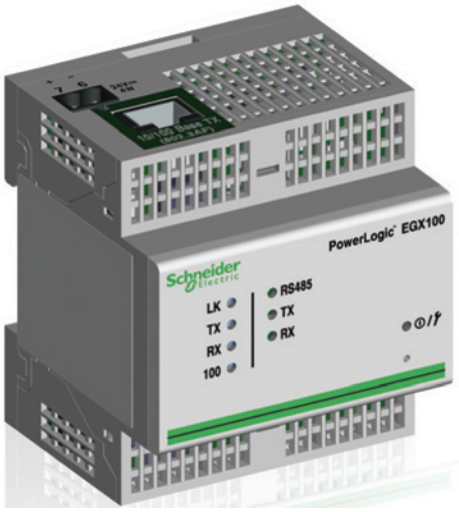
# Product Environmental Profile

## EGX/ETG

Family of ethernet gateways




PEP ecoPASSPORT®

Schneider Electric

# Product Environmental Profile - PEP

## Product overview

The main function of the EGX/ETG family of Ethernet gateways product range is to provide a very low cost, single-line port Ethernet-to-serial line gateway that is robust and has industrial ratings.

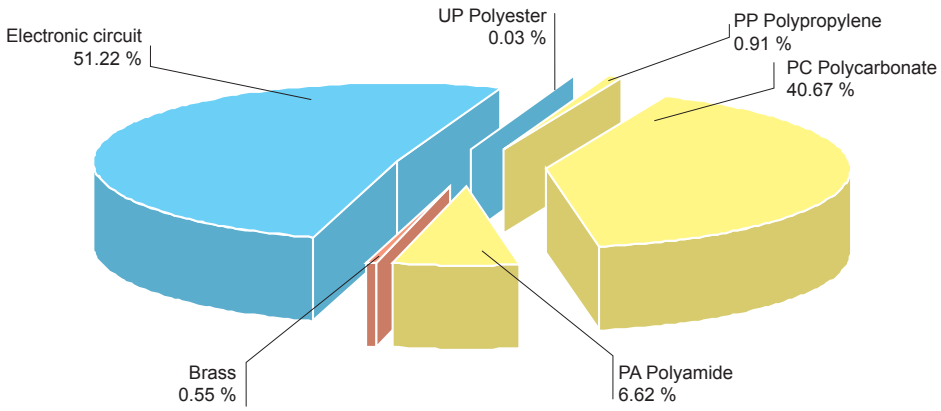
The range consists of products that offer Modbus TCP/IP connections and are well suited for a wide range of electrical distribution products, control panels, power metering/monitoring and critical control systems. The gateways provide WEB Interface for configuration, diagnostics, and maintenance.

The representative product used for the analysis was EGX100MG. The environmental impacts of this referenced product are representative of the impacts within the product range, which are developed on a common technology platform.

The environmental analysis was performed in conformity with ISO 14040. This analysis takes the stages of the product life cycle into account.

## Constituent materials

The mass of the product is 164 g not including packaging.
The constituent materials are distributed as follows:




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, polybromodiphenylthers PBDE) as mentioned in the Directive.

## Manufacturing

The EGX/ETG Ethernet gateway product range is manufactured at a Schneider Electric production site in which both an ISO 14001 certified environmental management system and OHSAS18001 occupational health and safety assessment practice are established.

## Distribution

The weight and volume of the packaging have been reduced, in compliance with the European Union's packaging directive.
Packaging for the EGX/ETG family of Ethernet gateways weighs 212 g. The packaging consists of 125 g of cardboard, 46 g of paper (50 % recycled), 25 g polypropylene, (carton and insert assembly); and 12 g polycarbonate, 4 g polyethylene and 0.5 g aluminum (Technical Library CD assembly).
The product distribution flows have been optimized by setting up local distribution centers close to the market areas.

## Use

The products of the EGX/ETG family of Ethernet gateways do not generate environmental pollution requiring special precautionary measures (noise, emissions, and so on) in the utilization phase.
The dissipated power depends on the conditions under which the product is implemented and used. The electrical power consumed by the EGX/ETG family of Ethernet gateways ranges between 1.73 W and 2.09 W. It expends 2.09 W in active mode and 0 % in standby mode for the referenced EGX100MG. This consumed power represents 99% of the total power passing through this product.

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## End of life

At end of life, the products in the EGX/ETG Ethernet gateway family are optimized to decrease the amount of waste and increase the amount of recyclable components and materials in the end of life treatment process. The product design and information provided allows components to enter the usual end-of-life treatment processes as appropriate: depollution if recommended, reuse and/or dismantling if recommended to increase recycling efficiencies.
The potential recyclability of the products was evaluated using the"Codde recyclability and recoverability calculation method" (version V1, 20 Sep. 2008) and published by ADEME (French Agency for Environment and Energy Management).
According to this method, the potential recyclability ratio is: 53.43 %

## Environmental impacts

The environmental impacts were analyzed for the Manufacturing (M), Distribution (D) and Utilization (U) phases.
According to IEC PAS 62545, eleven environmental indicators are chosen to calculate the environmental impacts of this range of products.
This product range is included in the category 2: Energy consuming product. Assumed lifetime service is 10 years, and utilization scenario: category 2 was used. The consumed power and % of uptime was based on real data.
The EIME (Environmental Impact and Management Explorer) software, version 4.0, and its database, version 10.0 were used for the life cycle assessment (LCA).
The calculation has been done on EGX100MG. The electrical power model used is Electrical (US) – Europe.

**Presentation of product environmental impacts:**

| Indicator | Unit | EGX100MG Impact | | | |
|---|---|---|---|---|---|
| | | S = M + D + U | M | D | U |
| Raw material depletion | Y-1 | $4.88E^{-14}$ | $4.51E^{-14}$ | $7.85E^{-19}$ | $3.70E^{-15}$ |
| Energy depletion | MJ | $4.08E^{+03}$ | 63.993 | $6.96E^{-01}$ | $4.01E^{+03}$ |
| Water depletion | $dm^3$ | $5.27E^{+02}$ | 39.548 | $1.05E^{-01}$ | $4.88E^{+02}$ |
| Global warming | $g \approx CO_2$ | $2.80E^{+05}$ | $3.59E^{+03}$ | 36.772 | $2.77E^{+05}$ |
| Ozone depletion | g≈CFC-11 | $1.21E^{-02}$ | $8.10E^{-04}$ | $5.22E^{-06}$ | $1.13E^{-02}$ |
| Air toxicity | $m^3$ | $6.52E^{+07}$ | $6.49E^{+05}$ | $8.20E^{+03}$ | $6.45E^{+07}$ |
| Photochemical ozone creation | $g \approx C_2H_4$ | 60.001 | 1.019 | $1.45E^{-02}$ | 58.967 |
| Air acidification | $g \approx H^+$ | 55.165 | $4.88E^{-01}$ | $6.47E^{-03}$ | 54.671 |
| Water toxicity | $dm^3$ | $2.57E^{+04}$ | $1.08E^{+03}$ | 8.538 | $2.46E^{+04}$ |
| Water eutrophication | $g \approx PO_4$ | 1.032 | $3.54E^{-01}$ | $1.51E^{-04}$ | $6.79E^{-01}$ |
| Hazardous waste production | kg | 6.247 | $7.67E^{-02}$ | $5.34E^{-04}$ | 6.17 |

When migrating from the EGX200/400 technology platform to the EGX/ETG100 technology platform the environmental impact reduction goals were either met or exceeded. For example, the product mass was reduced by 77 %, a battery was eliminated, and the number of assembly steps was reduced from 18 to 8.
The life cycle analysis shows that the utilization phase (phase U) is the phase which has the greatest impact on the majority of environmental indicators. The environmental parameters of this phase have been optimized at the design stage as noted in the system approach section below.

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## 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 $dm^3$.

**Global Warming Potential (GWP)**

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 $CO_2$.

**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 ethene ($C_2H_4$).

**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 $H^+$.

**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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