Product Environmental Profile

PowerLogic™ PM700/200 series meters

PEP ecoPASSPORT®

Schneider Electric

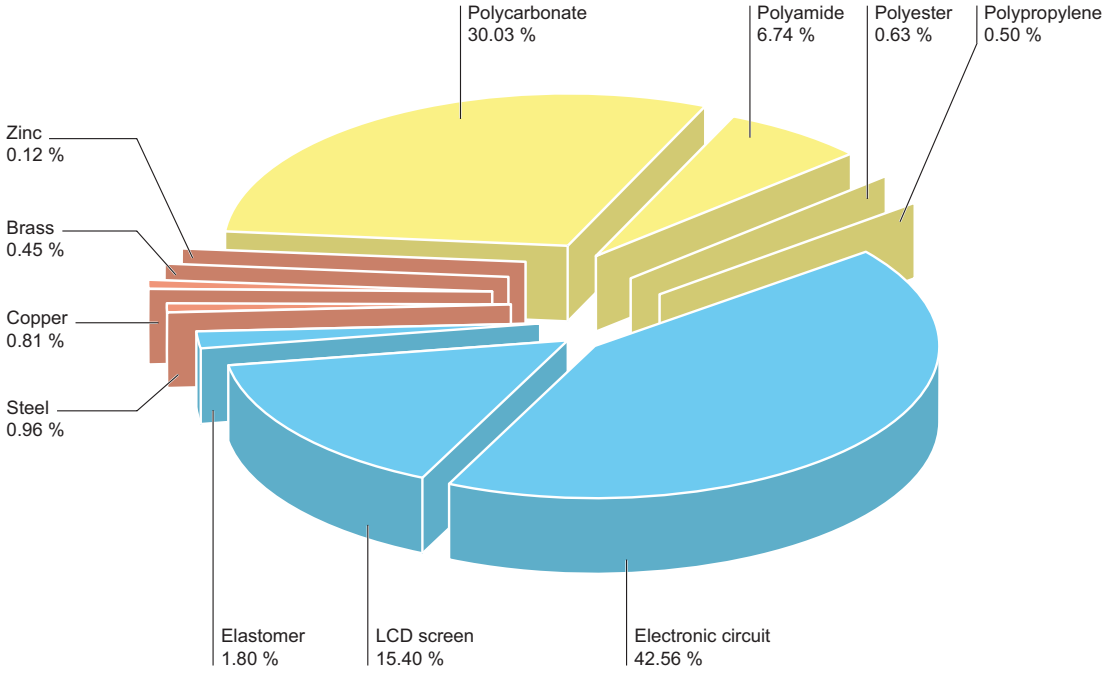
Product Environmental Profile - PEP

Product Overview

The main function of the PowerLogic™ PM700/200 series meters is to offer all the high performance measurement capabilities required to monitor electrical installation in a single 96 x 96 mm unit. These meters are used to accumulate data regarding power quality, power consumption and events that may occur during daily energy cycles (e.g. power outages, low voltage dips).
The representative product used for the analysis was PM750MG.
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 ISO14040 “Environmental management: Life Cycle assessment – Principle and framework”. This analysis takes the stages of the product life cycle into account.

Constituent materials

The mass of the product range is 396.55 g and 398.95 g not including packaging. It is 398.95 g for the PM750.
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 exceed the allowable percentages of lead, mercury, cadmium, hexavalent chromium, flame retardant (polybromobiphenyles PBB, polybromodiphenylthers PBDE) as mentioned in the Directive.

Manufacturing

The PowerLogic PM700/200 series meters are 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 PM750MG weighs 168.05 g. It consists of 113.4 g of cardboard, 37.2 g of paper (50 % recycled), 15.45 g polypropylene, and 2 g vellum paper.
The product distribution flows have been optimized by setting up local distribution centers close to the market areas.

Product Environmental Profile - PEP

Use

The PowerLogic PM700/200 series meters 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.
Over the specified control power-supply input-voltage range, the electrical power consumed by the referenced PM750MG is between 1.25 W and 2.0 W. This is the power consumed in the active mode and a standby mode does not apply to this product.

End of life

At end of life, the products in the PowerLogic PM700/200 meter series 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 recommendations to optimize the recycling performance are detailed in the product “End of Life Instructions” of this product range.
The potential of 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 this method, the potential recyclability ratio is 71 %.

Environmental impacts

The environmental impacts were analysed for the Manufacturing (M) phase, including the processing of raw materials, and for the Distribution (D) and Utilization (U) phase.
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 is 2 W and 100 % of uptime.
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 scope of the analysis was limited to a PM750MG.
The electrical power model used is Electrical (US) – Europe.

Presentation of the environmental impacts

Environmental indicators	Unit	PM750MG Impact (1.000 unit)			
		S = M + D + U	M	D	U
Raw Material Depletion	Y-1	**$1.24\ 10^{-13}$**	$1.22\ 10^{-13}$	$1.72\ 10^{-17}$	$1.68\ 10^{-15}$
Energy Depletion	MJ	**$3.33\ 10^{3}$**	$1.49\ 10^{3}$	13.27	$1.82\ 10^{3}$
Water depletion	dm^3	**$1.45\ 10^{3}$**	$1.23\ 10^{3}$	$6.05\ 10^{-2}$	$2.22\ 10^{2}$
Global Warming	g≈CO_2	**$2.48\ 10^{5}$**	$1.22\ 10^{5}$	$9.83\ 10^{2}$	$1.26\ 10^{5}$
Ozone Depletion	g≈CFC-11	**$9.21\ 10^{-3}$**	$4.09\ 10^{-3}$	$5.92\ 10^{-7}$	$5.12\ 10^{-3}$
Photochemical Ozone Creation	g≈C_2H_4	**$6.14\ 10^{7}$**	$3.19\ 10^{7}$	$1.62\ 10^{5}$	$2.93\ 10^{7}$
Air acidification	g≈H^+	**45.83**	18.20	$8.24\ 10^{-1}$	26.80
Hazardous waste production	kg	**52.24**	27.27	$1.15\ 10^{-1}$	24.85

The life cycle analysis shows that the Manufacturing and 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. For example, the product benefits from a mass reduction of 56 %, a reduction from 4 to 3 PCB assemblies, reduced number of connectors from 7 to 4, and eliminated a cable due to integrated display as compared to the earlier PM650MG.

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^3.

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.

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_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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