


PRODUCT ENVIRONMENTAL PROFILE

Individual mixed wall-mounted gas condensing boiler

CHAPPÉE - ACCEA



N° of registration: CHAP-00011-V01.02-EN	Drafting rules : PCR-ed3-FR-2015 04 02 Completed by: PSR-0012-ed1.0-2018 02 09
Verifier accreditation number: VH18	Information and reference : www.pep-ecopassport.org
Edition date : 06/2021	Period of validity : 5 years
Independent verification of declaration and data in accordance ISO 14025: 2010 Internal : <input type="checkbox"/> External : <input checked="" type="checkbox"/>	
Complies with ISO 14025 : 2010 type III environmental declarations	
Critical review of the PCR carried out by a group of experts led by "par" Philippe Osset (SOLINNEN)	
PEPs comply with standard XP C08-100-1 :2016-12	
The elements of the PEP cannot be compared with the elements from another program	
Document in accordance with standard NF EN 14025 : 2010 « Environmental markings and declarations. Type III environmental declarations ».	



TYPE OF PRODUCT AND FUNCTIONAL UNIT

Product category

Individual wall-mounted gas condensing boiler range for heating and domestic hot water production.

Functional unit

Production of 1 kW for heating and domestic hot water production, according to the reference usage scenario and during the 17-year of reference life time of the declared product.

Declared product (equipment unit)

Ensure the production of energy for heating and domestic hot water of an individual dwelling using XX kW wall-mounted gas condensing boiler over a reference life time of 17 years.

Note : XX indicates the power, that must be adjusted according to the considered product in the same range (16, 20 and 25 kW, that are the nominal thermal power values of the other boilers belonging to the same environmental family).



PRODUCTS COVERED BY THE PEP SHEET

Reference product




ACCEA 2.25 – REFERENCE 7767942 – Brand Chappée

Technical features of the reference product			
P_{cal} Nominal thermal power	16 kW	Etas Seasonal energy efficiency of the boiler for the heating mode according to EU 813/2013	93%
P Useful power at the arithmetic average of maximum and minimum power output according to EN 15502-1/A1 for gas boilers	10.65 kW	Q_{fuel} Daily fuel consumption for hot water according to EU 811/2013	23.12 kWh
Type of installation	Wall-mounted	Composition of the heating body	Steel
Place of manufacturing/ assembly	Italy	Place of use	France
Weight without packaging (*)	29.9 kg	Drawing profile	XL

(*) This value corresponds to the mass modeled within the framework of the PEP, and may present slight variations with the masses indicated in the technical documentation of the products due to the assumptions made for this study.

Other products covered by the current PEP

This PEP sheet covers all the following products belonging to the same homogeneous environmental range:

-  ACCEA 2.25 7767942 – REFERENCE PRODUCT
-  ACCEA 2.29 7767943
-  ACCEA 2.35 7767944



COMPOSITION OF REFERENCE PRODUCT

METALS		PLASTICS		OTHERS	
Steel	35.9 %	ABS	5.6 %	Wood	3.9 %
Stainless steel	25.2 %	Others (PPO, PPE, LDPE)	4.0 %	Cardboard	3.6 %
Aluminum	5.6 %	Polypropylene	2.1 %	Electrical components	1.2 %
Copper	1.8 %	EPDM	1.9 %	Electronic PCB	1.0 %
Brass	0.4 %	EPS	1.9 %	Paper	0.8 %
Kanthal	<0.1 %	Polyamide	1.9 %	Fiberboard	0.6 %
		Resin	1.4 %	Alumina	<0.1 %
		Polycarbonate	0.9 %		
		Rubber	0.3 %		
		PPS	<0.1 %		
TOTAL	68.8 %	TOTAL	20.0 %	TOTAL	11.2 %

Total mass of reference modeled product : 33.17 kg (product + packaging)

Note:

- *The composition refers to the mass of the modeled product, which may be different from that reported in the technical documentation of the product due to the assumptions made in this study ;*
- Kanthal, PPS and Alumina are declared as <0.1% according to the PCR ed3, in detail these materials would be 0.03% of Kanthal, 0.03% of PPS and 0.04% of Alumina.



BDR THERMEA and THE ENVIRONMENT

According to our environmental policy, we are committed to :

- ✓ Ensure strict control of compliance with regulations and pollution
- ✓ Reduce our impacts related to waste and energy consumption
- ✓ Reduce greenhouse gas emissions from our business and products
- ✓ Implement a continuous improvement process, especially by informing and mobilizing all employees
- ✓ Evaluate and develop products and processes that take into account environmental aspects
- ✓ Involve our suppliers in a similar process.

Our production site in Italy is certified ISO 14001, ISO 9001 and ISO 45001. We contribute to reduce the fossil energy consumption thanks to our photovoltaic system which produced about 1256976 kWh of electricity in 2020, which covers more than 1/5 of the plant's annual energy needs.



LIFE CYCLE

The Product Environmental Profile (PEP) is based on the Life Cycle Analysis (manufacturing, distribution, installation, use end of life) in accordance with the rules published by the PEP Ecopassport association (for more information on the program, see the site www.pep-ecopassport.org). The final results were obtained using EIME V5.9.1 software associated with its latest database version CODDE 2020-12.



MANUFACTURING

- ✓ Quantification of materials involved in the components of the reference product and packaging including manufacturing scraps
- ✓ End of life of production scraps and packaging from suppliers (transport and treatments)
- ✓ Industrial transformation processes of suppliers and assembling process in our site at manufacturing and assembly sites (including energy, water and gas consumptions)
- ✓ Upstream transport of materials and components from supplier's production site to the assembly site
- ✓ Downstream transport of packaged product from our site to the last logistics' platform.



DISTRIBUTION

- ✓ Transport of the reference product to the place of use in France.



INSTALLATION

- ✓ End of life of product's packaging waste (transport and treatment processes).



USE

- ✓ Gas consumption in Europe for an annual operation of 2066 hours
- ✓ Emissions (CO₂ and NO_x) due to the combustion of natural gas
- ✓ Liquid discharge due to the emission of condensates
- ✓ Annual trip of a technician to ensure the maintenance (replacement of spare parts)
- ✓ Replacement of spare parts (during RLT) :
 - electrode ignition (once)

- expansion vessel (once)
- plate exchanger (three times)
- temperature probe (once)

The replacement includes :

- ✓ quantification of materials involved in spare parts and their transformation processes (including production scraps) and packaging
- ✓ end of life of the scraps, packaging and replaced parts (transport and treatment processes)
- ✓ transport of spare parts from the distributor to the installation site.



End of life

- ✓ Disposal and treatment of the product and accessories (without packaging) at the end of their life



ENVIRONMENTAL IMPACTS

Environmental impacts, per kW, corresponding to the functional unit

The table below shows the environmental impacts of the reference product at the functional unit scale. The PEP was drawn up by considering the supply of 1 kW of heating and domestic hot water production. The impacts of the stages of the life cycle of an installed product is calculated by the user of the PEP by multiplying the impact concerned by the total heating and domestic hot water production capacity in kW. According to the PSR the environmental impacts from the PEP (1kW) = Environmental impacts of the reference product/ calorific value of the reference product.

Indicators for environmental impacts	Unit	Total	Manufacturing	Distribution	Installation	Use	End-of-life
Global warming	kg CO ₂ eq.	4.27E+03	1.46E+01	2.75E-01	5.13E-02	4.26E+03	1.84E+00
Ozone layer depletion	kg CFC-11 eq.	1.31E-05	1.87E-06	5.57E-10	-3.75E-09	1.12E-05	1.47E-08
Soil and water acidification	kg SO ₂ eq.	1.99E+00	3.75E-02	1.30E-03	-2.19E-04	1.95E+00	4.58E-04
Water eutrophication	Kg (PO ₄) ³⁻ eq.	4.11E-01	5.88E-03	3.01E-04	5.00E-06	4.04E-01	4.57E-04
Photochemical ozone formation	kg C ₂ H ₄ eq.	3.05E-01	3.85E-03	9.37E-05	-9.70E-06	3.01E-01	4.16E-05
Depletion of abiotic resources - elements	kg Sb eq.	1.24E-03	7.98E-04	1.10E-08	-2.00E-09	4.38E-04	3.73E-09
Depletion of abiotic resources – fossil fuels	MJ (PCI)	5.82E+04	1.45E+02	3.86E+00	-4.00E-01	5.81E+04	1.23E+00
Water pollution	m ³	1.61E+04	1.46E+03	4.52E+01	-1.16E+00	1.45E+04	7.91E+01
Air pollution	m ³	3.07E+04	1.91E+03	1.27E+01	-1.10E+00	2.88E+04	2.34E+01

Indicators for energy resources used	Unit	Total	Manufacturing	Distribution	Installation	Use	End-of-life
Use of renewable primary energy (no raw materials)	MJ	9.95E+00	5.86E+00	5.18E-03	-5.40E-02	4.13E+00	1.69E-03
Use of renewable primary energy resources as raw materials	MJ	3.03E+00	1.87E+00	0.00E+00	0.00E+00	1.16E+00	0.00E+00
Total use of renewable primary energy resources	MJ	1.30E+01	7.73E+00	5.18E-03	-5.40E-02	5.30E+00	1.69E-03
Use of non-renewable primary energy (no raw materials)	MJ	5.85E+04	3.50E+02	3.88E+00	-5.39E-01	5.81E+04	1.87E+00
Use of non-renewable primary energy resources as raw materials	MJ	1.94E+01	1.77E+01	0.00E+00	0.00E+00	1.69E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	5.85E+04	3.68E+02	3.88E+00	-5.39E-01	5.81E+04	1.87E+00
Use of secondary materials	kg	7.07E-01	6.00E-01	0.00E+00	0.00E+00	1.07E-01	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m ³	4.07E+00	4.33E+00	2.46E-05	1.62E-04	-2.58E-01	8.16E-04
Total primary energy	MJ	5.85E+04	3.75E+02	3.89E+00	-5.93E-01	5.81E+04	1.87E+00

Indicators for waste categories	Unit	Total	Manufacturing	Distribution	Installation	Use	End-of-life
Hazardous waste disposed of	kg	5.49E+01	4.33E+01	0.00E+00	1.17E-05	8.60E+00	3.08E+00
Non-hazardous waste disposed of	kg	1.25E+02	9.61E+00	9.77E-03	-6.91E-02	1.16E+02	6.49E-03
Radioactive waste disposed of	kg	1.36E-02	6.68E-03	6.96E-06	-4.71E-05	6.96E-03	1.23E-05

Indicators for other environmental information	Unit	Total	Manufacturing	Distribution	Installation	Use	End-of-life
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	8.22E-01	9.19E-02	0.00E+00	1.48E-01	2.04E-01	3.78E-01
Materials for energy recovery	kg	3.89E-01	1.28E-09	0.00E+00	5.98E-03	5.18E-03	3.78E-01
Exported energy	MJ (by energy vector)	2.29E-03	3.03E-05	0.00E+00	1.08E-03	1.18E-03	0.00E+00

Environmental impacts of B1- B7 modules, per kW, corresponding to the functional unit

The table below shows the environmental impacts of the reference product due to the use phase at the functional unit scale (modules from B1 to B7).

Note : B1 : condensate. B2 : maintenance. B6 : use of energy (gas consumption and emissions)

Indicators for environmental impacts	Unit	Total (B1-B7)	B1	B2	B6	Other B modules
Global warming	kg CO ₂ eq.	4.26E+03	2.22E+01	1.83E+01	4.22E+03	0.00E+00
Ozone layer depletion	kg CFC-11 eq.	1.12E-05	1.38E-07	1.09E-05	2.24E-07	0.00E+00
Soil and water acidification	kg SO ₂ eq.	1.95E+00	4.82E-02	3.99E-02	1.87E+00	0.00E+00

Water eutrophication	Kg (PO4) ³⁻ eq.	4.04E-01	1.50E-02	1.03E-02	3.78E-01	0.00E+00
Photochemical ozone formation	kg C ₂ H ₄ eq.	3.01E-01	2.59E-03	2.01E-02	2.78E-01	0.00E+00
Depletion of abiotic resources - elements	kg Sb eq.	4.38E-04	2.97E-07	1.16E-04	3.22E-04	0.00E+00
Depletion of abiotic resources – fossil fuels	MJ (PCI)	5.81E+04	6.18E+01	2.13E+02	5.78E+04	0.00E+00
Water pollution	m ³	1.45E+04	2.06E+02	2.39E+03	1.19E+04	0.00E+00
Air pollution	m ³	2.88E+04	2.27E+02	6.44E+03	2.21E+04	0.00E+00

Indicators for energy resources used	Unit	Total (B1-B7)	B1	B2	B6	Other B modules
Use of renewable primary energy (no raw materials)	MJ	4.13E+00	6.81E-01	-3.51E-01	3.80E+00	0.00E+00
Use of renewable primary energy resources as raw materials	MJ	1.16E+00	0.00E+00	1.16E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	5.30E+00	6.81E-01	8.13E-01	3.80E+00	0.00E+00
Use of non-renewable primary energy (no raw materials)	MJ	5.81E+04	6.69E+01	2.71E+02	5.78E+04	0.00E+00
Use of non-renewable primary energy resources as raw materials	MJ	1.69E+00	0.00E+00	1.69E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	5.81E+04	6.69E+01	2.73E+02	5.78E+04	0.00E+00
Use of secondary materials	kg	1.08E-01	0.00E+00	1.08E-01	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m ³	-2.58E-01	-7.00E-01	4.24E-01	1.76E-02	0.00E+00
Total primary energy	MJ	5.81E+04	6.75E+01	2.74E+02	5.78E+04	0.00E+00

Indicators for waste categories	Unit	Total (B1-B7)	B1	B2	B6	Other B modules
Hazardous waste disposed of	kg	8.63E+00	4.74E-04	8.63E+00	0.00E+00	0.00E+00
Non-hazardous waste disposed of	kg	1.16E+02	5.37E+00	2.48E+00	1.08E+02	0.00E+00
Radioactive waste disposed of	kg	6.94E-03	1.63E-03	3.58E-03	1.74E-03	0.00E+00

Indicators for other environmental information	Unit	Total (B1-B7)	B1	B2	B6	Other B modules
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.04E-01	0.00E+00	2.04E-01	0.00E+00	0.00E+00
Materials for energy recovery	kg	5.18E-03	0.00E+00	5.18E-03	0.00E+00	0.00E+00
Exported energy	MJ (by energy vector)	1.18E-03	0.00E+00	1.18E-03	0.00E+00	0.00E+00

Environmental impacts at the scale of the equipment, corresponding to the reference product

The table below shows the environmental impacts obtained for the reference product at the declared product scale, one unit of individual mixed wall-mounted gas condensing boiler. These impacts results can be obtained by multiplying those of the reference product at functional unit scale by the nominal power (16 kW).

Indicators for environmental impacts	Unit	Total	Manufacturing	Distribution	Installation	Use	End-of-life
Global warming	kg CO ₂ eq.	6.84E+04	2.33E+02	4.40E+00	8.21E-01	6.81E+04	2.94E+01
Ozone layer depletion	kg CFC-11 eq.	2.10E-04	2.99E-05	8.92E-09	-6.00E-08	1.80E-04	2.36E-07
Soil and water acidification	kg SO ₂ eq.	3.19E+01	6.01E-01	2.08E-02	-3.51E-03	3.13E+01	7.33E-03
Water eutrophication	Kg (PO ₄) ³⁻ eq.	6.57E+00	9.41E-02	4.82E-03	7.99E-05	6.46E+00	7.30E-03
Photochemical ozone formation	kg C ₂ H ₄ eq.	4.87E+00	6.16E-02	1.50E-03	-1.55E-04	4.81E+00	6.66E-04
Depletion of abiotic resources - elements	kg Sb eq.	1.98E-02	1.28E-02	1.76E-07	-3.20E-08	7.01E-03	5.96E-08
Depletion of abiotic resources – fossil fuels	MJ (PCI)	9.31E+05	2.33E+03	6.18E+01	-6.41E+00	9.29E+05	1.97E+01
Water pollution	m ³	2.57E+05	2.33E+04	7.24E+02	-1.85E+01	2.32E+05	1.27E+03
Air pollution	m ³	4.91E+05	3.06E+04	2.03E+02	-1.77E+01	4.60E+05	3.74E+02

Indicators for energy resources used	Unit	Total	Manufacturing	Distribution	Installation	Use	End-of-life
Use of renewable primary energy (no raw materials)	MJ	1.59E+02	9.38E+01	8.29E-02	-8.64E-01	6.61E+01	2.71E-02
Use of renewable primary energy resources as raw materials	MJ	4.85E+01	2.99E+01	0.00E+00	0.00E+00	1.86E+01	0.00E+00
Total use of renewable primary energy resources	MJ	2.08E+02	1.24E+02	8.29E-02	-8.64E-01	8.48E+01	2.71E-02
Use of non-renewable primary energy (no raw materials)	MJ	9.36E+05	5.60E+03	6.21E+01	-8.62E+00	9.30E+05	2.99E+01
Use of non-renewable primary energy resources as raw materials	MJ	3.11E+02	2.84E+02	0.00E+00	0.00E+00	2.71E+01	0.00E+00
Total use of non-renewable primary energy resources	MJ	9.36E+05	5.88E+03	6.21E+01	-8.62E+00	9.30E+05	2.99E+01
Use of secondary materials	kg	1.13E+01	9.60E+00	0.00E+00	0.00E+00	1.72E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m ³	6.51E+01	6.92E+01	3.94E-04	2.59E-03	-4.13E+00	1.31E-02
Total primary energy	MJ	9.36E+05	6.01E+03	6.22E+01	-9.48E+00	9.30E+05	2.99E+01

Indicators for waste categories	Unit	Total	Manufacturing	Distribution	Installation	Use	End-of-life
Hazardous waste disposed of	kg	8.79E+02	6.92E+02	0.00E+00	1.87E-04	1.38E+02	4.92E+01
Non-hazardous waste disposed of	kg	2.01E+03	1.54E+02	1.56E-01	-1.11E+00	1.85E+03	1.04E-01
Radioactive waste disposed of	kg	2.18E-01	1.07E-01	1.11E-04	-7.54E-04	1.11E-01	1.98E-04

Indicators for other environmental information	Unit	Total	Manufacturing	Distribution	Installation	Use	End-of-life
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.32E+01	1.47E+00	0.00E+00	2.37E+00	3.27E+00	6.04E+00
Materials for energy recovery	kg	6.22E+00	2.04E-08	0.00E+00	9.57E-02	8.28E-02	6.04E+00
Exported energy	MJ (by energy vector)	3.67E-02	4.85E-04	0.00E+00	1.73E-02	1.89E-02	0.00E+00

Environmental impacts of B1- B7 modules at the scale of the equipment, corresponding to the reference product

Indicators for environmental impacts	Unit	Total (B1-B7)	B1	B2	B6	Other B modules
Global warming	kg CO2 eq.	6.81E+04	3.55E+02	2.93E+02	6.75E+04	0.00E+00
Ozone layer depletion	kg CFC-11 eq.	1.80E-04	2.21E-06	1.74E-04	3.59E-06	0.00E+00
Soil and water acidification	kg SO2 eq.	3.13E+01	7.71E-01	6.38E-01	2.99E+01	0.00E+00
Water eutrophication	Kg (PO4) ³⁻ eq.	6.46E+00	2.40E-01	1.65E-01	6.05E+00	0.00E+00
Photochemical ozone formation	kg C2H4 eq.	4.81E+00	4.15E-02	3.22E-01	4.45E+00	0.00E+00
Depletion of abiotic resources - elements	kg Sb eq.	7.01E-03	4.75E-06	1.85E-03	5.15E-03	0.00E+00
Depletion of abiotic resources – fossil fuels	MJ (PCI)	9.29E+05	9.88E+02	3.40E+03	9.25E+05	0.00E+00
Water pollution	m ³	2.32E+05	3.29E+03	3.82E+04	1.90E+05	0.00E+00
Air pollution	m ³	4.60E+05	3.63E+03	1.03E+05	3.53E+05	0.00E+00

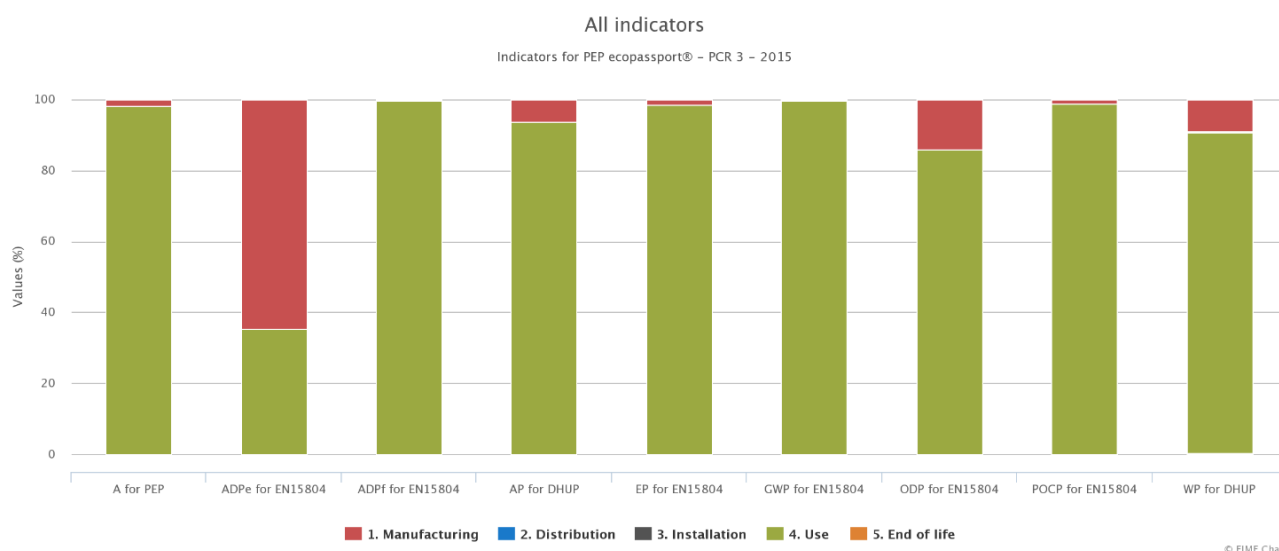
Indicators for energy resources used	Unit	Total (B1-B7)	B1	B2	B6	Other B modules
Use of renewable primary energy (no raw materials)	MJ	6.61E+01	1.09E+01	-5.61E+00	6.08E+01	0.00E+00
Use of renewable primary energy resources as raw materials	MJ	1.86E+01	0.00E+00	1.86E+01	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	8.48E+01	1.09E+01	1.30E+01	6.08E+01	0.00E+00
Use of non-renewable primary energy (no raw materials)	MJ	9.30E+05	1.07E+03	4.34E+03	9.25E+05	0.00E+00
Use of non-renewable primary energy resources as raw materials	MJ	2.71E+01	0.00E+00	2.71E+01	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	9.30E+05	1.07E+03	4.37E+03	9.25E+05	0.00E+00
Use of secondary materials	kg	1.72E+00	0.00E+00	1.72E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m ³	-4.13E+00	-1.12E+01	6.78E+00	2.81E-01	0.00E+00
Total primary energy	MJ	9.30E+05	1.08E+03	4.38E+03	9.25E+05	0.00E+00

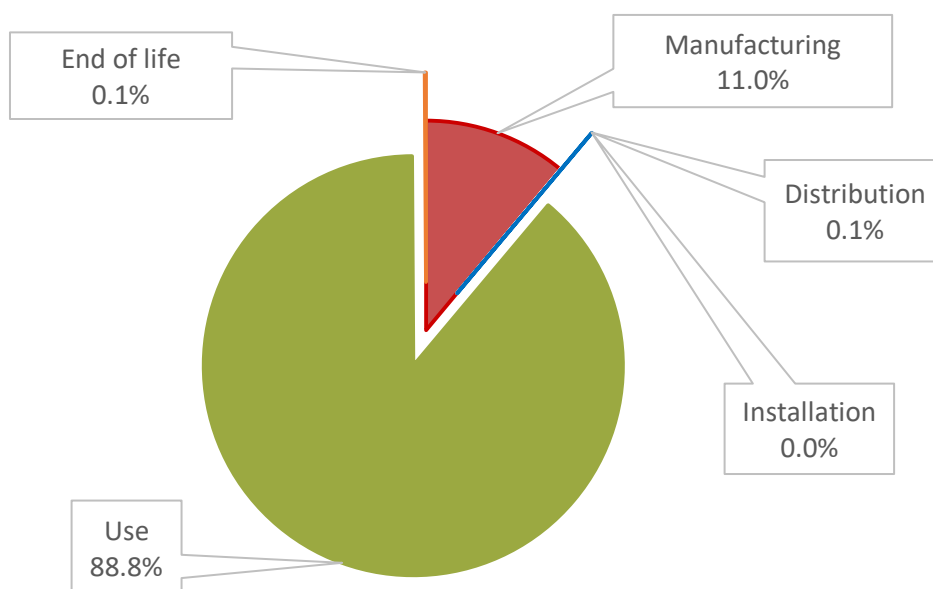
Indicators for waste categories	Unit	Total (B1-B7)	B1	B2	B6	Other B modules
Hazardous waste disposed of	kg	1.38E+02	7.58E-03	1.38E+02	0.00E+00	0.00E+00
Non-hazardous waste disposed of	kg	1.85E+03	8.59E+01	3.96E+01	1.73E+03	0.00E+00
Radioactive waste disposed of	kg	1.11E-01	2.61E-02	5.73E-02	2.79E-02	0.00E+00

Indicators for other environmental information	Unit	Total (B1-B7)	B1	B2	B6	Other B modules
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	3.27E+00	0.00E+00	3.27E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	8.28E-02	0.00E+00	8.28E-02	0.00E+00	0.00E+00
Exported energy	MJ (by energy vector)	1.89E-02	0.00E+00	1.89E-02	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS DISTRIBUTION

The figures below show how the environmental impacts are distributed among the different phases of the life cycle of the product. The use phase turns out to be the most impactful phase during the life cycle of the boiler for most of the impact indicators.





EXTRAPOLATION OF ENVIRONMENTAL IMPACTS TO THE ENTIRE RANGE

Calculation basis

The environmental impacts of other products belonging to the same *environmental family* described before have been evaluated in accordance with the extrapolation rules defined in the PSR and the data below.

The following table summarizes all the considered products of the same range with the useful information for applying the extrapolation rules described below.

Product considered	Unit	ACCEA 2.25	ACCEA 2.29	ACCEA 2.35
Reference	-	7716356	7716357	7716358
Nominal thermal power	kW	16	20	25
Unpackaged product mass (*)	kg	29.90	29.90	30.90
Packaging mass (*)	kg	3.27	3.27	3.27
Electronic components' mass (*)	kg	0.33	0.33	0.33
Total consumption during RLT	kWh	313135	367932	439139
Drawing profile	-	XL	XL	XL

(*) : the composition refers to the mass of the modeled product, which may be different from that reported in the technical documentation of the product due to the assumptions made in this study.

Extrapolation rules

Stages	Formula to define coefficients on the functional unit scale
Manufacturing (A1-A3)	$\left[\left(\frac{\text{Total mass of the product considered (kg)}}{\text{Total mass of the reference product (kg)}} + \frac{\text{Mass of electronic components in the product considered}}{\text{Mass of reference product electronic components (kg)}} \right) \div 2 \right] \times \left(\frac{\text{Calorific value of the reference product (kW)}}{\text{Calorific value of the product considered (kW)}} \right)$
Distribution (A4)	$\left(\frac{\text{Total mass of the product considered (kg)} + \text{Mass of packaging of the product considered (kg)}}{\text{Total mass of reference product (kg)} + \text{Mass of packaging of the reference product (kg)}} \right) \times \left(\frac{\text{Calorific value of the reference product (kW)}}{\text{Calorific value of the product considered (kW)}} \right)$
Installation (A5)	$\left(\frac{\text{Packaging mass of the product considered (kg)}}{\text{Packaging mass of the reference product (kg)}} \right) \times \left(\frac{\text{Calorific value of the reference product (kW)}}{\text{Calorific value of the product considered (kW)}} \right)$
Use - maintenance (B2)	1: environmental impacts of the reference product are considered as identical to any other power from the same range
Use (excluding B2)	$\left(\frac{C_{tot} \text{ of the product considered (kWh)}}{C_{tot} \text{ of the reference product (kWh)}} \right) \times \left(\frac{\text{Calorific value of the reference product (kW)}}{\text{Calorific value of the product considered (kW)}} \right)$
End of life (C1-C4)	$\left(\frac{\text{Mass of the product considered (kg)} - \text{Packaging mass of the product considered (kg)}}{\text{Mass of the reference product (kg)} - \text{Packaging mass of the reference product (kg)}} \right) \times \left(\frac{\text{Calorific value of the reference product (kW)}}{\text{Calorific value of the product considered (kW)}} \right)$

On the declared product scale, the above coefficients must be divided (except for the use – maintenance (B2)) by:

$$\left(\frac{\text{Calorific value of the reference product (kW)}}{\text{Calorific value of the product considered (kW)}} \right)$$

Extrapolation coefficients

The extrapolation coefficients are given for the environmental impact of the functional unit (i.e. provision of 1 kW for heating and domestic hot water production) and the equipment (declared product).

	Phases	ACCEA 2.25	ACCEA 2.29	ACCEA 2.35
DECLARED PRODUCT	Manufacturing	1	1	1.015
	Distribution	1	1	1.030
	Installation	1	1	1
	Use (excluding maintenance)	1	1.175	1.402
	Maintenance	1	1	1
	End of life	1	1	1.033
FUNCTIONAL UNIT	Manufacturing	1	0.800	0.650
	Distribution	1	0.800	0.659
	Installation	1	0.800	0.640
	Use (excluding maintenance)	1	0.94	0.898
	Maintenance	1	1	1
	End of life	1	0.800	0.661



CONTACT

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