Statement of Verification

BREG EN EPD No: 000779 Issue: 01

This is to verify that the Environmental Product Declaration provided by:

Honeywell International Inc.

are in accordance with the requirements of:

EN 15804:2012+A2:2019

and

BRE Global Scheme Document SD207

This declaration is for:

1 Unit of IQ8 Quad Self-Test series autonomous fire detector (802271-ST Rise-of-heat detector / 802371-ST Optical smoke detector / 802373-ST OT multisensor detector / 802374-ST O²T multisensor detector / 802375-ST OT ^{blue}-multisensor detector) for a service life of 12 years.

Company Address

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Germany

ESSER by Honeywell

Honeywell

Hayley Thomson
Signed for BRE Global Limited — Operator

20 March 2026	20 March 2026	19 March 2031
Date of this Issue	Date of First Issue	Expiry Date

Environmental Product Declaration

EPD Number: 000779

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE 2025 PCR (PN 514 Rev 3.2) Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A2:2019 EN 50693:2019 - Product category rules for life cycle assessments of electronic and electrical products and systems
Commissioner of LCA study	**LCA consultant/Tool**
Novar GmbH a Honeywell Company Berliner Straße 111 40880 Ratingen Germany	LCA Consultant: Sustainability Centre of Excellence, Honeywell Technology & Connected Solutions (HTCS) Madurai LCA Tool: BRE LINAA2
Declared/Functional Unit	**Applicability/Coverage**
1 Unit of IQ8 Quad Self-Test series autonomous fire detector (802271-ST Rise-of-heat detector / 802371-ST Optical smoke detector / 802373-ST OT multisensor detector / 802374-ST O²T multisensor detector / 802375-ST OT ^{blue}-multisensor detector) for a service life of 12 years.	Product Specific
EPD Type	**Background database**
Cradle to Grave	ecoinvent 3.8

Demonstration of Verification
CEN standard EN 15804 serves as the core PCR [a]
Independent verification of the declaration and data according to EN ISO 14025:2010 ☒Internal ☐ External
(Where appropriate [b]) Third party verifier: Kim Allbury
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)

Comparability
Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A2:2019. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A2:2019 for further guidance

Information modules covered

Product			Construction		Use stage							End-of-life					Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building							
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal		Reuse, Recovery and/or Recycling potential
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑		☑

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Honeywell's manufacturing facilities located in Lugoj, Romania.

Data Coverage Period: 01-01-2024 - 31-12-2024

Construction Product:

Product Description

Fire Detector IQ8Quad with self-test function features an automatic point-type smoke or heat detector with integrated loop isolator and self-test function to connect to the Esserbus® or Esserbus®-PLus loop of the ESSER fire alarm control panels which provides safety, speed and integrity of fire detection whilst reducing false alarms. The Self-Test feature allows both heat and optical sensors to be tested using the Connected Life Safety Services (CLSS) app performing realistic fire simulations by heating the thermistor and generating aerosol. Additionally, each device includes Bluetooth Low Energy (BLE) for automatic detection and verification via the CLSS app, aiding in device location, detail accuracy, and visual inspection confirmation. The series is approved by EN54, LPCB, UKCA, and CE standards. For updated information, declaration of conformity and maintenance specifications, refer to www.esser-systems.com. Esserbus® and Essernet® are registered trademarks in Germany. The series comprises 5 distinct non-AV detectors as detailed below in the table.

Part Number	Description	Mass in g
802271-ST	Rise-of-heat detector	86.8
802371-ST	Optical Smoke detector	120.7
802373-ST	OT multisensor detector	121.3
802374-ST	O²T multisensor detector	121.7
802375-ST	OT^{blue} -multisensor detector	121.6

While these variants collectively form a homogeneous family, the net weight of the product variants ranges between 86.8 g to 122 g including accessories like base, mounting plate, dust cover, etc. A LCA analysis is conducted for each individual product and presented separately in this EPD.

Technical Information

Technical characteristics of the products are provided below. For the most up-to-date information, please refer to the technical datasheet. https://www.esser-systems.com/en/products/details/automatic-detectors/series-iq8quadintelligent-addressable/802374-o2t-multisensor-fire-detector-iq8quad-with-isolator/

Property	Value, Unit	
Operating Voltage	9.2 – 42.4 V DC	
Type of Sensor	Heat	Smoke
Monitored Area	max. 30 m²	max. 110 m²
Mounting Height	max. 7.5 m	max. 110 m²
Air velocity Standard Operation	--	0 - 25.4 m/s
Air velocity Self-test active	--	0 - 1.5 m/s
Area and Height to be monitored	110 m² and 12 m	
Alarm indicator	Red LED flashing	
Loudness of the fan	55 dB (A) @ 1 m	
Ambient temperature self-test	0 °C to +40 °C	
Storage temperature	-25 °C to + 65 °C	
Ambient humidity	≤ 95% humidity (non-condensing)	
Colour	white, (similar to RAL 9010)	
Dimensions	Ø: 117 mm H: 70 mm	

Detectors/ Parameters	Rise-of-heat detector [802271-ST]	Optical Smoke detector [802371-ST]	OT multisensor detector [802373-ST]	O²T multisensor detector [802374-ST]	OT^{blue} - multisensor detector [802375-ST]
Quiescent current @ 19 V DC	50 µ A	70 µ A	75 µ A	80 µ A	75 µ A
Quiescent current @ FACP Accu	0,09 mA @ 27,5 V / 0,11 mA @ 42 V	0.11 mA @ 27.5 V / 0.13 mA @ 42 V	0.11 mA @ 27.5 V / 0.13 mA @ 42 V	0.23 mA @ 27.5 V / 0.33 mA @ 42 V	0.11 mA @ 27.5 V / 0.13 mA @ 42 V
Ambient temperature	-20 °C … +50 °C	-20 °C … +50 °C	-20 °C … +50 °C	-20 °C … +65 °C	-20 °C … +50 °C
Specification	EN 54-7 / EN 54-5 A2 / EN 54-17 / EN 54-29	EN 54-7 / EN 54-17	EN 54-7 / EN 54-5 A2 / EN 54-17 / EN 54-29	EN 54-7 /EN 54-5 A2 /EN 54-17 /EN 54-29	EN 54-7 / EN 54-5 A2 / EN 54-17 / EN 54-29
Weight	approx. 86 g	approx. 121 g	approx. 122 g	approx. 122 g	approx. 122 g
Vds approval	G225003	G225002	G225004	G225006	G225005
Declaration of Performance	DoP-ST020241115	DoP-ST030241115	DoP-ST045241115	DoP-ST050241115	DoP-ST040241115

Rate-of-rise heat detector 802271-ST

Optical smoke detector 802371-ST,
OT multisensor detector 802373-ST,
O^2T-multisensor detector 802374-ST,
OT^{blue} -multisensor detector 802375-ST

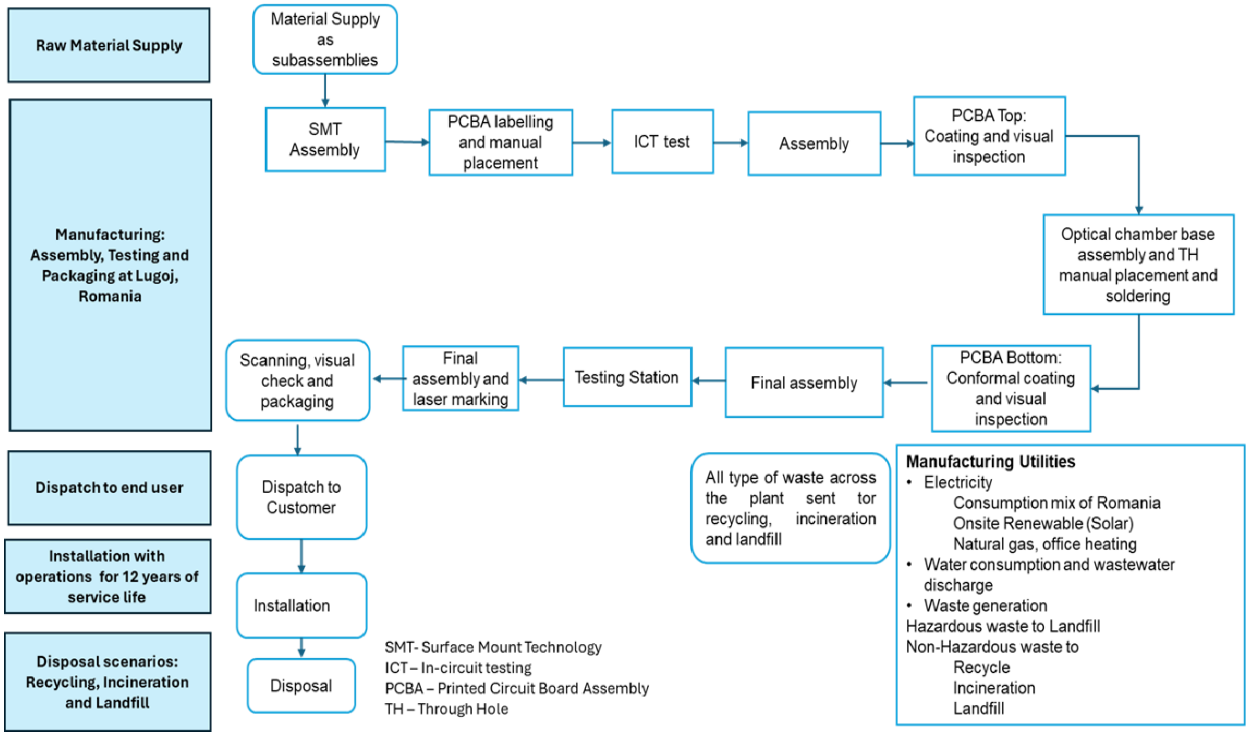
Main Product Content

Material/Chemical Input	Rise-of-heat detector [802271-ST], gram	Optical Smoke detector [802371-ST], gram	OT multisensor detector [802373-ST], gram	O^2T multisensor detector [802374-ST], gram	OT^{blue} - multisensor detector [802375-ST], gram
Acrylonitrile Butadiene Styrene	63.81	56.29	56.29	56.12	56.14
Polyamide	0.61	0.25	0.25	0.25	0.25
Printed Circuit Board Assembly	31.01	24.51	24.51	25.15	24.71
Labels	0.58	0.41	0.82	0.41	0.82
Polycarbonate	0.07	0.44	0.49	0.48	0.49
Chemicals, Solder paste	3.93	2.81	2.80	2.79	2.80
Polyethylene	0.00	3.79	3.79	3.78	3.78
Stainless steel	0.00	3.30	3.30	3.29	3.29
Silicone Rubber	0.00	0.82	0.82	0.82	0.82
Fiberglass	0.00	6.93	6.93	6.9	6.91

Manufacturing Process

The manufacturing process at Honeywell's Lugoj factory involves assembly process. Various subassemblies, parts, and components are sourced from regional and global suppliers and assembled at the factory following sophisticated technology and standard industrial practices, with robust inspection and testing. The process flow diagram of the assembly process is provided below. During the assembly, there is no multi-output or co-products generation in the production line. However, the factory level utilities like water consumed, electricity consumption (mix of Romania), onsite renewable (solar) electricity and natural gas consumption, and waste generated (hazardous and non-hazardous), wastewater discharged, are considered in the process flow. All the products are assembled using the same technology, standard industrial practices and inline quality tested. A set of representative products from every batch is tested at the laboratory to ensure the product compliant with regulations and certifications.

Process Flow Diagram



Construction Installation

The installation phase involves only manual activities and does not consume any energy. However, the disposal of packaging waste to the nearest incineration facility is accounted in this phase. For the disposal of packaging and documentation after installation, a transport distance of 100 km is assumed based on the PSR-0019-ed1EN-2023 06 06.

Use Information

Under typical usage condition, the product has a service life for 12 years. It remains in quiescent mode and does not need any use (B1), maintenance (B2), repair (B3), parts replacement (B4), refurbishments (B5) and water use (B7) during its operation. Hence, the use stage environmental impacts are associated to the operational electricity consumption (B6).

Since, this product falls under fire detection and alarm system, a system testing and servicing is required for twice a year as per the recommendations of BS 5839 for Grade A systems. Typically, this responsibility falls to an external fire alarm servicing organization. This is executed by a connectivity check performed by a

software application. Hence, the maintenance does not require any spares or part and does not consume any energy (B2). This EPD follows an additional requirement for construction products considered as Electrical and Electronic Equipment. The electricity consumption in use phase (B6) is calculated based on PSR-0019 ed1EN-2023 06 06 PEP Eco passport.

Operation	Value
Quiescent State	0.00005 Watt (70 µA)
Operation	24 hours per day
Alarm time	10 minutes

The fire detector operates in a quiescent state under normal circumstances and switches to an alarm state during a fire incident or inspection/maintenance activity which typically lasts for 10 minutes. According to the PSR-0019 ed1 EN-2023 06 06 PEP ecopassport® guideline, the electricity consumption during 10-minute of alarm state is negligible over the annual operating hours (8760 hours).

The total power consumed per annum is calculated using the formula below.

Ct = Pc * (8760) h/an* DVR
= 0.00005 * 8759.833
= 0.43799 Wh.

For 12 years,
= 0.43799* 12 = 0.0052599 kWh ~0.0189 MJ

where Ct: Total energy consumption (kWh), Pc: Power consumption in quiescent condition (W), an: annual, DVR: Dynamic voltage restorer is assumed as 1.

End-of-Life

No additional input materials, energy or water required to dismantle the product at end-of-life. It can be dismantled using standard equipment and tools by manual operation. Hence module C1 did not have any environmental impacts.

In case of C2, a typical transport distance of 100 km by road using a lorry (>32 metric ton) from the demolition site to the waste processing plant is assumed. However, end-users of the EPD can use this information to calculate the impacts of bespoke transport distances if required.

Fire detectors fall under WEEE recycling scheme where the product is made up of 50% - 66 % plastic and polymer, 7% - 11% metals, 18% - 28% electronics, and 10% - 21 % other materials. It is assumed that 100% of the product is recovered at the waste processing facility is applicable.

Referencing to EN50693:2019 PCR, the allocation for end-of-life scenarios is assumed for the detectors as given below.

Material	Recycling	Incineration	Disposal in landfill
Steel	80%	NA	20%
Polyamide	NA	50%	50%
ABS	20%	40%	40%
Rubber	NA	50%	50%
PCB (Metals)	NA	NA	100%

Paper	NA	100%	NA
Fiber Glass	NA	50%	50%
Copper	60%	NA	40%
Polyethylene	NA	50%	50%

The allocation of environmental burden of waste processing shall be assigned to the product system generating the waste in C3 and the waste comes as burden free. In case of metals and plastic wastes, recycling and incineration is preferred respectively. The environmental burden of waste processing until it reaches end of waste state shall be assigned to the product system in C3.

For mixed electronics and inter waste, landfilling is preferred with the environmental burden of landfilling is accounted in C4.

"Benefits and loads beyond the system boundary" (module D) accounts for the net environmental benefits and loads resulting from the recycling and incineration of waste. These benefits and loads are calculated by including the burdens of recycling and the benefit of avoided primary production following a substitution approach.

There is no recycled content in the products considered in the LCA and wastes from primary raw materials after eliminating scrap content are reported as benefits in Module D. In addition, Module D also includes energy credits from incineration of waste. Only combustible materials such as plastics, rubber, fiberglass, and labels are considered in this energy recovery process.

Additionally, the recyclability potential for the product is calculated based on IEC62635 standard - A framework guideline for recyclability rate calculation for WEEE products and reported in this EPD.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1 Unit of IQ8Quad Self-Test series autonomous fire detector (802271-ST Rise-of-heat detector / 802371-ST Optical smoke detector / 802373-ST OT multisensor detector / 802374-ST O²T multisensor detector / 802375-ST OT ^{blue}-multisensor detector) for a service life of 12 years.

System boundary

The system boundary considered in the LCA study is cradle to grave which covers all production stages (A1-A3), transportation to site (A4), installation (A5), use stages (B1-B7), and end- of-life stages (C1-C4 and D) in accordance with EN 15804:2012+A2:2019. Additionally, this EPD complies with the requirements for electronic and electrical equipment as per EN 50693:2019, Product Category Rules for life cycle assessments of electronic and electrical products and systems.

The study period of this LCA is 12 years which is same as the reference service life of the product for the entire system boundary from A1-C4.

Impacts and losses/wastage in production, transport, use stage and end of life stage are accounted in their respective modules.

Data sources, quality and allocation

In this LCA study, both the primary and secondary data are modelled using BRE LINA A2. The main sources for primary data are the Bill of Materials (BOM) and technical drawings, while site specific foreground data are provided by Honeywell HSE Facility Management. Manufacture specific data for production 1 year (Jan 2024 to Dec 2024) from Lugoj site has been used in this LCA study. For all secondary data, obtained for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e. raw material production), are generic data originating from ecoinvent 3.8. All datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs, according to the requirements specified in EN 15804:2012+A2:2019.

The factory produces other products in addition to the self-test fire detectors; hence a volume-based allocation is carried out in order to calculate the electricity consumption from grid mix, onsite solar electricity, natural gas, water and waste generated to per product according to the provisions in the BRE 2025 PCR (PN 514 Rev 3.2). For example, the electricity consumed to manufacture per product arrived based on allocating of the overall factory energy consumption to production quantity based on one year data. Factory level data on electricity, natural gas, water and waste are taken from Honeywell ERP systems. In addition, the factory has onsite solar electricity generation facility for 1.7MWp PV panels. Figures for the raw materials, ancillary materials and packaging are from actual usages. Emissions to air, water and soil during assembly process are negligible and hence not accounted.

Printed circuit board (PCB) assembly have been modelled with a representative cluster dataset with printed wiring board 70%, active electronics 3% and passive electronic 27% of mass in the net weight of the PCB assembly.

All the primary data such as BOM, energy consumption, supply chain details, are clearly mapped to the corresponding processes and the most specific datasets. Upon data review, it was noted that the mass balance is within the acceptable range, and no data uplift has been performed. Additionally, no proxy datasets have been used. The LCIA methodology used is the EN 15804:2012+A2:2019 based on Environmental Footprint 3.1.

The location-based approach is applied for electricity consumption mix calculations. Romanian grid mix with an emission factor of 0.431 kg CO_2eq/kWh, Romanian natural gas with an emission factor of 0.074 kg CO_2eq/kWh are used in the LCA study. Additionally, solar electricity generated in Romania from multi-Si panels is considered, with an emission factor of 0.076 kg CO_2eq/kWh.

At the products end-of-life, the waste allocation process follows the guidelines provided by EN50693:2019 PCR for recycling, incineration and landfill.

Specific European datasets are selected from the ecoinvent LCI for this LCA. The quality level of time representativeness is very good as the background LCI datasets are based on ecoinvent v.3.8. Therefore, there is less than 3 years between the ecoinvent LCI reference year and the time period for which the LCA is undertaken.

The technical data quality is very good where the data from processes and products under study are of same state of technology as the Ecoinvent datasets. The geographical scope of product are Modules A1-A3: Romania, A4-A5: Region Europe, Module B: Region Europe and Module C: Region Europe are considered for geography. There is less than 1 years between the LCI reference year (2024) and the time period for which the LCA is undertaken. Hence the quality of geographical and technical representativeness is therefore very good.

ISO14044 guidance Quality Level	Geographical representativeness	Technical representativeness	Time representativeness
Very good	Data from area under study.	Data from processes and products under study. Same state of technology applied as defined in goal and scope (i.e., identical technology).	Less than 1-year difference between the reference year according to the documentation, and the time period for which data are representative

Cut-off criteria

The LCA study includes input and output flows at every process steps. Life cycle inventory data related to raw material, packaging, consumables, transportation, process energy consumption, water use and waste generation are considered. No relevant processes are excluded. Some of the upstream transportation distance from supplier are unavailable which are less than 5% of the cut-off criteria of input flows. The upstream data related to raw material extraction and processing are factored through background datasets within LINA and ecoinvent 3.8 aligning to industrial standards and practices. Emissions to air, water and soil during assembly process are negligible and hence not accounted.

LCA Results Summary

Part No	Product Description	B6-Operational energy use during service life of 12 years (kWh)	Cradle to Gate (kg CO_2eq)	Cradle to Grave (kg CO_2eq) (Reference only)
802271-ST	Rise-of-heat detector	0.0042	2.59E+00	2.77E+00
802371-ST	Optical Smoke detector	0.0053	2.91E+00	3.15E+00
802373-ST	OT multisensor detector	0.0079	2.91E+00	3.09E+00
802374-ST	O²T multisensor detector	0.0084	2.98 E+00	3.23E+00
802375-ST	OT^{blue} -multisensor detector	0.0079	2.93E+00	3.18E+00

LCA Results of Rate-of-rise heat detector 802271-ST

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Rate-of-rise heat detector 802271-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	2.56E+00	2.54E+00	1.09E-02	4.48E-03	2.04E-07	1.96E-02	3.00E-03
	Transport	A2	1.55E-02	1.55E-02	1.50E-05	5.62E-06	3.70E-09	6.47E-05	9.69E-07
	Manufacturing	A3	1.16E-02	1.80E-02	-6.69E-03	1.18E-04	2.15E-09	9.25E-05	9.79E-06
	Total (Consumption grid)	A1-3	2.59E+00	2.57E+00	4.23E-03	4.60E-03	2.10E-07	1.98E-02	3.01E-03
Construction process stage	Transport	A4	1.84E-02	1.84E-02	1.79E-05	6.62E-06	4.39E-09	7.68E-05	1.15E-06
	Construction	A5	3.21E-02	6.41E-04	3.14E-02	4.75E-07	1.83E-10	9.13E-06	1.40E-07
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.67E-03	1.61E-03	5.30E-05	3.82E-06	8.03E-11	8.63E-06	1.61E-06
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13% Recycle, 26% Incineration, 61% Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	7.89E-04	7.87E-04	7.65E-07	2.83E-07	1.88E-10	3.29E-06	4.90E-08
	Waste processing	C3	5.83E-02	5.76E-02	7.26E-04	3.01E-06	4.09E-10	2.41E-05	7.03E-07
	Disposal	C4	7.62E-02	7.61E-02	9.18E-05	1.71E-05	8.77E-09	1.12E-04	2.08E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.97E-02	-1.94E-02	-2.77E-04	-2.21E-05	-1.34E-09	-1.12E-04	-1.12E-05

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use chan

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results of Rate-of-rise heat detector 802271-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Rate-of-rise heat detector 802271-ST) for a service life of 12 years
(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			EP-marine	EP-terrestrial	POCP	ADP-mineral & metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	3.39E-03	3.67E-02	1.08E-02	9.01E-04	3.49E+01	1.11E+00	1.36E-07
	Transport	A2	1.97E-05	2.16E-04	6.92E-05	3.68E-08	2.42E-01	1.16E-03	1.79E-09
	Manufacturing	A3	4.92E-05	2.87E-04	6.13E-05	9.46E-08	2.59E-01	1.10E-02	1.45E-09
	Total (Consumption grid)	A1-3	3.46E-03	3.72E-02	1.09E-02	9.01E-04	3.54E+01	1.12E+00	1.39E-07
Construction process stage	Transport	A4	2.34E-05	2.56E-04	8.24E-05	4.22E-08	2.87E-01	1.39E-03	2.16E-09
	Construction	A5	4.30E-06	4.29E-05	1.12E-05	3.83E-09	7.42E-03	6.49E-04	8.39E-11
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.51E-06	1.31E-05	3.57E-06	1.61E-09	3.47E-02	1.16E-03	2.56E-11
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13% Recycle, 26% Incineration, 61% Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.00E-06	1.10E-05	3.53E-06	1.81E-09	1.23E-02	5.93E-05	9.26E-11
	Waste processing	C3	1.15E-05	9.53E-05	2.61E-05	2.43E-08	5.05E-02	4.35E-03	3.00E-10
	Disposal	C4	7.20E-05	2.44E-04	6.74E-05	1.47E-07	3.52E-01	1.10E-02	1.08E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.65E-05	-1.63E-04	-4.55E-05	-1.19E-08	-3.13E-01	-8.51E-03	-7.57E-10

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

LCA Results of Rate-of-rise heat detector 802271-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Rate-of-rise heat detector 802271-ST) for a service life of 12 years

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	2.93E-01	2.22E+02	3.02E-09	1.17E-07	1.27E+01
	Transport	A2	1.22E-03	1.89E-01	5.28E-12	2.06E-10	2.69E-01
	Manufacturing	A3	2.41E-03	3.47E-01	9.83E-12	2.25E-10	8.25E-01
	Total (Consumption grid)	A1-3	2.97E-01	2.23E+02	3.04E-09	1.17E-07	1.38E+01
Construction process stage	Transport	A4	1.45E-03	2.24E-01	6.20E-12	2.45E-10	3.28E-01
	Construction	A5	4.84E-05	5.20E-02	6.98E-12	4.78E-11	4.62E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	9.52E-04	1.71E-02	4.12E-13	1.38E-11	5.00E-03
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13% Recycle, 26% Incineration, 61% Landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	6.21E-05	9.59E-03	2.65E-13	1.05E-11	1.40E-02
	Waste processing	C3	2.49E-04	1.54E-01	9.93E-12	2.27E-10	3.49E-02
	Disposal	C4	2.28E-03	1.44E+00	4.60E-11	5.38E-10	8.71E-02
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.37E-03	-2.75E-01	-4.62E-12	-1.46E-10	-9.10E-02

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

LCA Results of Rate-of-rise heat detector 802271-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Rate-of-rise heat detector 802271-ST) for a service life of 12 years

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	3.34E+00	6.88E-03	3.35E+00	3.25E+01	2.17E+00	3.47E+01
	Transport	A2	3.09E-03	0.00E+00	3.09E-03	2.37E-01	0.00E+00	2.37E-01
	Manufacturing	A3	-7.58E-02	2.55E-01	1.79E-01	2.46E-01	2.14E-03	2.49E-01
	Total (Consumption grid)	A1-3	3.27E+00	2.62E-01	3.53E+00	3.30E+01	2.17E+00	3.52E+01
Construction process stage	Transport	A4	3.65E-03	0.00E+00	3.65E-03	2.82E-01	0.00E+00	2.82E-01
	Construction	A5	3.60E-05	0.00E+00	3.60E-05	2.78E-03	0.00E+00	2.78E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	6.17E-03	0.00E+00	6.17E-03	3.51E-02	0.00E+00	3.51E-02
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13% Recycle, 26% Incineration, 61% Landfill								
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.56E-04	0.00E+00	1.56E-04	1.21E-02	0.00E+00	1.21E-02
	Waste processing	C3	1.04E-03	0.00E+00	1.04E-03	-1.15E+00	1.16E+00	1.54E-02
	Disposal	C4	1.46E-02	0.00E+00	1.46E-02	-8.59E-01	1.21E+00	3.47E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-4.70E-02	0.00E+00	-4.70E-02	-3.15E-01	0.00E+00	-3.15E-01

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;

PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource

LCA Results of Rate-of-rise heat detector 802271-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Rate-of-rise heat detector 802271-ST) for a service life of 12 years

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	9.32E-03	0.00E+00	0.00E+00	2.75E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.86E-05
	Manufacturing	A3	1.97E-02	0.00E+00	0.00E+00	2.66E-04
	Total (Consumption grid)	A1-3	2.90E-02	0.00E+00	0.00E+00	2.78E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	3.41E-05
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	1.53E-05
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	2.95E-05
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13% Recycle, 26% Incineration, 61% Landfill						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	1.46E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	1.02E-04
	Disposal	C4	1.98E-06	0.00E+00	0.00E+00	2.64E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-2.12E-04

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results of Rate-of-rise heat detector 802271-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Rate-of-rise heat detector 802271-ST) for a service life of 12 years

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	2.79E-01	6.88E+00	9.22E-05
	Transport	A2	2.55E-04	4.44E-03	1.64E-06
	Manufacturing	A3	8.34E-04	3.03E-02	8.52E-07
	Total (Consumption grid)	A1-3	2.80E-01	6.91E+00	9.47E-05
Construction process stage	Transport	A4	3.02E-04	5.25E-03	1.94E-06
	Construction	A5	2.98E-06	5.18E-05	1.92E-08
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.22E-04	7.87E-03	2.56E-07
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
13% Recycle, 26% Incineration, 61% Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.29E-05	2.25E-04	8.31E-08
	Waste processing	C3	9.37E-04	2.53E-02	4.78E-08
	Disposal	C4	4.31E-02	4.37E-02	2.07E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.27E-03	-6.83E-02	-1.60E-06

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

LCA Results of Rate-of-rise heat detector 802271-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Rate-of-rise heat detector 802271-ST) for a service life of 12 years

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13% Recycle, 26% Incineration, 61% Landfill						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	1.00E-02	2.24E-02	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

LCA Results of Optical smoke detector 802371-ST

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Optical smoke detector 802371-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	2.88E+00	2.86E+00	1.18E-02	4.93E-03	2.29E-07	2.19E-02	3.30E-03
	Transport	A2	1.87E-02	1.87E-02	1.80E-05	6.76E-06	4.45E-09	7.78E-05	1.17E-06
	Manufacturing	A3	1.26E-02	2.10E-02	-8.65E-03	1.53E-04	2.39E-09	1.09E-04	1.11E-05
	Total (Consumption grid)	A1-3	2.91E+00	2.90E+00	3.17E-03	5.09E-03	2.36E-07	2.21E-02	3.31E-03
Construction process stage	Transport	A4	2.56E-02	2.56E-02	2.49E-05	9.21E-06	6.11E-09	1.07E-04	1.59E-06
	Construction	A5	3.21E-02	6.41E-04	3.14E-02	4.75E-07	1.83E-10	9.13E-06	1.40E-07
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	2.08E-03	2.01E-03	6.63E-05	4.77E-06	1.00E-10	1.08E-05	2.02E-06
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.10E-03	1.10E-03	1.06E-06	3.94E-07	2.62E-10	4.57E-06	6.82E-08
	Waste processing	C3	8.85E-02	8.78E-02	7.28E-04	3.99E-06	6.29E-10	3.57E-05	9.51E-07
	Disposal	C4	9.41E-02	9.40E-02	1.13E-04	2.11E-05	1.08E-08	1.38E-04	2.56E-05
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	-5.52E-02	-5.47E-02	-4.13E-04	-6.44E-05	-3.63E-09	-2.45E-04	-2.10E-05

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;

ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results of Optical smoke detector 802371-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Optical smoke detector 802371-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

			EP-marine	EP-terrestrial	POCP	ADP-mineral&metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	3.77E-03	4.07E-02	1.20E-02	9.75E-04	3.96E+01	1.25E+00	1.52E-07
	Transport	A2	2.37E-05	2.59E-04	8.31E-05	4.46E-08	2.90E-01	1.40E-03	2.15E-09
	Manufacturing	A3	5.35E-05	3.28E-04	7.43E-05	1.12E-07	2.98E-01	1.42E-02	1.82E-09
	Total (Consumption grid)	A1-3	3.85E-03	4.13E-02	1.22E-02	9.75E-04	4.02E+01	1.27E+00	1.56E-07
Construction process stage	Transport	A4	3.26E-05	3.56E-04	1.15E-04	5.87E-08	3.99E-01	1.93E-03	3.01E-09
	Construction	A5	4.30E-06	4.29E-05	1.12E-05	3.83E-09	7.42E-03	6.49E-04	8.39E-11
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.88E-06	1.64E-05	4.47E-06	2.02E-09	4.33E-02	1.45E-03	3.20E-11
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.39E-06	1.52E-05	4.91E-06	2.51E-09	1.71E-02	8.25E-05	1.29E-10
	Waste processing	C3	1.72E-05	1.46E-04	3.95E-05	3.22E-08	6.79E-02	5.94E-03	4.46E-10
	Disposal	C4	9.48E-05	3.01E-04	8.34E-05	1.81E-07	4.34E-01	1.36E-02	1.33E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-4.40E-05	-4.58E-04	-1.31E-04	-8.68E-08	-1.11E+00	-1.66E-02	-1.69E-09

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;DP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

LCA Results of Optical smoke detector 802371-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Optical smoke detector 802371-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	3.32E-01	2.43E+02	3.31E-09	1.30E-07	1.41E+01
	Transport	A2	1.47E-03	2.27E-01	6.36E-12	2.47E-10	3.22E-01
	Manufacturing	A3	2.60E-03	4.46E-01	1.23E-11	2.80E-10	1.01E+00
	Total (Consumption grid)	A1-3	3.36E-01	2.44E+02	3.33E-09	1.31E-07	1.54E+01
Construction process stage	Transport	A4	2.02E-03	3.12E-01	8.62E-12	3.41E-10	4.57E-01
	Construction	A5	4.84E-05	5.20E-02	6.98E-12	4.78E-11	4.62E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.19E-03	2.14E-02	5.16E-13	1.73E-11	6.25E-03
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.64E-05	1.33E-02	3.69E-13	1.46E-11	1.95E-02
	Waste processing	C3	3.38E-04	2.33E-01	1.50E-11	3.20E-10	4.43E-02
	Disposal	C4	2.82E-03	1.77E+00	5.67E-11	6.63E-10	1.09E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.98E-02	-8.00E-01	-3.45E-11	-4.57E-10	-3.70E-01

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

LCA Results of Optical smoke detector 802371-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Optical smoke detector 802371-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	3.74E+00	6.88E-03	3.75E+00	3.68E+01	2.64E+00	3.94E+01
	Transport	A2	3.72E-03	0.00E+00	3.72E-03	2.85E-01	0.00E+00	2.85E-01
	Manufacturing	A3	-4.10E-02	2.69E-01	2.28E-01	2.86E-01	2.50E-03	2.89E-01
	Total (Consumption grid)	A1-3	3.70E+00	2.76E-01	3.98E+00	3.74E+01	2.64E+00	4.00E+01
Construction process stage	Transport	A4	5.08E-03	0.00E+00	5.08E-03	3.92E-01	0.00E+00	3.92E-01
	Construction	A5	3.60E-05	0.00E+00	3.60E-05	2.78E-03	0.00E+00	2.78E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	7.72E-03	0.00E+00	7.72E-03	4.39E-02	0.00E+00	4.39E-02
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill								
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.17E-04	0.00E+00	2.17E-04	1.68E-02	0.00E+00	1.68E-02
	Waste processing	C3	1.34E-03	0.00E+00	1.34E-03	-1.48E+00	1.50E+00	2.26E-02
	Disposal	C4	1.80E-02	0.00E+00	1.80E-02	-1.15E+00	1.57E+00	4.28E-01
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	-9.81E-02	0.00E+00	-9.81E-02	-6.53E-01	0.00E+00	-6.53E-01

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;
PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource

LCA Results of Optical smoke detector 802371-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Optical smoke detector 802371-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	1.00E-02	0.00E+00	0.00E+00	3.12E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	3.44E-05
	Manufacturing	A3	1.98E-02	0.00E+00	0.00E+00	3.42E-04
	Total (Consumption grid)	A1-3	2.98E-02	0.00E+00	0.00E+00	3.16E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	4.75E-05
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	1.53E-05
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	3.68E-05
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	2.03E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	1.40E-04
	Disposal	C4	2.70E-06	0.00E+00	0.00E+00	3.26E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-4.17E-04

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results of Optical smoke detector 802371-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Optical smoke detector 802371-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	3.09E-01	7.63E+00	1.04E-04
	Transport	A2	3.07E-04	5.35E-03	1.97E-06
	Manufacturing	A3	1.06E-03	3.62E-02	9.42E-07
	Total (Consumption grid)	A1-3	3.10E-01	7.67E+00	1.07E-04
Construction process stage	Transport	A4	4.20E-04	7.31E-03	2.70E-06
	Construction	A5	2.98E-06	5.18E-05	1.92E-08
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.53E-04	9.85E-03	3.20E-07
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.80E-05	3.13E-04	1.16E-07
	Waste processing	C3	1.24E-03	3.37E-02	7.88E-08
	Disposal	C4	5.30E-02	5.67E-02	2.55E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.24E-04	-8.44E-02	3.32E-06

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

LCA Results of Optical smoke detector 802371-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (Optical smoke detector 802371-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing output flows – at end of life

			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	1.24E-02	3.00E-02	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

LCA Results of OT- multisensor detector 802373-ST

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT- multisensor detector 802373-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	2.88E+00	2.86E+00	1.08E-02	4.94E-03	2.29E-07	2.19E-02	3.30E-03
	Transport	A2	1.89E-02	1.88E-02	1.81E-05	6.82E-06	4.49E-09	7.85E-05	1.18E-06
	Manufacturing	A3	1.17E-02	1.81E-02	-6.69E-03	1.18E-04	2.16E-09	9.27E-05	9.79E-06
	Total (Consumption grid)	A1-3	2.91E+00	2.90E+00	4.13E-03	5.06E-03	2.36E-07	2.21E-02	3.31E-03
Construction process stage	Transport	A4	2.58E-02	2.57E-02	2.50E-05	9.25E-06	6.14E-09	1.07E-04	1.60E-06
	Construction	A5	3.21E-02	6.41E-04	3.14E-02	4.75E-07	1.83E-10	9.13E-06	1.40E-07
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	3.12E-03	3.02E-03	9.94E-05	7.16E-06	1.51E-10	1.62E-05	3.03E-06
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.10E-03	1.10E-03	1.07E-06	3.96E-07	2.63E-10	4.59E-06	6.85E-08
	Waste processing	C3	2.75E-02	2.61E-02	1.45E-03	3.77E-06	5.76E-10	2.35E-05	8.10E-07
	Disposal	C4	9.41E-02	9.40E-02	1.13E-04	2.11E-05	1.08E-08	1.38E-04	2.56E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.53E-02	-5.48E-02	-4.13E-04	-6.45E-05	-3.64E-09	-2.45E-04	-2.10E-05

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;
ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results OT- multisensor detector 802373-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT- multisensor detector 802373-ST) for a service life of 12 years.
(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

			EP-marine	EP-terrestrial	POCP	ADP-mineral&metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	3.77E-03	4.07E-02	1.20E-02	9.74E-04	3.96E+01	1.25E+00	1.53E-07
	Transport	A2	2.39E-05	2.61E-04	8.38E-05	4.50E-08	2.93E-01	1.41E-03	2.17E-09
	Manufacturing	A3	4.92E-05	2.87E-04	6.15E-05	9.48E-08	2.62E-01	1.10E-02	1.46E-09
	Total (Consumption grid)	A1-3	3.84E-03	4.12E-02	1.21E-02	9.74E-04	4.02E+01	1.26E+00	1.57E-07
Construction process stage	Transport	A4	3.27E-05	3.58E-04	1.15E-04	5.90E-08	4.01E-01	1.94E-03	3.02E-09
	Construction	A5	4.30E-06	4.29E-05	1.12E-05	3.83E-09	7.42E-03	6.49E-04	8.39E-11
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	2.82E-06	2.46E-05	6.70E-06	3.02E-09	6.50E-02	2.17E-03	4.79E-11
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.40E-06	1.53E-05	4.93E-06	2.52E-09	1.72E-02	8.29E-05	1.29E-10
	Waste processing	C3	6.73E-05	8.42E-05	2.57E-05	2.86E-08	6.28E-02	2.15E-03	4.24E-10
	Disposal	C4	9.49E-05	3.01E-04	8.34E-05	1.81E-07	4.34E-01	1.36E-02	1.33E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-4.40E-05	-4.58E-04	-1.31E-04	-8.69E-08	-1.11E+00	-1.66E-02	-1.69E-09

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

LCA Results OT- multisensor detector 802373-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT- multisensor detector 802373-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	3.31E-01	2.43E+02	3.31E-09	1.30E-07	1.42E+01
	Transport	A2	1.48E-03	2.29E-01	6.41E-12	2.50E-10	3.25E-01
	Manufacturing	A3	2.41E-03	3.48E-01	9.85E-12	2.25E-10	8.26E-01
	Total (Consumption grid)	A1-3	3.35E-01	2.44E+02	3.33E-09	1.30E-07	1.54E+01
Construction process stage	Transport	A4	2.03E-03	3.13E-01	8.66E-12	3.43E-10	4.59E-01
	Construction	A5	4.84E-05	5.20E-02	6.98E-12	4.78E-11	4.62E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.79E-03	3.21E-02	7.73E-13	2.59E-11	9.37E-03
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.68E-05	1.34E-02	3.71E-13	1.47E-11	1.96E-02
	Waste processing	C3	3.36E-04	1.14E-01	9.57E-12	1.07E-10	5.65E-02
	Disposal	C4	2.82E-03	1.77E+00	5.67E-11	6.63E-10	1.09E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.98E-02	-8.01E-01	-3.45E-11	-4.57E-10	-3.70E-01

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

LCA Results OT- multisensor detector 802373-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT- multisensor detector 802373-ST) for a service life of 12 years.
(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	3.75E+00	1.38E-02	3.77E+00	3.68E+01	2.64E+00	3.94E+01
	Transport	A2	3.76E-03	0.00E+00	3.76E-03	2.88E-01	0.00E+00	2.88E-01
	Manufacturing	A3	-7.58E-02	2.55E-01	1.79E-01	2.49E-01	2.14E-03	2.51E-01
	Total (Consumption grid)	A1-3	3.68E+00	2.69E-01	3.95E+00	3.73E+01	2.64E+00	3.99E+01
Construction process stage	Transport	A4	5.10E-03	0.00E+00	5.10E-03	3.94E-01	0.00E+00	3.94E-01
	Construction	A5	3.60E-05	0.00E+00	3.60E-05	2.78E-03	0.00E+00	2.78E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.16E-02	0.00E+00	1.16E-02	6.58E-02	0.00E+00	6.58E-02
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill								
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.18E-04	0.00E+00	2.18E-04	1.68E-02	0.00E+00	1.68E-02
	Waste processing	C3	1.01E-03	0.00E+00	1.01E-03	-1.49E+00	1.51E+00	1.73E-02
	Disposal	C4	1.80E-02	0.00E+00	1.80E-02	-1.15E+00	1.58E+00	4.28E-01
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	-9.81E-02	0.00E+00	-9.81E-02	-6.54E-01	0.00E+00	-6.54E-01

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;
PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource

LCA Results OT- multisensor detector 802373-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT- multisensor detector 802373-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	1.01E-02	0.00E+00	0.00E+00	3.12E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	3.47E-05
	Manufacturing	A3	1.97E-02	0.00E+00	0.00E+00	2.66E-04
	Total (Consumption grid)	A1-3	2.98E-02	0.00E+00	0.00E+00	3.15E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	4.77E-05
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	1.53E-05
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	5.52E-05
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	2.04E-06
	Waste processing	C3	2.41E-06	0.00E+00	0.00E+00	5.13E-05
	Disposal	C4	2.70E-06	0.00E+00	0.00E+00	3.26E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-4.17E-04

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results OT- multisensor detector 802373-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT- multisensor detector 802373-ST) for a service life of 12 years.
(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	3.09E-01	7.63E+00	1.04E-04
	Transport	A2	3.10E-04	5.39E-03	1.98E-06
	Manufacturing	A3	8.35E-04	3.03E-02	8.52E-07
	Total (Consumption grid)	A1-3	3.10E-01	7.67E+00	1.07E-04
Construction process stage	Transport	A4	4.22E-04	7.34E-03	2.72E-06
	Construction	A5	2.98E-06	5.18E-05	1.92E-08
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	2.29E-04	1.48E-02	4.80E-07
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.81E-05	3.14E-04	1.16E-07
	Waste processing	C3	2.65E-04	3.26E-02	9.22E-08
	Disposal	C4	5.30E-02	5.67E-02	2.55E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.26E-04	-8.44E-02	3.32E-06

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

LCA Results OT- multisensor detector 802373-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT- multisensor detector 802373-ST) for a service life of 12 years.
(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	1.24E-02	2.75E-03	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

LCA Results of O^2T-multisensor detector 802374-ST

1 Unit of IQ8Quad Self-Test series autonomous fire detector (O^2T-multisensor detector 802374-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	2.95E+00	2.93E+00	1.21E-02	5.05E-03	2.35E-07	2.24E-02	3.39E-03
	Transport	A2	1.92E-02	1.92E-02	1.85E-05	6.95E-06	4.57E-09	7.99E-05	1.20E-06
	Manufacturing	A3	1.17E-02	1.81E-02	-6.69E-03	1.18E-04	2.16E-09	9.27E-05	9.79E-06
	Total (Consumption grid)	A1-3	2.98E+00	2.97E+00	5.43E-03	5.17E-03	2.42E-07	2.26E-02	3.40E-03
Construction process stage	Transport	A4	2.59E-02	2.59E-02	2.51E-05	9.30E-06	6.18E-09	1.08E-04	1.61E-06
	Construction	A5	3.21E-02	6.41E-04	3.14E-02	4.75E-07	1.83E-10	9.13E-06	1.40E-07
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	3.33E-03	3.21E-03	1.06E-04	7.62E-06	1.60E-10	1.72E-05	3.22E-06
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.11E-03	1.11E-03	1.08E-06	3.98E-07	2.64E-10	4.62E-06	6.89E-08
	Waste processing	C3	8.86E-02	8.78E-02	7.28E-04	3.99E-06	6.29E-10	3.57E-05	9.51E-07
	Disposal	C4	9.62E-02	9.61E-02	1.16E-04	2.15E-05	1.11E-08	1.42E-04	2.62E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.53E-02	-5.48E-02	-4.13E-04	-6.45E-05	-3.64E-09	-2.45E-04	-2.10E-05

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;
ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results O^2T-multisensor detector 802374-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (O^2T-multisensor detector 802374-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

			EP-marine	EP-terrestrial	POCP	ADP-mineral&metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	3.87E-03	4.17E-02	1.23E-02	9.98E-04	4.05E+01	1.28E+00	1.56E-07
	Transport	A2	2.44E-05	2.66E-04	8.54E-05	4.57E-08	2.98E-01	1.43E-03	2.21E-09
	Manufacturing	A3	4.92E-05	2.87E-04	6.15E-05	9.48E-08	2.62E-01	1.10E-02	1.45E-09
	Total (Consumption grid)	A1-3	3.94E-03	4.23E-02	1.24E-02	9.98E-04	4.11E+01	1.29E+00	1.60E-07
Construction process stage	Transport	A4	3.29E-05	3.60E-04	1.16E-04	5.93E-08	4.03E-01	1.95E-03	3.04E-09
	Construction	A5	4.30E-06	4.29E-05	1.12E-05	3.83E-09	7.42E-03	6.49E-04	8.39E-11
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	3.01E-06	2.62E-05	7.14E-06	3.22E-09	6.92E-02	2.31E-03	5.11E-11
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.41E-06	1.54E-05	4.96E-06	2.54E-09	1.73E-02	8.34E-05	1.30E-10
	Waste processing	C3	1.72E-05	1.46E-04	3.95E-05	3.22E-08	6.79E-02	5.95E-03	4.46E-10
	Disposal	C4	9.56E-05	3.08E-04	8.52E-05	1.86E-07	4.44E-01	1.39E-02	1.36E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-4.40E-05	-4.58E-04	-1.31E-04	-8.69E-08	-1.11E+00	-1.66E-02	-1.69E-09

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

LCA Results O^2T-multisensor detector 802374-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (O^2T-multisensor detector 802374-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	3.40E-01	2.49E+02	3.39E-09	1.33E-07	1.44E+01
	Transport	A2	1.51E-03	2.33E-01	6.53E-12	2.54E-10	3.31E-01
	Manufacturing	A3	2.41E-03	3.48E-01	9.85E-12	2.25E-10	8.26E-01
	Total (Consumption grid)	A1-3	3.44E-01	2.50E+02	3.41E-09	1.33E-07	1.56E+01
Construction process stage	Transport	A4	2.04E-03	3.15E-01	8.71E-12	3.45E-10	4.61E-01
	Construction	A5	4.84E-05	5.20E-02	6.98E-12	4.78E-11	4.62E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.90E-03	3.42E-02	8.23E-13	2.76E-11	9.98E-03
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.73E-05	1.35E-02	3.73E-13	1.48E-11	1.97E-02
	Waste processing	C3	3.38E-04	2.33E-01	1.50E-11	3.20E-10	4.43E-02
	Disposal	C4	2.88E-03	1.81E+00	5.80E-11	6.78E-10	1.11E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.98E-02	-8.01E-01	-3.45E-11	-4.57E-10	-3.70E-01

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

LCA Results O^2T-multisensor detector 802374-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (O^2T-multisensor detector 802374-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	3.83E+00	6.88E-03	3.84E+00	3.77E+01	2.64E+00	4.03E+01
	Transport	A2	3.83E-03	0.00E+00	3.83E-03	2.93E-01	0.00E+00	2.93E-01
	Manufacturing	A3	-7.58E-02	2.55E-01	1.79E-01	2.49E-01	2.14E-03	2.51E-01
	Total (Consumption grid)	A1-3	3.76E+00	2.62E-01	4.02E+00	3.82E+01	2.64E+00	4.08E+01
Construction process stage	Transport	A4	5.13E-03	0.00E+00	5.13E-03	3.96E-01	0.00E+00	3.96E-01
	Construction	A5	3.60E-05	0.00E+00	3.60E-05	2.78E-03	0.00E+00	2.78E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.23E-02	0.00E+00	1.23E-02	7.01E-02	0.00E+00	7.01E-02
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill								
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.19E-04	0.00E+00	2.19E-04	1.69E-02	0.00E+00	1.69E-02
	Waste processing	C3	1.34E-03	0.00E+00	1.34E-03	-1.48E+00	1.51E+00	2.26E-02
	Disposal	C4	1.84E-02	0.00E+00	1.84E-02	-1.15E+00	1.59E+00	4.38E-01
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	-9.81E-02	0.00E+00	-9.81E-02	-6.54E-01	0.00E+00	-6.54E-01

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;
PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource

LCA Results O²T-multisensor detector 802374-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (O²T-multisensor detector 802374-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	1.03E-02	0.00E+00	0.00E+00	3.19E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	3.53E-05
	Manufacturing	A3	1.97E-02	0.00E+00	0.00E+00	2.66E-04
	Total (Consumption grid)	A1-3	3.00E-02	0.00E+00	0.00E+00	3.22E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	4.80E-05
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	1.53E-05
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	5.88E-05
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	2.05E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	1.40E-04
	Disposal	C4	2.70E-06	0.00E+00	0.00E+00	3.34E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-4.17E-04

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results O^2T-multisensor detector 802374-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (O^2T-multisensor detector 802374-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	3.16E-01	7.83E+00	1.07E-04
	Transport	A2	3.15E-04	5.49E-03	2.02E-06
	Manufacturing	A3	8.35E-04	3.03E-02	8.52E-07
	Total (Consumption grid)	A1-3	3.17E-01	7.87E+00	1.10E-04
Construction process stage	Transport	A4	4.25E-04	7.38E-03	2.73E-06
	Construction	A5	2.98E-06	5.18E-05	1.92E-08
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	2.44E-04	1.57E-02	5.11E-07
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.82E-05	3.16E-04	1.17E-07
	Waste processing	C3	1.24E-03	3.37E-02	7.88E-08
	Disposal	C4	5.43E-02	5.73E-02	2.61E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.26E-04	-8.44E-02	3.32E-06

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

LCA Results O^2T-multisensor detector 802374-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (O^2T-multisensor detector 802374-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	1.24E-02	3.01E-02	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

LCA Results of OT^{blue} -multisensor detector 802375-ST

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT^{blue} -multisensor detector 802375-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CO_2 eq	kg CFC11 eq	mol H^+ eq	kg $(PO_4)^{3-}$ eq
Product stage	Raw material supply	A1	2.90E+00	2.89E+00	1.10E-02	4.99E-03	2.31E-07	2.21E-02	3.33E-03
	Transport	A2	1.90E-02	1.90E-02	1.83E-05	6.88E-06	4.53E-09	7.92E-05	1.19E-06
	Manufacturing	A3	1.16E-02	1.80E-02	-6.69E-03	1.18E-04	2.15E-09	9.25E-05	9.79E-06
	Total (Consumption grid)	A1-3	2.93E+00	2.93E+00	4.33E-03	5.11E-03	2.38E-07	2.23E-02	3.34E-03
Construction process stage	Transport	A4	2.58E-02	2.58E-02	2.51E-05	9.27E-06	6.16E-09	1.08E-04	1.61E-06
	Construction	A5	3.21E-02	6.41E-04	3.14E-02	4.75E-07	1.83E-10	9.13E-06	1.40E-07
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	3.12E-03	3.02E-03	9.94E-05	7.16E-06	1.51E-10	1.62E-05	3.03E-06
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.11E-03	1.10E-03	1.07E-06	3.97E-07	2.64E-10	4.61E-06	6.87E-08
	Waste processing	C3	8.93E-02	8.79E-02	1.46E-03	3.99E-06	6.31E-10	3.59E-05	9.56E-07
	Disposal	C4	9.49E-02	9.48E-02	1.14E-04	2.12E-05	1.09E-08	1.40E-04	2.58E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.53E-02	-5.48E-02	-4.13E-04	-6.45E-05	-3.64E-09	-2.45E-04	-2.10E-05

GWP-total = Global warming potential, total;
GWP-fossil = Global warming potential, fossil;
GWP-biogenic = Global warming potential, biogenic;
GWP-luluc = Global warming potential, land use and land use change;
ODP = Depletion potential of the stratospheric ozone layer;
AP = Acidification potential, accumulated exceedance; and
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results OT^{blue} -multisensor detector 802375-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT^{blue} -multisensor detector 802375-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

			EP-marine	EP-terrestrial	POCP	ADP-mineral&metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m^3 world eq deprived	disease incidence
Product stage	Raw material supply	A1	3.81E-03	4.11E-02	1.21E-02	9.83E-04	3.99E+01	1.27E+00	1.54E-07
	Transport	A2	2.41E-05	2.64E-04	8.46E-05	4.53E-08	2.96E-01	1.42E-03	2.19E-09
	Manufacturing	A3	4.92E-05	2.87E-04	6.13E-05	9.46E-08	2.59E-01	1.10E-02	1.45E-09
	Total (Consumption grid)	A1-3	3.88E-03	4.17E-02	1.22E-02	9.83E-04	4.05E+01	1.28E+00	1.58E-07
Construction process stage	Transport	A4	3.28E-05	3.59E-04	1.16E-04	5.91E-08	4.02E-01	1.94E-03	3.03E-09
	Construction	A5	4.30E-06	4.29E-05	1.12E-05	3.83E-09	7.42E-03	6.49E-04	8.39E-11
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	2.82E-06	2.46E-05	6.70E-06	3.02E-09	6.50E-02	2.17E-03	4.79E-11
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill									
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.40E-06	1.54E-05	4.94E-06	2.53E-09	1.72E-02	8.31E-05	1.30E-10
	Waste processing	C3	1.73E-05	1.47E-04	3.98E-05	3.22E-08	6.80E-02	5.96E-03	4.48E-10
	Disposal	C4	9.51E-05	3.04E-04	8.41E-05	1.83E-07	4.37E-01	1.37E-02	1.34E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-4.40E-05	-4.58E-04	-1.31E-04	-8.69E-08	-1.11E+00	-1.66E-02	-1.69E-09

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
EP-terrestrial = Eutrophication potential, accumulated exceedance;
POCP = Formation potential of tropospheric ozone;
ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;
ADP-fossil = Depletion potential of the stratospheric ozone layer;
WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
PM = Particulate matter.

LCA Results OT^{blue} -multisensor detector 802375-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT^{blue} -multisensor detector 802375-ST) for a service life of 12 years.
(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts							
			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U^{235} eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	3.35E-01	2.45E+02	3.34E-09	1.31E-07	1.43E+01
	Transport	A2	1.50E-03	2.31E-01	6.47E-12	2.52E-10	3.28E-01
	Manufacturing	A3	2.41E-03	3.47E-01	9.83E-12	2.25E-10	8.25E-01
	Total (Consumption grid)	A1-3	3.39E-01	2.46E+02	3.36E-09	1.31E-07	1.55E+01
Construction process stage	Transport	A4	2.03E-03	3.14E-01	8.69E-12	3.44E-10	4.60E-01
	Construction	A5	4.84E-05	5.20E-02	6.98E-12	4.78E-11	4.62E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.79E-03	3.21E-02	7.73E-13	2.59E-11	9.37E-03
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	8.70E-05	1.34E-02	3.72E-13	1.47E-11	1.97E-02
	Waste processing	C3	3.39E-04	2.35E-01	1.52E-11	3.22E-10	4.43E-02
	Disposal	C4	2.84E-03	1.79E+00	5.72E-11	6.69E-10	1.10E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.98E-02	-8.01E-01	-3.45E-11	-4.57E-10	-3.70E-01

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;
HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

LCA Results OT^{blue} -multisensor detector 802375-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT^{blue} -multisensor detector 802375-ST) for a service life of 12 years.
(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	3.79E+00	1.38E-02	3.81E+00	3.71E+01	2.64E+00	3.98E+01
	Transport	A2	3.79E-03	0.00E+00	3.79E-03	2.90E-01	0.00E+00	2.90E-01
	Manufacturing	A3	-7.58E-02	2.55E-01	1.79E-01	2.46E-01	2.14E-03	2.49E-01
	Total (Consumption grid)	A1-3	3.72E+00	2.69E-01	3.99E+00	3.76E+01	2.64E+00	4.03E+01
Construction process stage	Transport	A4	5.11E-03	0.00E+00	5.11E-03	3.95E-01	0.00E+00	3.95E-01
	Construction	A5	3.60E-05	0.00E+00	3.60E-05	2.78E-03	0.00E+00	2.78E-03
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	1.16E-02	0.00E+00	1.16E-02	6.58E-02	0.00E+00	6.58E-02
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill								
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	2.19E-04	0.00E+00	2.19E-04	1.69E-02	0.00E+00	1.69E-02
	Waste processing	C3	1.34E-03	0.00E+00	1.34E-03	-1.48E+00	1.51E+00	2.26E-02
	Disposal	C4	1.82E-02	0.00E+00	1.82E-02	-1.15E+00	1.58E+00	4.32E-01
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	-9.81E-02	0.00E+00	-9.81E-02	-6.54E-01	0.00E+00	-6.54E-01

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;
PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource

LCA Results OT^{blue} -multisensor detector 802375-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT^{blue} -multisensor detector 802375-ST) for a service life of 12 years.
(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	1.02E-02	0.00E+00	0.00E+00	3.15E-02
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	3.50E-05
	Manufacturing	A3	1.97E-02	0.00E+00	0.00E+00	2.66E-04
	Total (Consumption grid)	A1-3	2.99E-02	0.00E+00	0.00E+00	3.18E-02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	4.78E-05
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	1.53E-05
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	5.52E-05
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	2.05E-06
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	1.40E-04
	Disposal	C4	2.70E-06	0.00E+00	0.00E+00	3.29E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-4.17E-04

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results OT^{blue} -multisensor detector 802375-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT^{blue}-multisensor detector 802375-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	3.12E-01	7.71E+00	1.05E-04
	Transport	A2	3.13E-04	5.44E-03	2.00E-06
	Manufacturing	A3	8.34E-04	3.03E-02	8.52E-07
	Total (Consumption grid)	A1-3	3.13E-01	7.75E+00	1.08E-04
Construction process stage	Transport	A4	4.23E-04	7.36E-03	2.72E-06
	Construction	A5	2.98E-06	5.18E-05	1.92E-08
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	2.29E-04	1.48E-02	4.80E-07
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.81E-05	3.15E-04	1.17E-07
	Waste processing	C3	1.24E-03	3.37E-02	7.88E-08
	Disposal	C4	5.35E-02	5.70E-02	2.57E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.26E-04	-8.44E-02	3.32E-06

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

LCA Results OT^{blue} -multisensor detector 802375-ST (continued)

1 Unit of IQ8Quad Self-Test series autonomous fire detector (OT^{blue} -multisensor detector 802375-ST) for a service life of 12 years.

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14% Recycle, 29% Incineration, 57% Landfill						
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	1.24E-02	3.01E-02	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Results per functional unit of

802271-ST Rise-of-heat detector,
802371-ST Optical Smoke detector,
802373-ST OT multisensor detector,
802374-ST O^2T multisensor detector,
802375-ST OT^{blue} -multisensor

Biogenic Carbon Content	Unit	Quantity
Biogenic carbon (product)	Kg C	0.00E+00
Biogenic carbon (packaging)	Kg C	1.00E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2

Scenarios and additional technical information

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
A4 – Transport to the building site	Transportation of finished product to customer location (A4) is by road transport from Lugoj to Neuss, Germany which is a distribution centre for a distance of 1537 km. From the distribution centre, the product gets transported to several customer locations throughout Europe. Hence, approximate distance 800 km is taken in the model for calculations of impacts related to downstream transport. During this transportation, it is assumed that all 100% utilization of products and none of them is accounted for any losses in distribution and installation phase.		
	Fuel type / Vehicle type	Litre of fuel type per distance or vehicle type	Lorry, > 32 metric tonne
	Distance: From Factory to Distribution Centre	km	1537
	Distance: From Distribution Centre to Customer	km	800
	Capacity utilisation (incl. empty returns)	%	NA
	Bulk density of transported products	kg/m^3	NA
A5 – Installation in the building	The installation phase involves only manual activities and does not consume any energy or water to install the product. After installation, the packaging waste generated onsite is taken to the nearest incineration facility for disposal assuming a transport distance of 100 km based on the PSR-0019-ed1EN-2023 06 06. It is assumed that there is no wastage/damage occurred while downstream transportation or installation of the products at the customer location.		
	Packaging waste Cardboard	Incineration	20 g
B1 - Use	N/A - There is no use during the service life of the product.		
B2 – Maintenance	Since, this product falls under fire detection and alarm system, a system maintenance is required for twice a year as per the recommendations of BS 5839 for Grade A systems. Typically, this responsibility falls to an external fire alarm servicing organisation. This is done by a connectivity check performed by a self-testing software application. Hence, the maintenance does not require any spares or part and does not consume any energy		
	No of maintenance cycles	Per year	2
B3 – Repair	N/A - There is no repair work needed during the service life of the products.		
B4 – Replacement	N/A -There is no replacement activity needed for the products during its service life.		
B5 – Refurbishment	N/A -There is no refurbishment activity needed for the products during its service life.		
Reference service life	12 years		
B6 – Use of energy;	Product is in use 12 years; it is powered via the fire panel. Over 99.9% of the time product runs of Quiescent current. Protocol voltage: 14 V DC to 42.4 V DC, Quiescent current: 0.00005 Watt (70µA), Quiescent current tested at: 19V DC		
	Electricity	kWh	0.0053

Scenarios and additional technical information

Scenario	Parameter		Units	Results
B7 – Use of water	N/A There is no water usage associated with the products.			
C1 - Deconstruction	At the end of its life, it will be dismantled by hand using standard tools. Therefore, there is no impacts during the deconstruction			
C2 – Transportation	A typical transport distance of 100 km by road from the demolition site to the waste processing plant is assumed.		Diesel	Lorry > 32 metric tons
	Distance		km	100
C3 - Waste processing	Fire detectors fall under WEEE recycling scheme where the product is made up of 50 % - 66 % plastic and polymer, 7 % - 11% metals, 18 % - 28% electronics, and 10 % - 21 % other materials. It is assumed that 100% of the product is recovered at the waste processing facility is applicable. Therefore, the most appropriate end-of-life scenario has been selected by referencing EN50693:2019 PCR recommendations.			
	Scenario	Part Number	Recycle, kg	Incineration, kg
	14% Recycle, 29% incineration	802371-ST 802373-ST 802374-ST 802375-ST	0.0169 0.0169 0.0169 0.0169	0.0352 0.0358 0.0352 0.0357
	13% Recycle, 26 % incineration	802271-ST	0.0111	0.0229
C4 - End of life,	For landfilling of waste, the environmental burden of landfilling and capturing and combustion of landfill gas, if any, shall be assigned to C4.			
	Scenario	Part Number	Landfill, kg	
	Raw material waste to 57% Landfill	802371-ST 802373-ST 802374-ST 802375-ST	0.0686 0.0687 0.0696 0.0690	
	Raw material waste to 61% Landfill	802271-ST	0.0528	
Module D	Benefits and loads beyond the system boundary" (module D) accounts for the environmental benefits and loads resulting from the recycling and energy recovery from incineration of waste in the C3 module of waste processing. These benefits and loads are calculated by including the burdens of recycling and the benefit of avoided primary production.			
	Products Recycled Content (post-consumer)	0	kg	
	Recovered for recycling	0.0169	kg	
	Recovered for re-use	0	kg	
	Recovered for energy	0.0354	kg	

Summary, comments and additional information

Substances Assessment

Official declaration of Fire Detector IQ8Quad with self-test function product cluster states compliance with the requirements of the EU Directive 2011/65/EU amended by 2015/863/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 3). While the product does contain components with lead in concentrations above 0.1 % (w/w), which is a REACH SVHC included on the Candidate List.

Recyclability Rate

According to the End-of-life provisions for Waste Electrical and Electronic Equipment guidelines in the technical report IEC/TR 62635 Edition1.0, the following, recyclability rate is calculated.

Part Number	Recyclability Rate, %
802271-ST 802371-ST 802373-ST 802374-ST 802375-ST	53 - 69

Interpretation of results

Global Warming Potential (GWP) – Total indicator is assessed for finding the environmental hotspots across the product life cycle stages. Among all variants, O^2T-multisensor detector 802374-ST shows the highest impact. The highest contribution is from A1 Raw materials stage accounting to > 90% of the overall GWP-Total as shown in figure below.

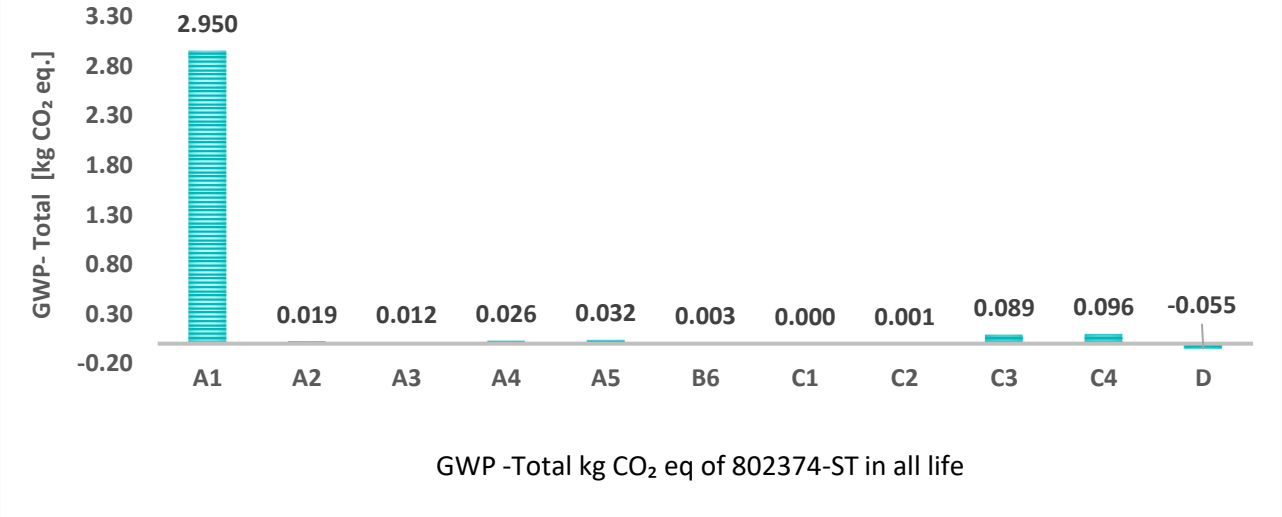


Figure 1 GWP -Total kg CO_2 eq of 802374-ST in all life cycle stages

To assess the environmental hotspot of raw materials, the product stage A1-A3 is considered. It is observed that the printed circuit board assembly comprising of active and passive electronic components, printed wiring board altogether had the largest environmental footprint followed by Acrylonitrile butadiene styrene (ABS) plastic and so on as shown in below chart.

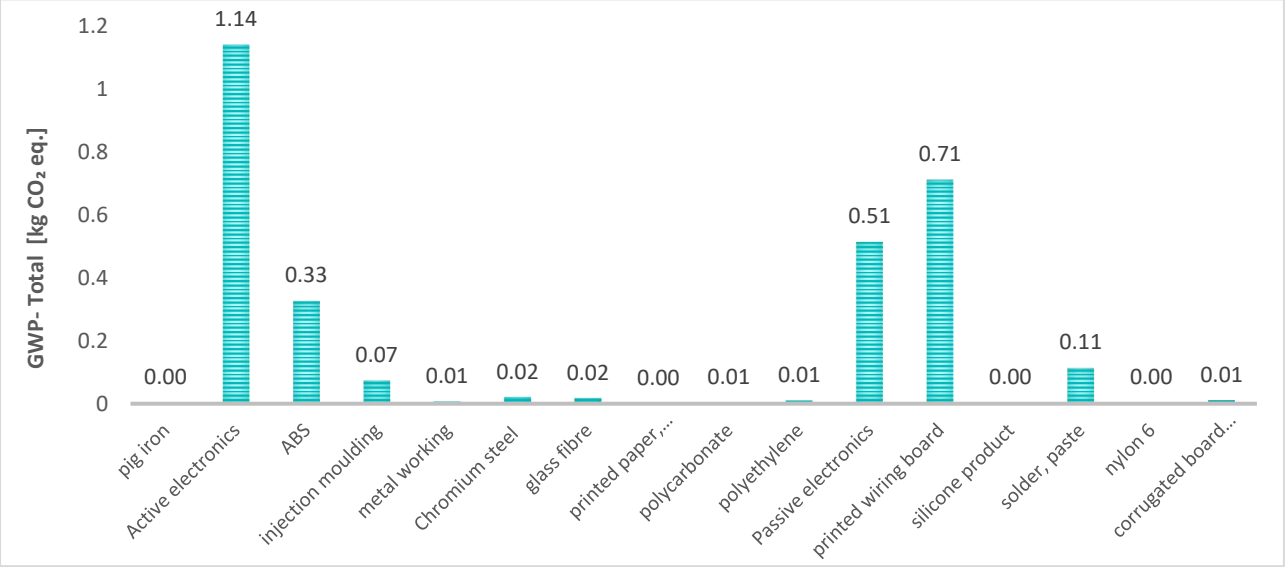


Figure 2 GWP – Total (A1) kg CO_2 eq of materials used in 802374-ST

References

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EN 50693:2019 - Product category rules for life cycle assessments of electronic and electrical products and systems 3. IEC/TR 62635 - Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment - Edition 1.0 2012-10

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BS EN 54: fire detection & alarm systems

EN 54-3:2001/A2:2006 Fire detection and fire alarm systems - Part 3: Fire alarm devices - Sounders

EN 54-3:2014+A1:2019 Fire detection and fire alarm systems - Part 3: Fire alarm devices - Sounders

BS EN 54-5:2001 - Heat detectors: Point detectors

BS EN 54-7:2001 - Smoke detectors: point detectors using scattered light, transmitted light or ionization

BS EN 54-17:2005 - Short-circuit isolators

BS EN 54-18:2005 - Input/output devices

BS EN 54-23:2010 - Fire alarm devices. Visual alarm devices

Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (recast) Text with EEA relevance

Honeywell 2024 Inventory Data