Statement of Verification

BREG EN EPD No.: 000617 Issue 01

This is to verify that the

Environmental Product Declaration

provided by:

Glen Dimplex Heating & Ventilation

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A2:2019

and

BRE Global Scheme Document SD207

This declaration is for:

One-unit Dimplex PLXE panel heater (0.5-3.0kW)

Company Address

Glen Dimplex Heating & Ventilation
Glen Dimplex Ltd. Newry
Rampart Road, Greenbank Industrial Estate,
Newry,
BT34 2QU,
Northern Ireland

GlenDimplex Heating & Ventilation

Signed for BRE Global Ltd	Emma Baker Operator	05 July 2024 Date of this Issue
05 July 2024 Date of First Issue		04 July 2029 Expiry Date

BRE Global Verified EPD

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ECO PLATFORM EPD VERIFIED

Environmental Product Declaration

EPD Number: 000617

General Information

EPD Programme Operator	Applicable Product Category Rules
Glen Dimplex Heating & Ventilation Rampart Road, Greenbank Industrial Estate, Newry, BT34 2QU, Northern Ireland	BRE 2023 Product Category Rules (PN 514 Rev 3.1) for Type III environmental product declaration of construction products to EN 15804:2012+A2:2019
Commissioner of LCA study	**LCA consultant/Tool**
Glen Dimplex Heating and Ventilation Glen Dimplex Ltd. Newry Rampart Road, Greenbank Industrial Estate, Newry, BT34 2QU, Northern Ireland	Conor Gribben/BRE LINA A2
Declared/Functional Unit	**Applicability/Coverage**
One-unit Dimplex PLXE panel heater (0.5-3.0kW)	Product specific.
EPD Type	**Background database**
Cradle to Gate with Module C&D and options	Ecoinvent v3.8

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: Pat Hermon
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)

Glen Dimplex Heating & Ventilation

Glen Dimplex Ltd. Newry
Rampart Road, Greenbank Industrial Estate, Newry, BT34
2QU, Northern Ireland

Construction Product:

Product Description

The PLXE is a Lot 20 compliant, modern and efficient electric panel heater. Offering intuitive controls with multiple timers, natural white colour and louvered grille. This heater is IP24 rated so there are restrictions in distance to water source and has a 2-year warranty guarantee. The heaters fit naturally into any room. The PLXE range is a great choice for homeowners looking for a modern and efficient electric panel heater

This EPD covers PLXE product ranges from 0.5kW-3.0kW. This heater operates on a supply voltage of 240VAC and outputs a maximum power of up to 3000W at the top of the range. The panel heater range features the Cap Sense controller, providing a more intuitive user experience with its backlit LCD display and touch-sensitive buttons. Its adaptive start pre-heats the room ahead of a programmed heating schedule for only exactly the amount of time required to meet the desired target temperature at the desired time. The 0.5kW-3.0kW PLXE range come in a range of different sizes that our available to view on our website PLXE Panel Heater | Dimplex.

Each product has similar mechanical structure and properties with the only difference that the 3kW PLXE unit operates with a dual element system (two 1.5kW Elements) while the 0.5kW-2.0kW range has a single element system.

Technical Information

Key Features	
Colour/Finish/Material	Metal chassis - Traffic white (RAL 9016)
Controls	Digitally controlled, Electronic Thermostat accurate to (±0.2oC). Sp range (7-30°C) Timer modes: 7 Day Programmable User Timer, Out All Day, Home All Day Continuous heat modes: Eco, Manual, Frost Protect. Additional modes: Away, Boost & Setback
Heat Output (kW)	0.5-3.0
Heat source	Electric
Inlet/Outlet location	Bottom, downward-facing / top, front-facing
Installation	H-frame wall bracket for easy fixing
IP Rating	IP24
Warranty / Guarantee	2 Years
Thermostat	Yes

Certification	
BEAB	Yes
CE	Yes

Figure 1: PLXE 0.5kW, 0.75kW & 1.0kW Unit

Figure 2: PLXE 1.25kW & 1.5kW Unit

Figure 3: PLXE 2.0kW & 3.0kW Unit

Main Product Contents

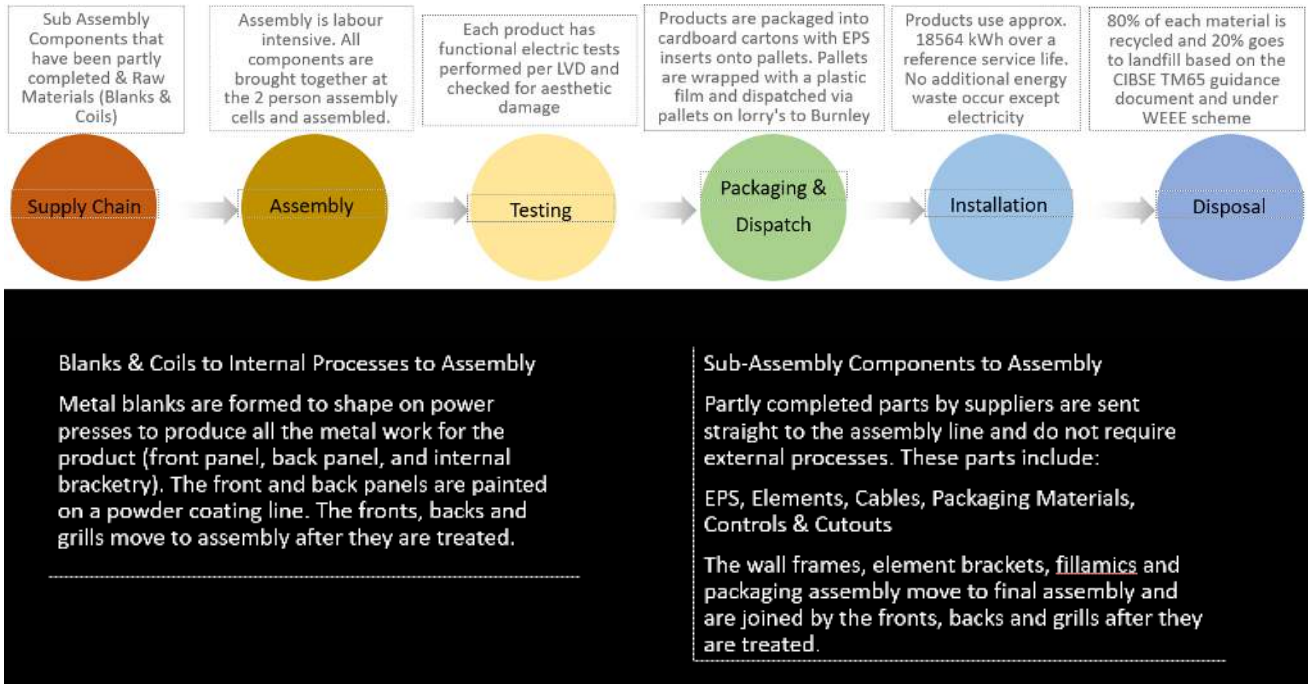
Material/Chemical Input	0.5kW%	0.75 & 1.0kW%	1.25 & 1.5kW%	2.0kW%	3.0kW%
Steel	78.94	79.45	79.5	79.84	71.23
Element	9.71	11.76	12.4	13.48	22.77
Aluminium	1.25	0.97	0.9	0.74	0.66
Plastic Mouldings	3.33	2.58	2.4	1.96	1.76
Hyperlam	0.21	0.16	0.1	0.12	0.11
Electronic Controls	2.29	1.77	1.6	1.35	1.21
Paint	1.15	0.89	0.8	0.67	0.61
Supply Cord & Cables	3.12	2.42	2.2	1.84	1.65

Table 1:Material Percentage breakdown of PLXE range

Manufacturing Process

Metal blanks are formed to shape on power presses to produce all the metal work for the product (front panel, back panel, and internal bracketry). The front and back panels are painted on a powder coating line. All components are brought together at the 3-person assembly cells and assembled. Each product has functional electric tests performed. Finished products are put onto pallets and taken to the warehouse for dispatch to distribution centre. Blank and coil go from stores into the press shop. The press shop manufactures the fronts, backs, grills, wall frames, element brackets and fillamics. The fronts, back and grills move to the paintline for spray coating process and drying. The wall frames, element brackets, fillamics and packaging assembly move to final assembly and are joined by the fronts, backs and grills after they are treated. All parts are assembled and set to stores to await shipment.

Process flow diagram



Construction Installation

No additional input materials, energy or water required to install the product. Components to install the product are supplied in the box and accounted for in the raw material inputs, with the exception of screws and plugs. The product can be installed using standard equipment / tools. Waste is generated from the packaging - either recycled or sent to landfill.

Use Information

The heater should only be operated when in the upright position. All models are splash proof to IP24. Before connecting the heater check that the supply voltage is the same as that stated on the heater.

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 / tools. Electric panel heaters fall under the WEEE recycling scheme. Therefore, at end of the life the product would be recycled through this scheme. In the transport stage, a journey of 100km by lorry is assumed. For all recyclable materials, it is assumed that 80% of each material is recycled and the remaining 20% goes to landfill based on the CIBSE TM65 guidance document.

For electrical products sold within the European Community:
At the end of the electrical product's useful life, it should not be disposed of with household waste.
It is recommended to check with the local authority or retailer for recycling advice in EU countries and recycle where facilities exist. Batteries should be disposed of or recycled in accordance with WEEE Directive 2012/19/EU. Packaging should be recycled where possible.

PLXE products are warranted for 2 years but, they will continue to operate for considerably longer. Because of this, there is no recommended disposal route. The electrical components, particularly the power supply, are likely to be economically viable to recycle given their content of precious metals.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

One-unit Dimplex PLXE panel heater (0.5-3.0kW)

System boundary

This is a Cradle-to-Gate with Module C&D and Options EPD, reporting all production life cycle stage of modules A1 to A3, optional modules A4, A5, B1-B7, end-of-life stage of modules C1 to C4, and D in accordance with EN 15804:2012+A2:2019 and BRE 2023 Product Category Rules (PN 514 Rev 3.1).

Data sources, quality and allocation

Specific primary data derived from the Dimplex PLXE Panel Heater (0.5-3.0 kW) production process in Glen Dimplex Heating & Ventilation, Rampart Road, Greenbank Industrial Estate, Newry, BT34 2QU, UK have been modelled using the BRE LINA A2 tool and the ecoinvent 3.8 database. In accordance with the requirements of EN 15804:2012+A2:2019, the most current available data has been used. The manufacturer-specific data from Glen Dimplex covers a period of one years (01/10/22 – 01/10/23). Secondary data has been obtained for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e. raw material production) from the ecoinvent 3.8 database (2021). All ecoinvent 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. Calculations were performed to enable allocation of processes to the Dimplex PLXE Panel Heater (0.5-3.0 kW) products. Allocation procedures were by physical allocation and are according to EN15804 and are based on ISO14044 guidance. This EPD also follows additional requirements of Electronic or Electric Equipment, i.e. CIBSE TM65, PEP-PCR–ed4-EN-2021 09 06 and additional eco-platform requirements.

This LCA is based on Dimplex PLXE Panel Heater (0.5-3.0kW which covers 18.61% of the factory's total production). This production is broken down in the following table

SKU	Product Description	Annual Qty	Percentage of total PLXE production (%)	Percentage of total SITE production (%)
X-090768	PLX050E 0.50kW Dimplex Panel Heater	6052	*9.71*	1.66
X-090775	PLX075E 0.75kW Dimplex Panel Heater	5692	*9.13*	1.56
X-090713	PLX100E 1.00kW Dimplex Panel Heater	15108	*24.24*	4.15
X-090720	PLX125E 1.25kW Dimplex Panel Heater	8307	*13.33*	2.28
X-090737	PLX150E 1.50kW Dimplex Panel Heater	11920	*19.12*	3.27
X-090744	PLX200E 2.00kW Dimplex Panel Heater	15248	*24.46*	4.19
X-090751	PLXC300E 3.00kW Dimplex Panel Heater	5432	*8.72*	1.49
		62327	***100.00***	***18.61%***

Table 2: Percentage of PLXE range total site production

Glen Dimplex manufactures other products in addition to Dimplex PLXE Panel Heater (0.5-3.0 kW), therefore an allocation of fuel, water, material usage, and waste are required. The allocation has been made based on the total production output of 6052 factory and weighted accordingly by kg/unit. All the input and output materials such as, transportation, packaging, energy, water use and wastes are included according to the provisions of

the BRE PCR PN514 and EN 15804:2012+A2:2019. Only exception is emissions to air, water & soil. Figures for the raw materials, ancillary materials and packaging were from actual usages. Site wide values for energy, water and wastewater have been taken from bills. UK Consumption mix is used for electricity with an emissions factor of 0.239kgCO2e/kWh. UK natural gas (at industrial furnace) is used with an emissions factor of 0.232kgCO2e/kWh.

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).	There is less than 5 years between the ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

Specific European and UK datasets have been selected from the ecoinvent v3.8 LCI for this LCA. The quality level of geographical and technical representativeness is therefore Very Good. The quality level of time representativeness is Very Good as the background LCI datasets are based on ecoinvent v3.8 which was released in 2021. Therefore, there is approximately 1-2 years between the ecoinvent LCI reference year and the time period for which the LCA was undertaken.

Cut-off criteria

All raw materials and energy input to the manufacturing process have been included, except for direct emissions to air, water and soil, which are not measured. The inventory process in this LCA includes all data related to raw material, packaging material and consumable items, and the associated transport to the manufacturing site. Process energy and water use and general waste are included. As the process is an assembly line there is no direct production waste as faulty components are returned to the supplier.

LCA Results for 0.5kW

(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	1.29E+01	1.29E+01	-8.09E-03	1.16E-02	7.33E-07	1.20E-01	1.32E-02
	Transport	A2	2.53E-01	2.53E-01	3.03E-05	1.64E-04	5.23E-08	6.63E-03	9.91E-06
	Manufacturing	A3	3.78E+00	3.85E+00	-7.29E-02	3.80E-03	3.30E-07	6.88E-03	4.51E-04
	Total (of product stage)	A1-3	1.70E+01	1.70E+01	-8.10E-02	1.55E-02	1.12E-06	1.33E-01	1.37E-02
Construction process stage	Transport	A4	1.83E-01	1.83E-01	1.66E-04	6.94E-05	4.32E-08	1.05E-03	1.11E-05
	Construction	A5	2.42E-02	2.42E-02	1.05E-05	2.45E-06	3.45E-09	1.00E-04	3.85E-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	2.90E+03	2.89E+03	4.80E+00	3.95E+00	1.96E-04	9.03E+00	4.62E-01
	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
80% to recycling and 20% to 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	4.36E-02	4.36E-02	4.23E-05	1.57E-05	1.04E-08	1.82E-04	2.71E-06
	Waste processing	C3	1.21E+00	1.21E+00	9.90E-05	4.21E-04	1.08E-08	1.36E-03	1.02E-04
	Disposal	C4	1.31E-01	1.30E-01	1.15E-04	1.10E-05	3.08E-09	9.06E-05	4.08E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-8.53E+00	-8.53E+00	1.51E-02	-7.77E-03	-4.64E-07	-8.68E-02	-9.17E-03

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 (continued)

(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	1.51E-02	1.72E-01	6.52E-02	2.71E-03	1.55E+02	4.76E+00	9.49E-07
	Transport	A2	1.65E-03	1.83E-02	4.78E-03	3.98E-07	3.39E+00	1.01E-02	1.27E-08
	Manufacturing	A3	2.79E-03	2.16E-02	5.92E-03	9.86E-06	7.56E+01	6.61E-01	7.33E-08
	Total (of product stage)	A1-3	1.96E-02	2.12E-01	7.59E-02	2.72E-03	2.34E+02	5.43E+00	1.03E-06
Construction process stage	Transport	A4	3.01E-04	3.30E-03	1.01E-03	4.09E-07	2.82E+00	1.33E-02	2.06E-08
	Construction	A5	1.44E-04	4.38E-04	1.55E-04	1.55E-08	2.20E-01	1.09E-03	2.22E-09
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	2.13E+00	2.36E+01	5.78E+00	8.15E-03	7.70E+04	5.49E+02	4.41E-05
	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
80% to recycling and 20% to 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	5.54E-05	6.06E-04	1.95E-04	9.99E-08	6.79E-01	3.28E-03	5.12E-09
	Waste processing	C3	3.79E-04	3.59E-03	9.12E-04	2.90E-06	2.73E+00	7.77E-02	1.10E-08
	Disposal	C4	4.37E-03	3.40E-04	1.23E-04	3.72E-08	2.39E-01	1.08E-02	1.76E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.05E-02	-1.20E-01	-4.54E-02	-2.11E-03	-1.04E+02	-2.40E+00	-6.04E-07

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 (continued)

(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	8.57E-01	1.02E+03	6.34E-08	1.14E-06	6.23E+01
	Transport	A2	1.58E-02	2.22E+00	1.37E-10	1.74E-09	1.33E+00
	Manufacturing	A3	9.44E-01	3.19E+01	1.07E-09	1.82E-08	2.83E+01
	Total (of product stage)	A1-3	1.82E+00	1.06E+03	6.46E-08	1.16E-06	9.19E+01
Construction process stage	Transport	A4	1.42E-02	2.18E+00	6.42E-11	2.35E-09	3.09E+00
	Construction	A5	9.90E-04	1.45E-01	2.63E-12	9.12E-11	7.68E-02
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	2.71E+03	3.59E+04	7.26E-07	2.07E-05	2.87E+04
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	3.43E-03	5.30E-01	1.47E-11	5.80E-10	7.77E-01
	Waste processing	C3	2.71E-02	1.03E+01	2.66E-10	3.13E-08	9.76E-01
	Disposal	C4	1.14E-03	1.10E+00	1.17E-11	3.98E-10	5.69E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.06E-01	-7.64E+02	-3.68E-08	-8.48E-07	-4.22E+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 (continued)

(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	1.15E+01	0.00E+00	1.15E+01	1.44E+02	9.24E+00	1.54E+02
	Transport	A2	2.80E-02	0.00E+00	2.80E-02	3.32E+00	0.00E+00	3.32E+00
	Manufacturing	A3	3.93E+00	6.12E+00	1.01E+01	8.03E+01	5.26E+00	8.56E+01
	Total (of product stage)	A1-3	1.54E+01	6.12E+00	2.15E+01	2.28E+02	1.45E+01	2.43E+02
Construction process stage	Transport	A4	3.51E-02	0.00E+00	3.51E-02	2.77E+00	0.00E+00	2.77E+00
	Construction	A5	-6.20E+00	6.21E+00	1.06E-02	-2.10E+00	2.39E+00	2.90E-01
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	1.40E+04	0.00E+00	1.40E+04	7.69E+04	0.00E+00	7.69E+04
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to 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	8.63E-03	0.00E+00	8.63E-03	6.67E-01	0.00E+00	6.67E-01
	Waste processing	C3	3.41E-01	0.00E+00	3.41E-01	3.17E+00	0.00E+00	3.17E+00
	Disposal	C4	4.67E-03	0.00E+00	4.67E-03	-3.32E+01	3.34E+01	2.35E-01
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	-6.40E+00	0.00E+00	-6.40E+00	-9.00E+01	-7.17E+00	-9.72E+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 (continued)

(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	1.12E+00	0.00E+00	0.00E+00	1.16E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	2.50E-04
	Manufacturing	A3	4.33E-01	2.26E-05	0.00E+00	1.99E-02
	Total (of product stage)	A1-3	1.55E+00	2.26E-05	0.00E+00	1.36E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	3.27E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	2.61E-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	5.24E+00	0.00E+00	0.00E+00	1.40E+01
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to 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	8.08E-05
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	1.97E-03
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	2.53E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-5.94E-02

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 (continued)

(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	2.20E+00	4.10E+01	3.26E-04
	Transport	A2	4.28E-03	4.33E-02	5.79E+00
	Manufacturing	A3	1.60E-01	1.50E+00	3.41E-04
	Total (of product stage)	A1-3	2.36E+00	4.26E+01	5.79E+00
Construction process stage	Transport	A4	3.01E-03	5.06E-02	1.80E+01
	Construction	A5	1.23E-03	9.53E-02	1.88E-06
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	1.60E+02	2.21E+03	6.79E-01
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	7.15E-04	1.24E-02	4.55E+00
	Waste processing	C3	1.25E-01	9.52E-01	1.18E-05
	Disposal	C4	4.89E-04	7.06E-03	1.42E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.28E+00	-1.64E+01	-1.98E-04

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

LCA Results (continued)

(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	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	1.23E-02	2.47E-05	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.46E-01	2.49E-07	1.99E-02	0.00E+00	-1.91E-01
	Total (of product stage)	A1-3	0.00E+00	3.58E-01	2.50E-05	1.99E-02	0.00E+00	-1.91E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	8.59E-01	1.47E-08	0.00E+00	0.00E+00	1.98E-01
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	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
80% to recycling and 20% to 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	3.19E+00	1.44E-07	0.00E+00	1.18E-04	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	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 for 0.75-1.0kW

(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	1.53E+01	1.53E+01	-1.18E-02	1.24E-02	8.34E-07	1.28E-01	1.44E-02
	Transport	A2	3.22E-01	3.22E-01	3.55E-05	2.10E-04	6.66E-08	8.53E-03	1.25E-05
	Manufacturing	A3	3.85E+00	3.95E+00	-1.11E-01	4.48E-03	3.42E-07	7.39E-03	5.01E-04
	Total (of product stage)	A1-3	1.95E+01	1.96E+01	-1.23E-01	1.71E-02	1.24E-06	1.44E-01	1.49E-02
Construction process stage	Transport	A4	2.37E-01	2.36E-01	2.15E-04	8.98E-05	5.59E-08	1.36E-03	1.43E-05
	Construction	A5	2.79E-02	2.79E-02	1.16E-05	2.86E-06	4.25E-09	1.24E-04	4.51E-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	5.80E+03	5.78E+03	9.59E+00	7.90E+00	3.92E-04	1.81E+01	9.23E-01
	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
80% to recycling and 20% to 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	5.64E-02	5.64E-02	5.48E-05	2.03E-05	1.35E-08	2.35E-04	3.51E-06
	Waste processing	C3	1.57E+00	1.57E+00	1.28E-04	5.45E-04	1.40E-08	1.76E-03	1.32E-04
	Disposal	C4	1.69E-01	1.69E-01	1.49E-04	1.42E-05	3.98E-09	1.17E-04	5.28E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.00E+01	-1.00E+01	1.97E-02	-8.19E-03	-5.23E-07	-9.22E-02	-9.75E-03

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 (continued)

(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	1.72E-02	1.93E-01	7.64E-02	2.71E-03	1.79E+02	5.34E+00	1.11E-06
	Transport	A2	2.12E-03	2.35E-02	6.15E-03	5.04E-07	4.31E+00	1.28E-02	1.59E-08
	Manufacturing	A3	3.07E-03	2.32E-02	6.26E-03	1.04E-05	7.70E+01	7.22E-01	8.15E-08
	Total (of product stage)	A1-3	2.24E-02	2.40E-01	8.88E-02	2.72E-03	2.60E+02	6.07E+00	1.21E-06
Construction process stage	Transport	A4	3.89E-04	4.27E-03	1.30E-03	5.30E-07	3.65E+00	1.72E-02	2.67E-08
	Construction	A5	1.54E-04	5.41E-04	1.91E-04	1.87E-08	2.70E-01	1.17E-03	2.75E-09
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	4.26E+00	4.72E+01	1.16E+01	1.63E-02	1.54E+05	1.10E+03	8.82E-05
	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
80% to recycling and 20% to 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	7.17E-05	7.84E-04	2.52E-04	1.29E-07	8.78E-01	4.24E-03	6.63E-09
	Waste processing	C3	4.90E-04	4.65E-03	1.18E-03	3.75E-06	3.54E+00	1.01E-01	1.42E-08
	Disposal	C4	5.65E-03	4.40E-04	1.59E-04	4.81E-08	3.10E-01	1.39E-02	2.28E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.18E-02	-1.34E-01	-5.29E-02	-2.11E-03	-1.19E+02	-2.51E+00	-7.04E-07

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 (continued)

(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	9.46E-01	1.09E+03	7.83E-08	1.19E-06	6.78E+01
	Transport	A2	2.00E-02	2.82E+00	1.76E-10	2.19E-09	1.65E+00
	Manufacturing	A3	9.56E-01	3.39E+01	1.12E-09	1.94E-08	3.30E+01
	Total (of product stage)	A1-3	1.92E+00	1.13E+03	7.96E-08	1.21E-06	1.02E+02
Construction process stage	Transport	A4	1.84E-02	2.82E+00	8.30E-11	3.04E-09	4.00E+00
	Construction	A5	1.22E-03	1.73E-01	3.14E-12	1.10E-10	8.56E-02
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	5.41E+03	7.18E+04	1.45E-06	4.13E-05	5.74E+04
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.44E-03	6.86E-01	1.90E-11	7.51E-10	1.00E+00
	Waste processing	C3	3.51E-02	1.34E+01	3.44E-10	4.05E-08	1.26E+00
	Disposal	C4	1.48E-03	1.43E+00	1.51E-11	5.15E-10	7.37E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.33E-01	-8.09E+02	-4.48E-08	-8.79E-07	-4.52E+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 (continued)

(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	1.23E+01	0.00E+00	1.23E+01	1.68E+02	9.16E+00	1.77E+02
	Transport	A2	3.54E-02	0.00E+00	3.54E-02	4.23E+00	0.00E+00	4.23E+00
	Manufacturing	A3	3.47E+00	7.59E+00	1.11E+01	8.17E+01	5.27E+00	8.70E+01
	Total (of product stage)	A1-3	1.58E+01	7.59E+00	2.34E+01	2.54E+02	1.44E+01	2.68E+02
Construction process stage	Transport	A4	4.54E-02	0.00E+00	4.54E-02	3.58E+00	0.00E+00	3.58E+00
	Construction	A5	-7.75E+00	7.76E+00	1.31E-02	-2.03E+00	2.39E+00	3.58E-01
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	2.80E+04	0.00E+00	2.80E+04	1.54E+05	0.00E+00	1.54E+05
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to 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	1.12E-02	0.00E+00	1.12E-02	8.62E-01	0.00E+00	8.62E-01
	Waste processing	C3	4.42E-01	0.00E+00	4.42E-01	4.11E+00	0.00E+00	4.11E+00
	Disposal	C4	6.04E-03	0.00E+00	6.04E-03	-4.29E+01	4.32E+01	3.04E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-6.92E+00	0.00E+00	-6.92E+00	-1.05E+02	-7.17E+00	-1.12E+02

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 (continued)

(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	1.44E+00	0.00E+00	0.00E+00	1.30E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	3.15E-04
	Manufacturing	A3	5.46E-01	2.26E-05	0.00E+00	2.13E-02
	Total (of product stage)	A1-3	1.99E+00	2.26E-05	0.00E+00	1.52E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	4.24E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	2.80E-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	1.05E+01	0.00E+00	0.00E+00	2.80E+01
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to 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	1.04E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	2.55E-03
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	3.27E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-6.20E-02

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 (continued)

(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	2.66E+00	4.53E+01	3.67E-04
	Transport	A2	5.46E-03	5.48E-02	7.08E+00
	Manufacturing	A3	1.64E-01	1.65E+00	3.45E-04
	Total (of product stage)	A1-3	2.83E+00	4.70E+01	7.08E+00
Construction process stage	Transport	A4	3.89E-03	6.55E-02	2.33E+01
	Construction	A5	1.53E-03	1.01E-01	2.33E-06
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	3.19E+02	4.42E+03	1.36E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	9.25E-04	1.61E-02	5.89E+00
	Waste processing	C3	1.62E-01	1.23E+00	1.53E-05
	Disposal	C4	6.32E-04	9.13E-03	1.84E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.57E+00	-1.91E+01	-2.24E-04

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

LCA Results (continued)

(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	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	1.25E-02	2.54E-05	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.46E-01	2.49E-07	1.99E-02	0.00E+00	-2.43E-01
	Total (of product stage)	A1-3	0.00E+00	3.58E-01	2.56E-05	1.99E-02	0.00E+00	-2.43E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	1.07E+00	1.83E-08	0.00E+00	0.00E+00	2.47E-01
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	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
80% to recycling and 20% to 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	4.13E+00	1.87E-07	0.00E+00	1.53E-04	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

LCA Results for 1.25kW-1.5kW

(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	1.63E+01	1.63E+01	-1.32E-02	1.27E-02	8.76E-07	1.32E-01	1.49E-02
	Transport	A2	3.50E-01	3.50E-01	3.73E-05	2.29E-04	7.24E-08	9.32E-03	1.36E-05
	Manufacturing	A3	4.09E+00	4.20E+00	-1.15E-01	4.71E-03	3.49E-07	8.46E-03	5.71E-04
	Total (of product stage)	A1-3	2.08E+01	2.09E+01	-1.28E-01	1.77E-02	1.30E-06	1.50E-01	1.55E-02
Construction process stage	Transport	A4	2.58E-01	2.58E-01	2.35E-04	9.80E-05	6.10E-08	1.48E-03	1.56E-05
	Construction	A5	2.79E-02	2.79E-02	1.16E-05	2.86E-06	4.25E-09	1.24E-04	4.51E-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	8.69E+03	8.66E+03	1.44E+01	1.19E+01	5.87E-04	2.71E+01	1.38E+00
	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
80% to recycling and 20% to 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	6.16E-02	6.15E-02	5.98E-05	2.21E-05	1.47E-08	2.57E-04	3.83E-06
	Waste processing	C3	1.71E+00	1.71E+00	1.40E-04	5.95E-04	1.53E-08	1.92E-03	1.45E-04
	Disposal	C4	1.85E-01	1.84E-01	1.62E-04	1.55E-05	4.35E-09	1.28E-04	5.76E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.06E+01	-1.06E+01	2.16E-02	-8.36E-03	-5.48E-07	-9.44E-02	-9.99E-03

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 (continued)

(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	1.80E-02	2.02E-01	8.10E-02	2.71E-03	1.88E+02	5.58E+00	1.18E-06
	Transport	A2	2.31E-03	2.57E-02	6.71E-03	5.47E-07	4.68E+00	1.38E-02	1.72E-08
	Manufacturing	A3	3.28E-03	2.54E-02	7.26E-03	1.17E-05	8.41E+01	9.17E-01	9.11E-08
	Total (of product stage)	A1-3	2.36E-02	2.53E-01	9.50E-02	2.72E-03	2.77E+02	6.51E+00	1.29E-06
Construction process stage	Transport	A4	4.24E-04	4.66E-03	1.42E-03	5.78E-07	3.98E+00	1.88E-02	2.91E-08
	Construction	A5	1.54E-04	5.41E-04	1.91E-04	1.87E-08	2.70E-01	1.17E-03	2.75E-09
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	6.40E+00	7.08E+01	1.73E+01	2.45E-02	2.31E+05	1.65E+03	1.32E-04
	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
80% to recycling and 20% to 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	7.83E-05	8.56E-04	2.76E-04	1.41E-07	9.59E-01	4.63E-03	7.24E-09
	Waste processing	C3	5.35E-04	5.08E-03	1.29E-03	4.09E-06	3.86E+00	1.10E-01	1.55E-08
	Disposal	C4	6.17E-03	4.80E-04	1.74E-04	5.25E-08	3.38E-01	1.52E-02	2.49E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.23E-02	-1.39E-01	-5.59E-02	-2.11E-03	-1.25E+02	-2.55E+00	-7.45E-07

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 (continued)

(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	9.83E-01	1.12E+03	8.44E-08	1.21E-06	7.01E+01
	Transport	A2	2.18E-02	3.06E+00	1.92E-10	2.37E-09	1.77E+00
	Manufacturing	A3	9.79E-01	3.67E+01	1.21E-09	2.14E-08	3.39E+01
	Total (of product stage)	A1-3	1.98E+00	1.16E+03	8.58E-08	1.24E-06	1.06E+02
Construction process stage	Transport	A4	2.00E-02	3.08E+00	9.07E-11	3.32E-09	4.37E+00
	Construction	A5	1.22E-03	1.73E-01	3.14E-12	1.10E-10	8.56E-02
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	8.12E+03	1.08E+05	2.18E-06	6.20E-05	8.61E+04
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.85E-03	7.49E-01	2.07E-11	8.20E-10	1.10E+00
	Waste processing	C3	3.83E-02	1.46E+01	3.75E-10	4.42E-08	1.38E+00
	Disposal	C4	1.61E-03	1.56E+00	1.65E-11	5.62E-10	8.04E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.44E-01	-8.27E+02	-4.81E-08	-8.91E-07	-4.64E+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 (continued)

(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	1.26E+01	0.00E+00	1.26E+01	1.77E+02	9.15E+00	1.87E+02
	Transport	A2	3.83E-02	0.00E+00	3.83E-02	4.59E+00	0.00E+00	4.59E+00
	Manufacturing	A3	3.77E+00	7.59E+00	1.14E+01	8.51E+01	8.80E+00	9.39E+01
	Total (of product stage)	A1-3	1.64E+01	7.59E+00	2.40E+01	2.67E+02	1.80E+01	2.85E+02
Construction process stage	Transport	A4	4.95E-02	0.00E+00	4.95E-02	3.91E+00	0.00E+00	3.91E+00
	Construction	A5	-7.75E+00	7.76E+00	1.31E-02	-2.03E+00	2.39E+00	3.58E-01
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	4.20E+04	0.00E+00	4.20E+04	2.31E+05	0.00E+00	2.31E+05
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to 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	1.22E-02	0.00E+00	1.22E-02	9.42E-01	0.00E+00	9.42E-01
	Waste processing	C3	4.82E-01	0.00E+00	4.82E-01	4.48E+00	0.00E+00	4.48E+00
	Disposal	C4	6.60E-03	0.00E+00	6.60E-03	-4.68E+01	4.72E+01	3.32E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-7.14E+00	0.00E+00	-7.14E+00	-1.11E+02	-7.17E+00	-1.18E+02

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 (continued)

(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	1.58E+00	0.00E+00	0.00E+00	1.36E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	3.42E-04
	Manufacturing	A3	5.48E-01	2.26E-05	0.00E+00	2.60E-02
	Total (of product stage)	A1-3	2.13E+00	2.26E-05	0.00E+00	1.62E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	4.62E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	2.80E-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	1.57E+01	0.00E+00	0.00E+00	4.20E+01
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to 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	1.14E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	2.79E-03
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	3.57E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-6.30E-02

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 (continued)

(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	2.85E+00	4.71E+01	3.84E-04
	Transport	A2	5.94E-03	5.94E-02	7.58E+00
	Manufacturing	A3	1.75E-01	1.98E+00	3.52E-04
	Total (of product stage)	A1-3	3.03E+00	4.92E+01	7.58E+00
Construction process stage	Transport	A4	4.24E-03	7.15E-02	2.55E+01
	Construction	A5	1.53E-03	1.01E-01	2.33E-06
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	4.79E+02	6.63E+03	2.04E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.01E-03	1.76E-02	6.43E+00
	Waste processing	C3	1.77E-01	1.35E+00	1.67E-05
	Disposal	C4	6.90E-04	9.97E-03	2.01E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.69E+00	-2.02E+01	-2.35E-04

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

LCA Results (continued)

(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	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	1.25E-02	2.56E-05	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.46E-01	2.49E-07	1.99E-02	0.00E+00	-2.43E-01
	Total (of product stage)	A1-3	0.00E+00	3.58E-01	2.59E-05	1.99E-02	0.00E+00	-2.43E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	1.07E+00	1.83E-08	0.00E+00	0.00E+00	2.47E-01
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	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
80% to recycling and 20% to 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	4.51E+00	2.04E-07	0.00E+00	1.67E-04	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

LCA Results for 2.0kW

(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	1.87E+01	1.87E+01	-1.65E-02	1.36E-02	9.80E-07	1.40E-01	1.61E-02
	Transport	A2	4.21E-01	4.21E-01	4.42E-05	2.75E-04	8.70E-08	1.12E-02	1.63E-05
	Manufacturing	A3	3.93E+00	4.09E+00	-1.65E-01	5.43E-03	3.59E-07	8.10E-03	5.71E-04
	Total (of product stage)	A1-3	2.30E+01	2.32E+01	-1.81E-01	1.93E-02	1.43E-06	1.60E-01	1.67E-02
Construction process stage	Transport	A4	3.10E-01	3.10E-01	2.83E-04	1.18E-04	7.34E-08	1.78E-03	1.88E-05
	Construction	A5	3.33E-02	3.33E-02	1.31E-05	3.45E-06	5.42E-09	1.58E-04	5.48E-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	1.16E+04	1.16E+04	1.92E+01	1.58E+01	7.83E-04	3.61E+01	1.85E+00
	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
80% to recycling and 20% to 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	7.41E-02	7.40E-02	7.19E-05	2.66E-05	1.77E-08	3.09E-04	4.61E-06
	Waste processing	C3	2.06E+00	2.06E+00	1.68E-04	7.15E-04	1.84E-08	2.31E-03	1.74E-04
	Disposal	C4	2.22E-01	2.22E-01	1.95E-04	1.87E-05	5.23E-09	1.54E-04	6.92E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.21E+01	-1.21E+01	2.62E-02	-8.78E-03	-6.06E-07	-9.98E-02	-1.06E-02

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 (continued)

(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	2.00E-02	2.24E-01	9.21E-02	2.71E-03	2.12E+02	6.17E+00	1.34E-06
	Transport	A2	2.78E-03	3.09E-02	8.07E-03	6.57E-07	5.62E+00	1.66E-02	2.06E-08
	Manufacturing	A3	3.46E-03	2.55E-02	6.74E-03	1.11E-05	7.90E+01	8.06E-01	9.31E-08
	Total (of product stage)	A1-3	2.63E-02	2.80E-01	1.07E-01	2.73E-03	2.97E+02	6.99E+00	1.45E-06
Construction process stage	Transport	A4	5.10E-04	5.60E-03	1.71E-03	6.95E-07	4.78E+00	2.26E-02	3.50E-08
	Construction	A5	1.67E-04	6.92E-04	2.44E-04	2.34E-08	3.44E-01	1.28E-03	3.51E-09
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	8.53E+00	9.45E+01	2.31E+01	3.26E-02	3.08E+05	2.20E+03	1.76E-04
	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
80% to recycling and 20% to 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	9.41E-05	1.03E-03	3.31E-04	1.70E-07	1.15E+00	5.57E-03	8.70E-09
	Waste processing	C3	6.43E-04	6.10E-03	1.55E-03	4.92E-06	4.64E+00	1.32E-01	1.86E-08
	Disposal	C4	7.41E-03	5.77E-04	2.09E-04	6.31E-08	4.06E-01	1.83E-02	3.00E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.36E-02	-1.53E-01	-6.33E-02	-2.11E-03	-1.40E+02	-2.66E+00	-8.43E-07

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 (continued)

(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	1.07E+00	1.18E+03	9.89E-08	1.26E-06	7.58E+01
	Transport	A2	2.61E-02	3.67E+00	2.30E-10	2.85E-09	2.12E+00
	Manufacturing	A3	9.72E-01	3.66E+01	1.20E-09	2.11E-08	3.96E+01
	Total (of product stage)	A1-3	2.07E+00	1.22E+03	1.00E-07	1.29E-06	1.18E+02
Construction process stage	Transport	A4	2.41E-02	3.70E+00	1.09E-10	3.99E-09	5.25E+00
	Construction	A5	1.55E-03	2.14E-01	3.88E-12	1.38E-10	9.84E-02
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	1.08E+04	1.44E+05	2.90E-06	8.27E-05	1.15E+05
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	5.83E-03	9.00E-01	2.49E-11	9.85E-10	1.32E+00
	Waste processing	C3	4.60E-02	1.75E+01	4.51E-10	5.31E-08	1.66E+00
	Disposal	C4	1.94E-03	1.87E+00	1.99E-11	6.76E-10	9.67E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.70E-01	-8.71E+02	-5.59E-08	-9.21E-07	-4.93E+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 (continued)

(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	1.34E+01	0.00E+00	1.34E+01	2.01E+02	9.24E+00	2.10E+02
	Transport	A2	4.60E-02	0.00E+00	4.60E-02	5.52E+00	0.00E+00	5.52E+00
	Manufacturing	A3	2.83E+00	9.63E+00	1.25E+01	8.36E+01	5.28E+00	8.89E+01
	Total (of product stage)	A1-3	1.63E+01	9.63E+00	2.59E+01	2.90E+02	1.45E+01	3.04E+02
Construction process stage	Transport	A4	5.95E-02	0.00E+00	5.95E-02	4.70E+00	0.00E+00	4.70E+00
	Construction	A5	-1.00E+01	1.00E+01	1.68E-02	-1.94E+00	2.39E+00	4.57E-01
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	5.59E+04	0.00E+00	5.59E+04	3.07E+05	0.00E+00	3.07E+05
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to 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	1.47E-02	0.00E+00	1.47E-02	1.13E+00	0.00E+00	1.13E+00
	Waste processing	C3	5.80E-01	0.00E+00	5.80E-01	5.39E+00	0.00E+00	5.39E+00
	Disposal	C4	7.93E-03	0.00E+00	7.93E-03	-5.63E+01	5.67E+01	3.99E-01
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-7.65E+00	0.00E+00	-7.65E+00	-1.25E+02	-7.17E+00	-1.33E+02

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 (continued)

(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	1.90E+00	0.00E+00	0.00E+00	1.50E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	4.10E-04
	Manufacturing	A3	7.04E-01	2.26E-05	0.00E+00	2.34E-02
	Total (of product stage)	A1-3	2.60E+00	2.26E-05	0.00E+00	1.74E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	5.56E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	3.07E-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	2.09E+01	0.00E+00	0.00E+00	5.60E+01
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to 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	1.37E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	3.35E-03
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	4.29E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-6.56E-02

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 (continued)

(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	3.31E+00	5.14E+01	4.25E-04
	Transport	A2	7.14E-03	7.13E-02	9.05E+00
	Manufacturing	A3	1.71E-01	1.85E+00	3.51E-04
	Total (of product stage)	A1-3	3.49E+00	5.34E+01	9.05E+00
Construction process stage	Transport	A4	5.10E-03	8.60E-02	3.06E+01
	Construction	A5	1.97E-03	1.10E-01	2.97E-06
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	6.39E+02	8.84E+03	2.71E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.21E-03	2.11E-02	7.73E+00
	Waste processing	C3	2.13E-01	1.62E+00	2.00E-05
	Disposal	C4	8.30E-04	1.20E-02	2.41E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.98E+00	-2.29E+01	-2.60E-04

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

LCA Results (continued)

(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	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	1.27E-02	2.62E-05	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.46E-01	2.49E-07	1.99E-02	0.00E+00	-3.15E-01
	Total (of product stage)	A1-3	0.00E+00	3.58E-01	2.64E-05	1.99E-02	0.00E+00	-3.15E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	1.39E+00	2.36E-08	0.00E+00	0.00E+00	3.19E-01
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	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
80% to recycling and 20% to 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	5.42E+00	2.45E-07	0.00E+00	2.00E-04	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

LCA Results for 3.0kW

(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	5.25E+01	5.25E+01	-5.54E-02	3.32E-02	2.64E-06	4.08E-01	4.53E-02
	Transport	A2	1.33E+00	1.33E+00	2.13E-05	9.12E-04	2.71E-07	3.86E-02	4.86E-05
	Manufacturing	A3	3.95E+00	4.13E+00	-2.00E-01	6.02E-03	3.69E-07	8.38E-03	6.06E-04
	Total (of product stage)	A1-3	5.78E+01	5.80E+01	-2.55E-01	4.01E-02	3.28E-06	4.55E-01	4.59E-02
Construction process stage	Transport	A4	3.46E-01	3.45E-01	3.15E-04	1.31E-04	8.17E-08	1.98E-03	2.09E-05
	Construction	A5	3.67E-02	3.67E-02	1.41E-05	3.82E-06	6.15E-09	1.79E-04	6.08E-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	1.74E+04	1.73E+04	2.88E+01	2.37E+01	1.17E-03	5.42E+01	2.77E+00
	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
80% to recycling and 20% to 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	8.25E-02	8.24E-02	8.01E-05	2.96E-05	1.97E-08	3.44E-04	5.13E-06
	Waste processing	C3	2.29E+00	2.29E+00	1.87E-04	7.97E-04	2.05E-08	2.57E-03	1.94E-04
	Disposal	C4	3.11E-01	2.65E-01	4.39E-02	3.17E-05	9.84E-09	2.73E-04	7.90E-05
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.30E+01	-1.30E+01	2.92E-02	-9.04E-03	-6.43E-07	-1.03E-01	-1.09E-02

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 (continued)

(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	5.59E-02	6.28E-01	2.66E-01	7.29E-03	5.74E+02	1.70E+01	3.78E-06
	Transport	A2	9.54E-03	1.06E-01	2.76E-02	1.98E-06	1.75E+01	4.77E-02	5.59E-08
	Manufacturing	A3	3.54E-03	2.66E-02	6.92E-03	1.15E-05	7.94E+01	1.09E+00	9.83E-08
	Total (of product stage)	A1-3	6.90E-02	7.61E-01	3.00E-01	7.31E-03	6.71E+02	1.82E+01	3.94E-06
Construction process stage	Transport	A4	5.68E-04	6.24E-03	1.90E-03	7.74E-07	5.33E+00	2.51E-02	3.90E-08
	Construction	A5	1.76E-04	7.86E-04	2.77E-04	2.64E-08	3.90E-01	1.35E-03	3.98E-09
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	1.28E+01	1.42E+02	3.47E+01	4.89E-02	4.62E+05	3.30E+03	2.65E-04
	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
80% to recycling and 20% to 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	1.05E-04	1.15E-03	3.69E-04	1.89E-07	1.28E+00	6.20E-03	9.69E-09
	Waste processing	C3	7.17E-04	6.80E-03	1.72E-03	5.48E-06	5.17E+00	1.47E-01	2.08E-08
	Disposal	C4	8.45E-03	1.01E-03	3.53E-04	9.73E-08	7.40E-01	3.33E-02	5.29E-09
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.44E-02	-1.61E-01	-6.80E-02	-2.12E-03	-1.50E+02	-2.72E+00	-9.05E-07

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 (continued)

(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	2.76E+00	3.37E+03	3.01E-07	3.84E-06	2.11E+02
	Transport	A2	8.05E-02	1.12E+01	7.59E-10	8.13E-09	4.97E+00
	Manufacturing	A3	9.82E-01	3.56E+01	1.21E-09	2.15E-08	4.37E+01
	Total (of product stage)	A1-3	3.83E+00	3.41E+03	3.03E-07	3.87E-06	2.59E+02
Construction process stage	Transport	A4	2.68E-02	4.12E+00	1.21E-10	4.44E-09	5.85E+00
	Construction	A5	1.75E-03	2.40E-01	4.34E-12	1.56E-10	1.06E-01
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	1.62E+04	2.15E+05	4.35E-06	1.24E-04	1.72E+05
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to landfill							
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	6.50E-03	1.00E+00	2.77E-11	1.10E-09	1.47E+00
	Waste processing	C3	5.13E-02	1.95E+01	5.03E-10	5.92E-08	1.85E+00
	Disposal	C4	3.49E-03	1.12E+01	2.88E-11	9.59E-10	1.67E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-5.87E-01	-8.99E+02	-6.09E-08	-9.40E-07	-5.11E+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 (continued)

(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	3.48E+01	0.00E+00	3.48E+01	5.53E+02	1.49E+01	5.68E+02
	Transport	A2	1.34E-01	0.00E+00	1.34E-01	1.72E+01	0.00E+00	1.72E+01
	Manufacturing	A3	2.39E+00	1.09E+01	1.33E+01	8.43E+01	4.90E+00	8.92E+01
	Total (of product stage)	A1-3	3.73E+01	1.09E+01	4.82E+01	6.55E+02	1.98E+01	6.75E+02
Construction process stage	Transport	A4	6.63E-02	0.00E+00	6.63E-02	5.23E+00	0.00E+00	5.23E+00
	Construction	A5	-1.14E+01	1.14E+01	1.92E-02	-1.87E+00	2.39E+00	5.19E-01
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	8.39E+04	0.00E+00	8.39E+04	4.61E+05	0.00E+00	4.61E+05
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to 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	1.63E-02	0.00E+00	1.63E-02	1.26E+00	0.00E+00	1.26E+00
	Waste processing	C3	6.46E-01	0.00E+00	6.46E-01	6.00E+00	0.00E+00	6.00E+00
	Disposal	C4	-3.56E-01	3.69E-01	1.25E-02	-6.39E+01	6.46E+01	7.27E-01
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	-7.98E+00	0.00E+00	-7.98E+00	-1.35E+02	-7.17E+00	-1.42E+02

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 (continued)

(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	5.83E+00	0.00E+00	0.00E+00	4.13E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.18E-03
	Manufacturing	A3	8.02E-01	2.26E-05	0.00E+00	2.99E-02
	Total (of product stage)	A1-3	6.63E+00	2.26E-05	0.00E+00	4.44E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	6.19E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	3.24E-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	3.14E+01	0.00E+00	0.00E+00	8.40E+01
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to 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	1.53E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	3.73E-03
	Disposal	C4	2.83E-06	0.00E+00	0.00E+00	7.81E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	-6.72E-02

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 (continued)

(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	9.72E+00	1.51E+02	1.14E-03
	Transport	A2	2.27E-02	2.10E-01	1.74E+01
	Manufacturing	A3	1.74E-01	1.97E+00	3.54E-04
	Total (of product stage)	A1-3	9.91E+00	1.53E+02	1.74E+01
Construction process stage	Transport	A4	5.69E-03	9.58E-02	3.41E+01
	Construction	A5	2.24E-03	1.16E-01	3.38E-06
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	9.58E+02	1.33E+04	4.07E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
80% to recycling and 20% to landfill					
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	1.35E-03	2.35E-02	8.61E+00
	Waste processing	C3	2.37E-01	1.80E+00	2.23E-05
	Disposal	C4	1.49E-03	1.29E-01	4.52E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-2.16E+00	-2.46E+01	-2.77E-04

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

LCA Results (continued)

(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	Biogenic carbon (product)	Biogenic carbon (packaging)
			kg	kg	kg	MJ per energy carrier	kg C	kg C
Product stage	Raw material supply	A1	0.00E+00	2.66E-02	6.08E-05	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	3.46E-01	2.49E-07	1.99E-02	0.00E+00	-3.60E-01
	Total (of product stage)	A1-3	0.00E+00	3.72E-01	6.11E-05	1.99E-02	0.00E+00	-3.60E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	1.58E+00	2.70E-08	0.00E+00	0.00E+00	3.64E-01
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	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00
80% to recycling and 20% to 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	6.04E+00	2.73E-07	0.00E+00	2.23E-04	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	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

Scenarios and additional technical information

Scenarios and additional technical information							
Scenario	Parameter	Units	Results				
A4 – Transport to the building site	Description of scenario						
	Fuel type / Vehicle type: Diesel/Lorry	Litre of fuel type per distance or vehicle type	Lorry – Diesel Freight- Diesel				
	Distance:	km	396- Lorry 224- Freight				
	Capacity utilisation (incl. empty returns)	%	N/A				
	Bulk density of transported products	kg/m^3	N/A				
A5 – Installation in the building	No additional input materials, energy or water required to install the product. All components to install the product are supplied in the box and accounted for in the raw material inputs. The product can be installed using standard equipment / tools. Waste is generated from the packaging - either recycled or sent to landfill. H-frame wall brackets are used for installation.						
	Product Weight	kg	0.5kW	0.75/1.0kW	1.25/1.5kW	2kW	3kW
			4.80	6.21	6.78	8.15	9.08
Reference service life	Reference service life based on PEP system						
	0.5-3.0kW PLXE UNITS	Number of years	17				
B1-B5, B7							
B6 – Use of energy	Use of energy		0.5kW	0.75/1.0kW	1.25/1.5kW	2kW	3kW
	Electricity used over service life	kWh	9,282	18,564	27,846	37,128	55,692
	This assumes a unit is used for 6 hours a day, 7 days a week for 26 weeks a year						
	Water use over service life	L	N/A				
C1 to C4 End of life,	End of Life						
C1 – Deconstruction	No additional input materials, energy or water required to dismantle the product at end of life. It can be dismantled using standard equipment / tools. Electric panel heaters fall under the WEEE recycling scheme. Therefore, at end of the life the product would be recycled through this scheme.						
C2 – Transport from site to pre-processing facility or landfill	Transport Distance	km	100				
C3 - Pre-processing of uninstalled product	There is no pre-processing for the product. It is assumed that 80% of each material is recycled based on the CIBSE TM65 guidance document.						
	80% of waste to recycling	Kg	3.84	4.96	5.42	6.52	7.27

Scenarios and additional technical information							
Scenario	Parameter	Units	Results				
C4 – Disposal	It is assumed that the remaining 20% goes to landfill based on the CIBSE TM65 guidance document						
	Raw Material Wastes to landfill	kg	0.96	1.24	1.36	1.63	1.82
Module D	The benefits of Module D include the recycling of waste product at the end-of-life. The existing recycled content in the products has been excluded from the 80% of waste to recycling in Module D. Only wastes from primary materials are calculated in Module D.						
	Description of scenario (0.5kW, 0.75kW & 1.0kW, 1.25kW &1.5kW, 2kW, 3kW		0.5kW	0.75/1.0kW	1.25/1.5kW	2kW	3kW
	Recovered for recycling	Kg	3.03	3.92	4.28	5.15	5.73
	Recovered for re-use	Kg	0				
	Recovered for energy	Kg	0				

Summary, comments and additional information

Product description and use

The PLXE is a Lot 20 compliant, modern and efficient electric panel heater. Offering intuitive controls with multiple timers, natural white colour and louvered grille, this heater can be installed in any room.

Features:

- Electronic time and temperature control ensure maximum comfort
- Integral open-window detection system reduces waste heat
- Electronic thermostat accurate to within 0.2°C
- Smartphone app controllable via the Dimplex Control system*
- Slimline design that covers traditional panel heater fixing marks
- Easy to install

Manufacturing process description

Metal blanks are formed to shape on power presses to produce all the metal work for the product (front panel, back panel, and internal bracketry). The front and back panels are painted on a powder coating line. All components are brought together at the 3-person assembly cells and assembled. Each product has functional electric tests performed. Finished products are put onto pallets and taken to the warehouse for dispatch to distribution centre. Blank and coil go from stores into the press shop. The press shop manufactures the fronts, backs, grills, wall frames, element brackets and fillamics. The fronts, back and grills move to the paint line for spray coating process and drying. The wall frames, element brackets, fillamics and packaging assembly move to final assembly and are joined by the fronts, backs and grills after they are treated. All parts are assembled and set to stores to await shipment

Technical properties and values

To see Technical properties and values contact the manufacturer

Figure 2: PLXE 0.5kW, 0.75kW & 1.0kW Unit

Figure 2: PLXE 1.25kW & 1.5kW Unit

Figure 3: PLXE 2.0kW & 3.0kW Unit

Interpretation

The composition of 0.5-3kW Dimplex PLXE panel heaters are the same, their proportions are similar and differ by less than 5%.

Out of the total mass of input materials, steel elements make up 89-94%, followed by plastic mouldings of 1-4%, cables make up 1-3%, others make up the remaining of 0-4%. The bulk of the environmental impacts and primary energy demand are attributed to the manufacturing phase, covered by information modules A1-A3 of EN15804:2012+A2:2019.

As a result, steel elements rank first in terms of overall environmental impacts and is responsible for the greatest impact on GWP-total (58% for 0.5kW, 65% for 0.75 & 1kW, 67% for 1.25 & 1.5 kW, 71% for 2kW, 71% for 3kW). Control units and cables rank second and third in terms of overall environmental impacts.

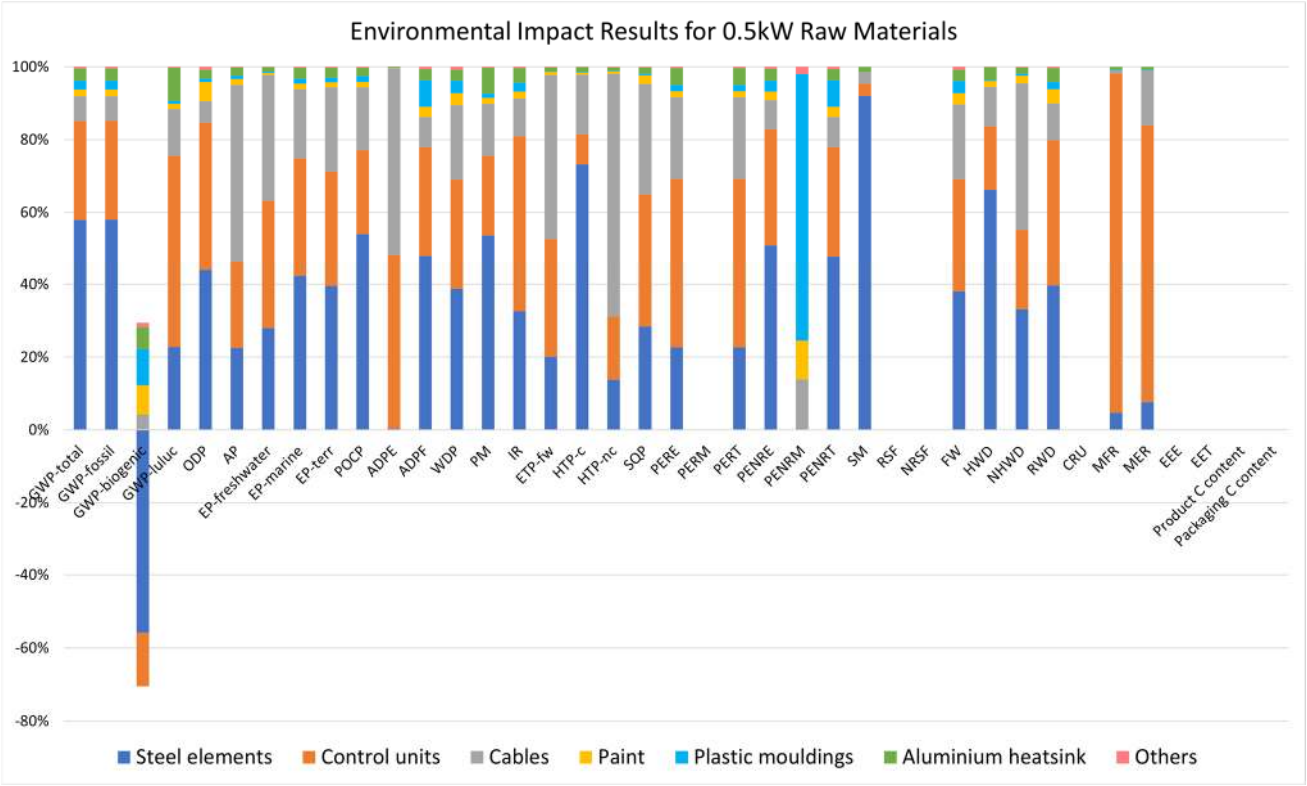


Figure 1

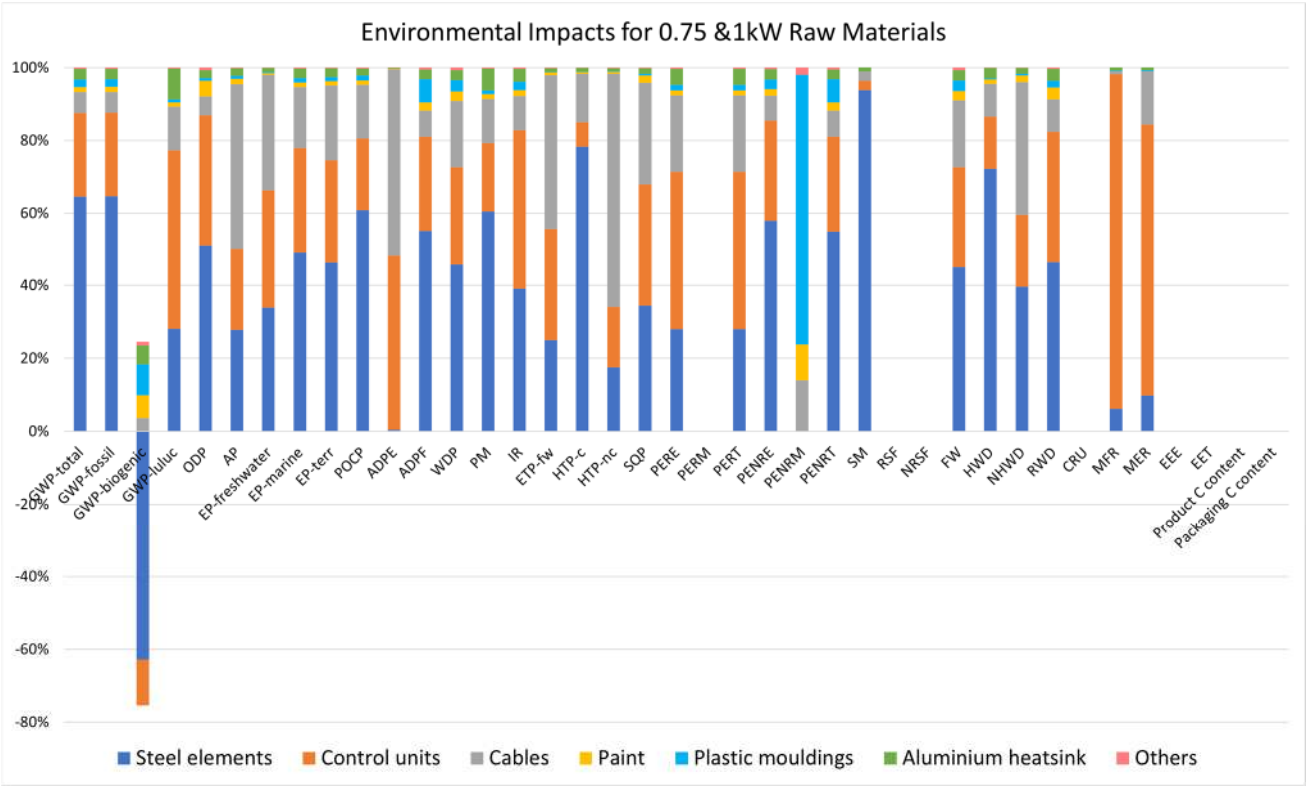


Figure 2

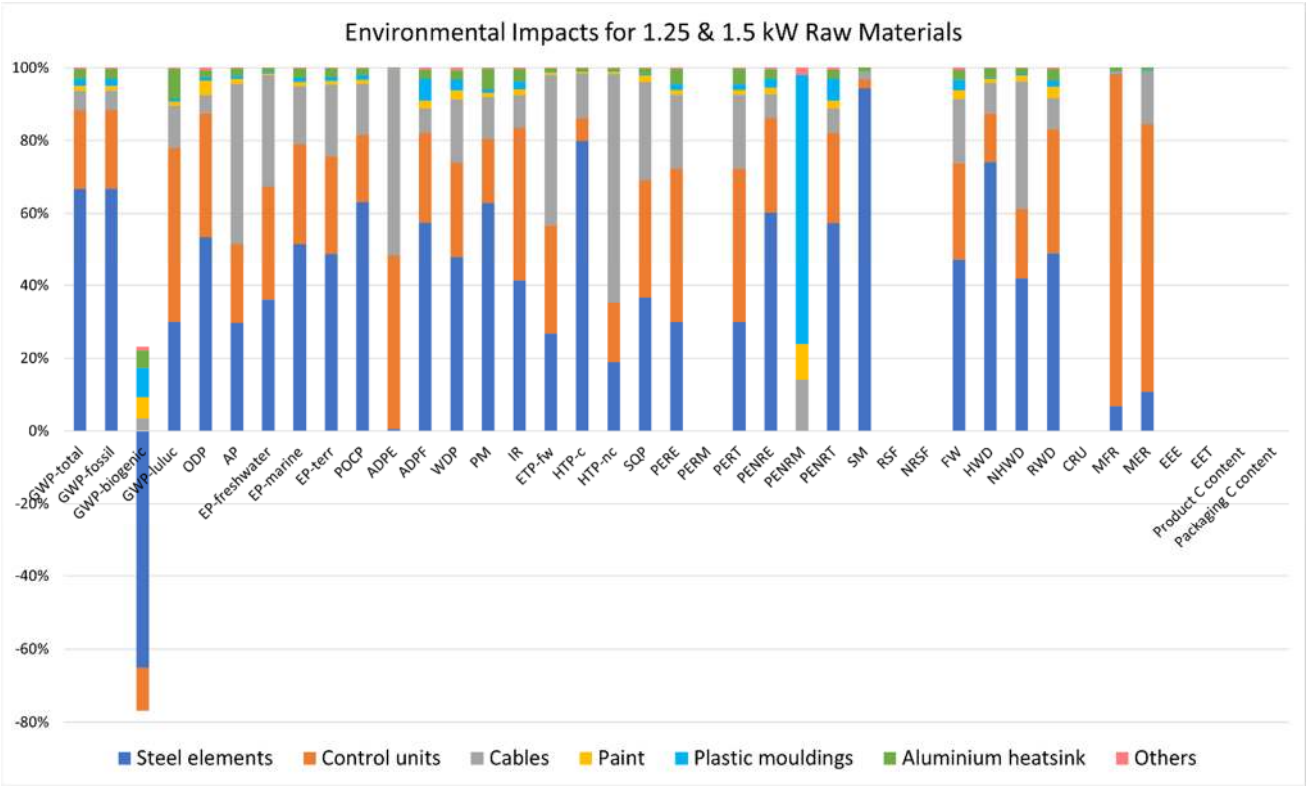


Figure 3

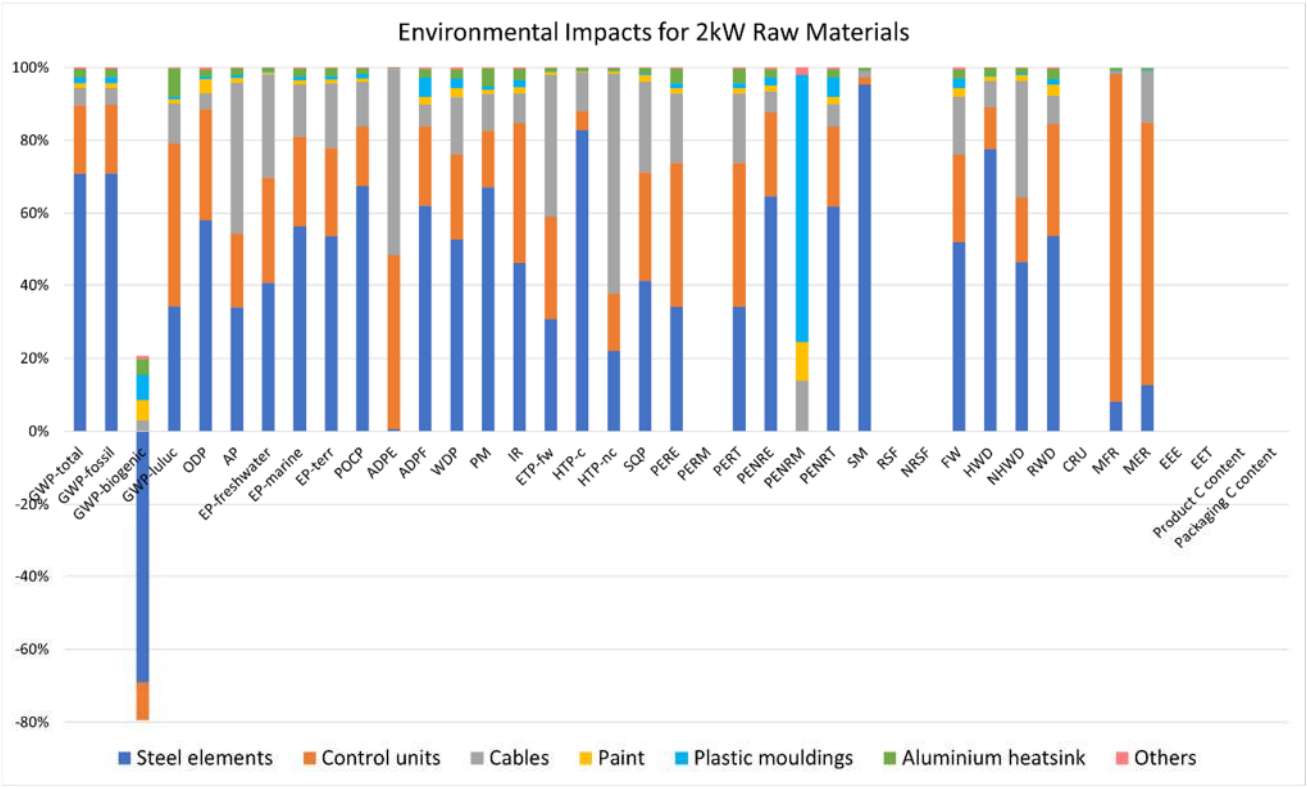


Figure 4

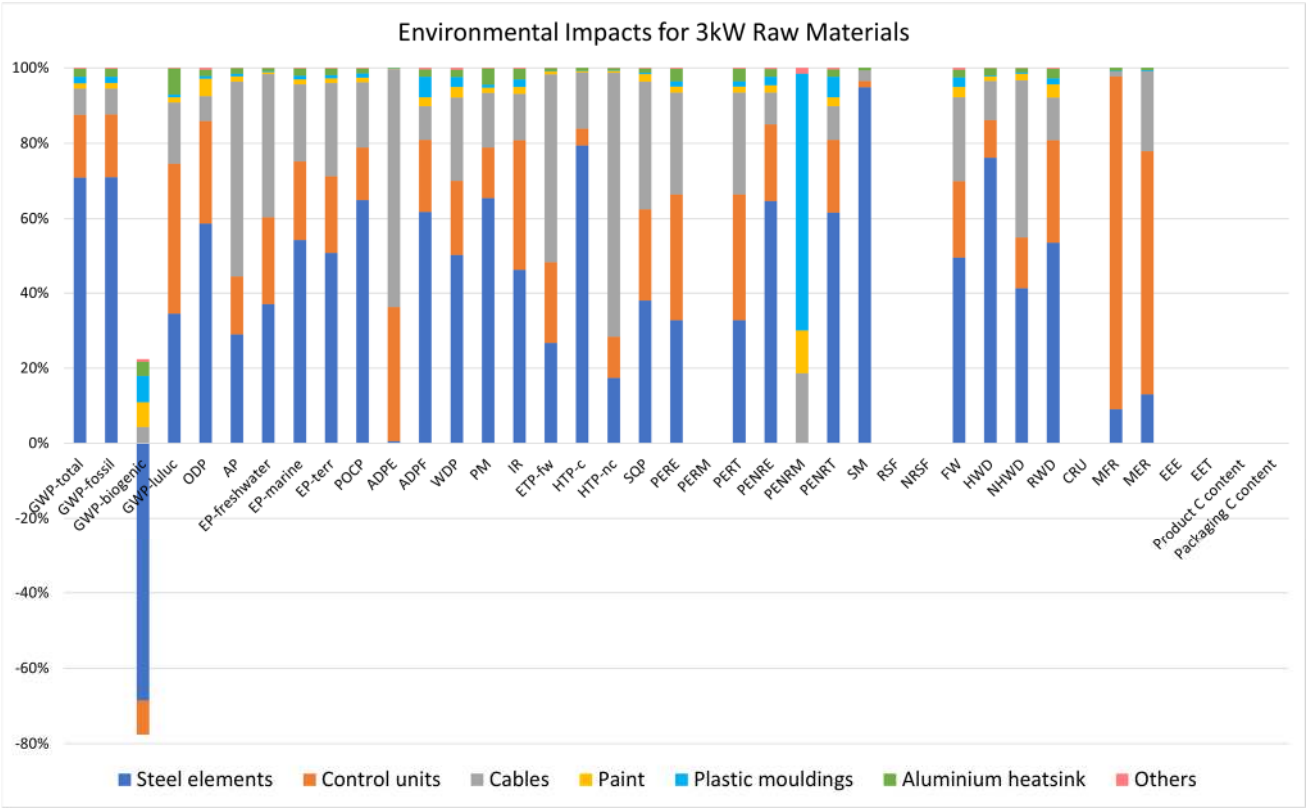


Figure 5

References

- BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A2:2019. London, BSI, 2020.
- BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.
- BSI. Environmental management – Life cycle assessment – Principles and framework. BS EN ISO 14040:2006. London, BSI, 2006.
- BSI. Environmental management – Life cycle assessment – requirements and guidelines. BS EN ISO 14044:2006. London, BSI, 2006.
- BSI. Environmental disposal – CIBSE TM65 guidance document
- PEP PCR-ed4-EN-2021 09 06