-04	2.99E-07	2.32E-07	1.07E-03	3.24E-05	**1.95E-03**
EP-marine	kg N eq	8.58E-04	5.22E-06	1.73E-06	1.08E-03	1.09E-04	**2.05E-03**
EP-terrestrial	mol N eq	1.09E-02	5.70E-05	1.61E-05	9.66E-03	7.76E-04	**2.15E-02**
POCP	kg NMVOC eq	2.47E-03	1.82E-05	4.85E-06	2.72E-03	2.66E-04	**5.47E-03**
ADP-minerals & metals	kg Sb eq	2.38E-04	9.37E-09	3.93E-09	1.10E-05	4.32E-06	**2.53E-04**
ADP-fossil	MJ	7.23E+00	6.28E-02	1.08E-02	2.35E+01	7.63E-01	**3.16E+01**
WDP	m^3 depriv.	1.59E-01	2.41E-04	1.20E-04	2.71E-01	3.63E-02	**4.67E-01**

Results highlight a significant variation of impacts for all the considered categories with an average reduction of about -52.80%.

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Date of issue: 06-2024	Validity period: 5 years
Independent verification of the declaration and data in compliance with ISO 14025:2006	
Internal □	External ✓
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)	
PEP is compliant with EN 50693:2019 The components of the present PEP may not be compared with components from any other program.	
Document in compliance with ISO 14025:2010 «Environmental labels and declarations. Type III environmental declarations»	