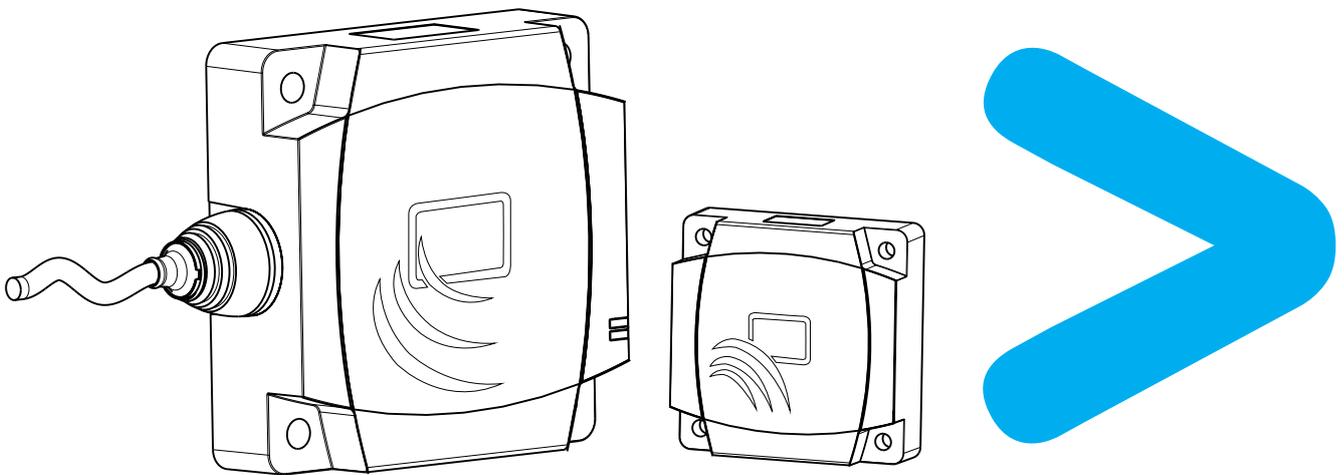


# Product Environmental Profile

RFID System



# Product Environmental Profile - PEP

## Product Overview

The purpose of the RFID product range is to identify and communicate remotely with electronic tags. It consists of:

- compact C and D type stations (40 and 80 cm square respectively)
- RFID electronic tags for industrial use
- fixing and wiring accessories.

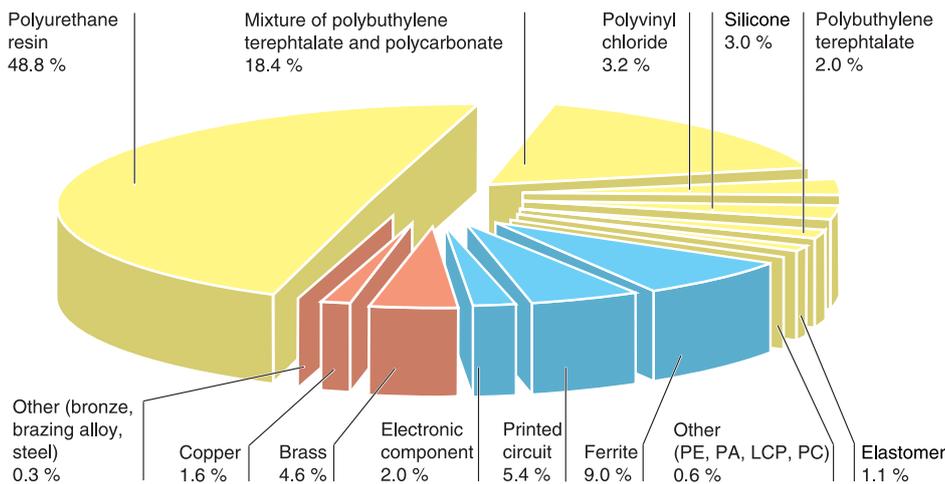
The configuration chosen for the environmental analysis of the range is a D type station, ref. XGCS8901201, with a configuration badge and a 4 kb electronic tag, ref. XGHB444345. This configuration is representative of all products in the family; the same manufacturing process is used for the other products in the range.

The environmental analysis was performed in conformity with ISO 14040 "Environmental management: Life cycle assessment - Principle and framework". This analysis takes all the stages in the life cycle of the product into account: extraction of raw materials and manufacture of materials, manufacture of the product, distribution, utilisation and end of life.

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## Constituent materials

The mass of the representative assembly in the range is 257 g, not including the packaging (station: 223 g; badge: 5 g; tag: 29 g), distributed as follows:



## Substance assessment

Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2002/95/EC of 27 January 2003) and do not contain, or in the authorised proportions, lead, mercury, cadmium, chromium hexavalent, flame retardant (polybromobiphenyles PBB, polybromodiphenylthethers PBDE) as mentioned in the Directive.

## Manufacturing

The RFID products range are manufactured at a Schneider Electric production site operating an ISO 14001 certified environmental management system.

## Distribution

The packaging was designed in compliance with the European Union's 94/62/EC packaging directive in order to reduce the weight and volume and consequently the environmental impact of the distribution phase of the life cycle of the product. Both the station and the tag are packed in 100 % recyclable cardboard boxes weighing 23 and 11 g respectively. The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

# Product Environmental Profile - PEP

## Utilization

The products in the RFID range do not generate any environmental pollution requiring special precautionary measures (noise, emissions, etc.).

The consumption of the representative configuration is that of a type D station, i.e. 1.5 W.

## End of life

At end of life, the stations and tags should be sent to a recycling centre for used electronic cards to recycle as much of their metal content as possible – especially the copper – and recover the plastic energetically.

The mass recycling potential of the materials in the representative configuration is consequently 5 %. As the energy recovery potential is greater than 80 %, the overall recovery potential at end of life is greater than 85 %.

## Environmental impacts

The EIME (Environmental Impact and Management Explorer) software, version 1.6, and its database, version 5.4, were used for the Life Cycle Assessment (LCA) of the product chosen as representative of the range.

The analysis focused on a complete RFID system consisting of a type D station ref. XGCS8901201, with a configuration badge and a 4 Kb electronic tag, ref. XGHB444345. For the purposes of the LCA, the estimated service life on the customer's premises is 10 years, with an annual rate of operation of 53 %, i.e. an electrical consumption of 69 kWh over 10 years. The European electrical power model was chosen for modelling the consumption.

The EIME software was used to model the environmental impacts on the Manufacturing phase (including the extraction of raw materials and processing of basic materials) and on the Distribution and Utilisation phases of the life cycle. The results of the LCA performed with the EIME software are as follows:

### Presentation of the environmental impacts

Environmental indicators	Unit	For an Ositrack RFID system			
		S = M + D + U	M	D	U
Raw Material Depletion	Y-1	6.81 10 <sup>-15</sup>	6.24 10 <sup>-15</sup>	6.94 10 <sup>-18</sup>	5.58 10 <sup>-16</sup>
Energy consumption	MJ	-	-	-	-
Water Depletion	dm <sup>3</sup>	4.55 10 <sup>2</sup>	3.58 10 <sup>2</sup>	1.06	95.6
Global Warming Potential	g≈CO <sub>2</sub>	8.77 10 <sup>4</sup>	4.26 10 <sup>4</sup>	4.09 10 <sup>2</sup>	4.47 10 <sup>4</sup>
Ozone Depletion	g≈CFC-11	1.57 10 <sup>-2</sup>	7.49 10 <sup>-3</sup>	8.27 10 <sup>-5</sup>	8.17 10 <sup>-3</sup>
Photochemical Ozone Creation	g≈C <sub>2</sub> H <sub>4</sub>	68.1	35.3	6.88 10 <sup>-1</sup>	32.1
Air acidification	g≈H <sup>+</sup>	18.2	10.3	5.47 10 <sup>-2</sup>	7.82
Hazardous waste production	kg	1.42	7.26 10 <sup>-1</sup>	6.61 10 <sup>-5</sup>	6.59 10 <sup>-1</sup>

# Product Environmental Profile - PEP

## System approach

As the product of the range are designed in accordance with the RoHS Directive (European Directive 2002/95/EC of 27 January 2003), they can be incorporated without any restriction within an assembly or an installation submitted to this Directive.

*N.B.: please note that the environmental impacts of the product depend on the use and installation conditions of the product.*

*Impacts values given above are only valid within the context specified and cannot be directly used to draw up the environmental assessment of the installation.*

## Glossary

### 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.

### Energy Depletion (ED)

This indicator gives the quantity of energy consumed, whether it be from fossil, hydroelectric, nuclear or other sources. This indicator takes into account the energy from the material produced during combustion. It is expressed in MJ.

### Water Depletion (WD)

This indicator calculates the volume of water consumed, including drinking water and water from industrial sources. It is expressed in dm<sup>3</sup>.

### 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<sub>2</sub>.

### 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<sub>2</sub>H<sub>4</sub>).

### 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<sup>+</sup>.

### Hazardous Waste Production (HWP)

This indicator calculates 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.

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Independent verification of the declaration and data, in compliance with ISO 14025:2006					
Internal	V1	External	V1		
In compliance with the ISO 14025:2006 type III environmental declaration standard.					
The critical review of the PCR was conducted by a panel of experts chaired by J. Chevalier (CSTB).					
The information in the present PEP cannot be compared with information from another programme.					



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