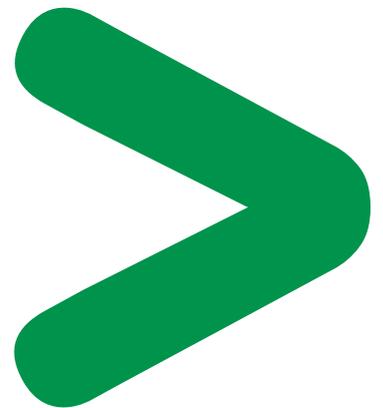


Product Environmental Profile

Exxact Thermostats



Product Environmental Profile - PEP

Product overview

The main function of the Exxact Thermostat products are to offer a standard to high-end range for flush or surface mounting. Depending of version it can be combined with various kinds of design frames in different colours and materials.

This range consists of:

Products covering all needs for homes and buildings:

- Wiring devices – switches, socket-outlets, surface boxes etc
- Control – Stand-alone electronics, wireless and KNX
- Network connectivity – LexCom, Keystone, telephone outlets ...

Solutions for homes and buildings:

- Lighting control – dimmers, movement detectors, wireless ...
- Climate control – thermostats, roller blinds, KNX ...
- Comfort – Stand-alone electronics, wireless, KNX ...
- Safety and security – timers, socket-outlets with integrated features
- Energy efficiency – KNX, movement detectors, thermostats ...
- Hotels & Hospitals – key-card switch, illuminated info signs, call-system ...

The representative product used for the analysis is Exxact Thermostat floor heating
Ref: WDE002481.

The environmental impacts of this referenced product are representative of the impacts of the other products of the range which are developed with the similar technology.

The extrapolation rules are described in the following chapters.

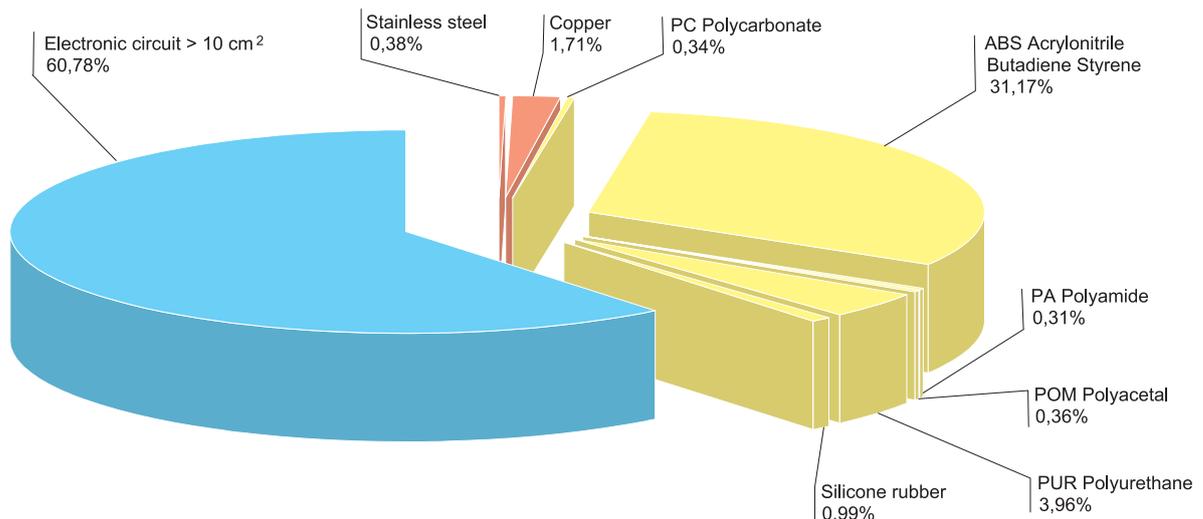
The environmental analysis was performed in conformity with ISO 14040.

This analysis takes the stages of the life cycle of the product into account.

Constituent materials

The mass of the product range is from 110 g to 134 g packaging not included. It is 134.25 g for the Exxact Thermostat floor heating
Ref: WDE002481.

The constituent materials are 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 Exxact Thermostat product range is manufactured at a Schneider Electric production site on which an ISO14001 certified environmental management system has been established.

Product Environmental Profile - PEP

Distribution

The weight and volume of the packaging have been reduced, in compliance with the European Union's packaging directive.

The Exxact Thermostat packaging weight is 32.41 g. It consists of Paper, recycled with deinking (1.11 g), Cardboard kraft (30 g) and Cardboard 5 layers 80 % recycled (1.3 g).

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

Utilization

The products of the Exxact Thermostat range do not generate environmental pollution requiring special precautionary measures (noise, emissions, and so on) in using phase.

The dissipated power depends on the conditions under which the product is implemented and used.

The electrical power consumed by the Exxact Thermostat range spreads out between 1.2 W and 1.4 W.

It is 1.341 W in active mode and 35 % in standby mode for the referenced Exxact Thermostat floor heating Ref: WDE002481.

End of life

At end of life, the products in the Exxact Thermostat have been optimized to decrease the amount of waste and valorise the components and materials of the product in the usual end of life treatment process.

The potential of recyclability of the products has been 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).

By this method, this product range doesn't contain recyclable materials as the lack of processes for recycling these plastics types.

Environmental impacts

The environmental impacts were analysed for the Manufacturing (M) phases, the Distribution (D) and the Utilisation (U) phases.

This product range is included in the category Energy Consuming product (assumed lifetime service is 10 years and using scenario: 1.341 W for 35 % up time).

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 Exxact Thermostat floor heating Ref : WDE002481.

The electrical power model used is EUROPEAN model.

Presentation of the environmental impacts

Environmental indicators	Short	Unit	For 1 Exxact Thermostat floor heating Ref: WDE002481			
			S = M + D + U	M	D	U
Raw material depletion	RMD	Y-1	2.86E ⁻¹⁴	2.79E ⁻¹⁴	2.03E ⁻¹⁸	7.13E ⁻¹⁶
Energy depletion	ED	MJ	6.81E ⁺⁰²	41.977	1.361	6.37E ⁺⁰²
Water depletion	WD	dm ³	1.20E ⁺⁰²	20.499	9.56E ⁻⁰¹	98.551
Global warming	GW	g ~CO ₂	3.50E ⁺⁰⁴	2.40E ⁺⁰³	27.826	3.26E ⁺⁰⁴
Ozone depletion	OD	g ~CFC-11	3.38E ⁻⁰³	5.69E ⁻⁰⁴	8.81E ⁻⁰⁶	2.80E ⁻⁰³
Air toxicity	AT	m ³	6.75E ⁺⁰⁶	4.64E ⁺⁰⁵	7.37E ⁺⁰³	6.27E ⁺⁰⁶
Photochemical ozone creation	POC	g ~C ₂ H ₄	11.99	6.73E ⁻⁰¹	1.59E ⁻⁰²	11.301
Air acidification	AA	g ~H ⁺	5.512	3.53E ⁻⁰¹	5.51E ⁻⁰³	5.154
Water toxicity	WT	dm ³	8.44E ⁺⁰³	5.03E ⁺⁰²	21.907	7.92E ⁺⁰³
Water eutrophication	WE	g ~PO ₄	3.36E ⁻⁰¹	2.29E ⁻⁰¹	1.37E ⁻⁰²	9.30E ⁻⁰²
Hazardous waste production	HWP	kg	5.65E ⁻⁰¹	4.56E ⁻⁰²	3.67E ⁻⁰⁵	5.19E ⁻⁰¹

The life cycle analysis shows that the U phase (M, D or U phase) is the life cycle 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.

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 this material.
Energy Depletion (ED)	This indicator gives the quantity of energy consumed, whether if 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 m 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. This effect is quantified in gram equivalent 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. This 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).
Air Acidification (AA)	The acid substances present in the atmosphere are carried by the rain. A high level of acidity in rain can cause damage to forests. The contribution of acidification is calculated using the acidification potentials of the substances concerned and is expressed in mole equivalent of H ⁺ .
Hazardous Waste Production (HWP)	This indicator gives the quantity of waste, produced along the life cycle of the product (manufacturing, distribution, use, including production of energy), that requires special treatments. It is expressed in kg.

Registration No.: SCHN-2011-055-VO	Programme information: www.pep-ecopassport.org
PEP in compliance with PEPecopassport according to PEP-AP0011 rules	
ACV rules are available from PEP editor on request	

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Published by: Schneider Electric