


## Product Environmental Profile

Air/water Heat Pump

IDU2WH R32 Monobloc  
SYSMGR AURIGA WH + AURIGA M/T-A (BAXI Italy)  
and PLATINUM BC PLUS MONOBLOC 2 + UIMB MURAL (BAXI Spain)



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Independent verification of the declaration and data in compliance with ISO 14025: 2006 Internal: External: X	
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)	
PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500: 2022 The components of the present PEP may not be compared with components from any other program.	
Document complies with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"	

# General information

## Product category

Non-reversible monobloc heat pump device for heating only. Two units are present, one external and one internal, but without refrigerant connection.

## Declared unit

To produce heating thanks to a heat pump air/water of 5.70 kW\* according to the appropriate usage scenario and during the 17-year reference lifetime of the product.

\*The power must be adjusted according to the product in the range considered.

## Functional unit

To produce 1 kW of heating, according to the appropriate usage scenario defined in the EN 14825 standard and during the 17-year reference lifetime of the product.

# Product information

**Reference product:** SYSMGR Auriga WH (7843053) + Auriga 6 M-A (7794571)

## Technical characteristics of the reference product

$P_{\text{rated,h}}$ Design load for heating	5,70 kW (1)	Mass of refrigerant R32	1,4 kg
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<b>SCOP</b> Seasonal coefficient of performance	3,52 (1)	Weight without packaging*	112,9 kg
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(\*) The indicated weight corresponds to the weight of the product within the framework of the PEP and may present slight variations with the indicated weight in the technical documentation.

(1) According to EN 14825 - outside air temperature +7°C - water temperature 47/55°C

## Constituent materials

Metals		Plastics		Others	
Steel	49,4%	ABS	3,7%	Wood	9,7%
Copper	7,8%	Polyamide	1,2%	Cardboard	7,0%
Aluminium	5,1%	Polypropylene	1,0%	Electronic PCB	1,8%
Brass	2,9%	Rubber	0,7%	Paper	1,4%
Magnet	0,7%	Polyethylene	0,7%	Polyester fiber	1,3%
Other metals	0,9%	Other plastics	0,4%	Other materials	4,3%
<b>Total</b>	<b>66,8 %</b>		<b>7,7 %</b>		<b>25,5 %</b>

Total weight of the modelled product: **138,8 kg**, including 25,9 kg of packaging, excluding 5,9 kg of transport packaging (wood pallet).

# Products cover by this PEP

This PEP sheet covers all the products of the IDU2WH R32 Monobloc “SYSMGR AURIGA WH + AURIGA M/T-A (BAXI Italy)” range and “PLATINUM BC PLUS MONOBLOC 2 + UIMB MURAL (BAXI Spain)” range, in “Electric” technology.

## Electric technology

### BAXI Italy

Commercial name	Indoor unit + Outdoor unit
SYSMGR Auriga WH + Auriga 4 M-A	SYSMGR Auriga WH (7843053) + Auriga 4 M-A (7794318)
SYSMGR Auriga WH + Auriga 6 M-A - reference product	SYSMGR Auriga WH (7843053) + Auriga 6 M-A (7794571)
SYSMGR Auriga WH + Auriga 8 M-A	SYSMGR Auriga WH (7843053) + Auriga 8 M-A (7794572)
SYSMGR Auriga WH + Auriga 10 M-A	SYSMGR Auriga WH (7843053) + Auriga 10 M-A (7794573)
SYSMGR Auriga WH + Auriga 12 M-A	SYSMGR Auriga WH (7843053) + Auriga 12 M-A (7794574)
SYSMGR Auriga WH + Auriga 16 M-A	SYSMGR Auriga WH (7843053) + Auriga 16 M-A (7794577)
SYSMGR Auriga WH + Auriga 12 T-A	SYSMGR Auriga WH (7843053) + Auriga 12 T-A (7794578)
SYSMGR Auriga WH + Auriga 16 T-A	SYSMGR Auriga WH (7843053) + Auriga 16 T-A (7794581)

### BAXI Spain

Commercial name	Indoor unit + Outdoor unit
Platinum BC Plus Monobloc 2 - 4 MR + UIMB Mural (7865019)	UIMB MURAL (7843052) + Platinum BC Plus Monobloc 2 - 4 MR (7798747)
Platinum BC Plus Monobloc 2 - 6 MR + UIMB Mural (7865020)	UIMB MURAL (7843052) + Platinum BC Plus Monobloc 2 - 6 MR (7798748)
Platinum BC Plus Monobloc 2 - 8 MR + UIMB Mural (7865021)	UIMB MURAL (7843052) + Platinum BC Plus Monobloc 2 - 8 MR (7798749)
Platinum BC Plus Monobloc 2 - 10 MR + UIMB Mural (7865023)	UIMB MURAL (7843052) + Platinum BC Plus Monobloc 2 - 10 MR (7798750)
Platinum BC Plus Monobloc 2 - 12MR + UIMB Mural (7865024)	UIMB MURAL (7843052) + Platinum BC Plus Monobloc 2 - 12 MR (7798751)
Platinum BC Plus Monobloc 2 - 16MR + UIMB Mural (7865026)	UIMB MURAL (7843052) + Platinum BC Plus Monobloc 2 - 16 MR (7798752)
Platinum BC Plus Monobloc 2 - 12TR + UIMB Mural (7865025)	UIMB MURAL (7843052) + Platinum BC Plus Monobloc 2 - 12 TR (7798753)
Platinum BC Plus Monobloc 2 - 16TR + UIMB Mural (7865027)	UIMB MURAL (7843052) + Platinum BC Plus Monobloc 2 - 16 TR (7798754)

# Life Cycle Assessment methodology

## Methodology

The Product Environmental Profile (PEP) is based on Life Cycle Assessment in accordance with the rules published by PEP Ecopassport program (for more information on the program, consult the website [www.pep-ecopassport.org](http://www.pep-ecopassport.org)). All system boundaries are considered (manufacturing, distribution, installation, use, end of life) as well as benefits and costs beyond the life cycle.

The results were obtained using EIME V6.1.3 software with its “February 2023” database. The method EF3.0 is applied for this declaration.

This PEP is representative of a manufacturing in China (outdoor unit) and Italy (indoor unit), and a distribution, use and end-of-life in Europe.

## Manufacturing stage

<b>Raw materials and components</b>	The production of 99.4% of the reference product weight (materials, components and packaging), as well as the shaping and assembly processes of the components were taken into account.
<b>Raw materials and components packaging</b>	The production and end of life of the packaging used for the transport of materials and components from the supplier's production site to the manufacturing site of the reference product have been counted.
<b>Manufacturing waste</b>	<p>We have identified the scrap rates and associated end of life of certain parts. For the other parts, in accordance with the PSR, we considered a scrap rate of:</p> <ul style="list-style-type: none"><li>• <math>\frac{5\%}{(1+5\%)}</math> of the bare component for plastics and elastomers from injection processes;</li><li>• <math>\frac{30\%}{(1+30\%)}</math> of the bare component for all other materials and other shaping processes.</li></ul> <p>The end-of-life treatment of manufacturing scraps was modelled as follows: 100% waste incinerated without energy recovery. A transport distance of 100 km is applied for waste collection to the treatment centre, according to the PCR-ed4.</p>
<b>Product manufacturing</b>	<p>The modelling integrates the flows of manufacturing sites (energy of the production site and the emissions of refrigerant).</p> <ul style="list-style-type: none"><li>• Internal module is assembled in Bassano del Grappa in Italy</li><li>• External module is produced in China.</li></ul>
<b>Transport</b>	<p>The upstream transport of materials and components, and supplier packaging to the assembly site (according to 3 models: local, intra-continental and inter-continental transport). The downstream transport is taken into account only for the external module produced in China and brought to our last logistics platform in Europe.</p>

## Distribution stage

<b>Transport</b>	<p>The distribution stage includes transport of the packaged product by truck over a distance of 3500 km from the manufacturer's last logistics platforms in Europe to the distributor, then to the place of implementation. No reconditioning packaging was considered.</p>
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## Installation stage

<b>Accessory</b>	The installation phase includes a floor installation support and a concrete slab. For each of these accessories, we modelled material and production scrap, shaping process, packaging, end of life of scrap and transport to the place of implementation. No additional refrigerant charge was considered during the installation stage.			
<b>Packaging waste</b>	The disposal (evacuation and treatment) of the packaging of the reference product. For the treatment applied to packaging waste, we considered the dataset below, according to the PSR (European scenario):			
		Cardboard & Paper	Wood	Plastics
	Recycling	82%	31%	41%
	Energy recovery	9%	31%	37%
	Not recovered (100% buried)	9%	38%	22%

## Use stage

Electricity consumption is calculated as below:

$$C_{tot} = \frac{P_h}{SCOP * \left(1 + \frac{F_{regul}}{100}\right)} * t_{heating} * RLT$$

With:

### Electricity consumption

- $C_{tot}$  in kWh
- $P_h = P_{rated,h}$  in kW according to regulation n° 813/2013 (1)
- $SCOP$  = seasonal coefficient of performance for heating according to EN 14825 (1)
- $t_{heating}$  = 2066 hours, number of equivalent active mode hours of the device on active heating mode
- $F_{regul}$  = 4 (class VI) by default for the water heating application and 0 for the air heating application in accordance with the PSR.
- $RLT$  = 17 years, reference lifetime of the device

(1) According to EN 14825 - temperature external air +7°C - temperature water 47/55°C

The electrical energy model considered for **European** use is:

Electricity Mix; Production mix; Low voltage; EU-27 (reference year: 2018)

<b>Maintenance</b>	A biennial inspection, considering the travel of a technician over 100km, is modelled for the entire life of the product, which means 8 control visits.
<b>Refrigerant leaks</b>	The leak of R32 refrigerant into the air is considered; its recharge is not necessary.

## End of life stage

<b>Product end of life</b>	The Heat pump falls within the scope of the WEEE directive (2012/19/EU). The end of life must therefore be managed by a local EEE waste treatment sector. We used The Life Cycle Inventories (LCI) developed by ECOSYSTEM*. *ECOSYSTEM is the organization in charge of ensuring the extended producer responsibility for WEEE in France. According to Ecosystem, ESR data are also representative of the impacts for a <b>European perimeter</b>
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<b>Refrigerant end of life</b>	The refrigerant end of life follows the following scenario: 10% of fluid not collected, 90% of the fluid collected recovered for energy and 10% of the fluid collected incinerated without recovery.
<b>Transport</b>	The considered transport to the treatment centre is 1000 km for the refrigerant and 100 km for the product.

## Benefits and loads

<b>Loads</b>	Loads related to the use of recycled materials are considered.
<b>Benefits</b>	Only the benefits related to the recycling of the material (packaging at installation stage and product at the end-of-life stage) are considered using the LCI modules developed by ECOSYSTEM.

# Environmental impacts

## Environmental impacts at the declared unit, corresponding to the reference product

The PEP was drawn up under the assumption 1 kW of heating power being supplied. The real impact of the stages of the life cycle of a product installed in an actual situation is calculated by the user of the PEP by multiplying the impact concerned by the total heating capacity of 5.70 kW.

Impact indicators	Unit	Total A-C	Manufacturing A1-A3	Distribution A4	Installation A5	Use					End of life C1-C4	Benefits and loads D
						B1-B7	B1	B2	B6	B3-B5,B7		
<b>Mandatory indicators</b>												
Climate change - total (IPCC 2013)	kg CO2 eq.	8.01E+03	1.07E+03	3.26E+01	1.21E+02	6.55E+03	4.17E+01	2.77E+02	6.23E+03	0.00E+00	2.39E+02	-3.16E+02
Climate change - fossil fuels	kg CO2 eq.	7.97E+03	1.06E+03	3.26E+01	1.10E+02	6.54E+03	4.17E+01	2.77E+02	6.22E+03	0.00E+00	2.34E+02	-3.04E+02
Climate change - biogenics	kg CO2 eq.	3.83E+01	1.42E+01	0.00E+00	1.06E+01	8.31E+00	0.00E+00	0.00E+00	8.31E+00	0.00E+00	5.11E+00	-1.20E+01
Climate change - land use and land use transformation	kg CO2 eq.	2.82E-04	2.81E-04	0.00E+00	7.68E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ozone depletion (WMO 2014)	kg CFC-11 eq.	4.55E-04	1.88E-04	4.99E-08	6.95E-06	2.45E-04	0.00E+00	2.18E-04	2.66E-05	0.00E+00	1.47E-05	1.02E-04
Acidification (AP)	mol H+ eq.	4.83E+01	9.76E+00	2.06E-01	5.58E-01	3.67E+01	0.00E+00	1.18E+00	3.55E+01	0.00E+00	1.10E+00	-7.51E+00
Freshwater eutrophication	kg P eq.	2.73E-02	6.05E-03	1.22E-05	1.01E-03	1.71E-02	0.00E+00	3.09E-05	1.70E-02	0.00E+00	3.14E-03	-7.26E-01
Marine aquatic eutrophication	kg N eq.	6.31E+00	1.14E+00	9.65E-02	1.32E-01	4.42E+00	0.00E+00	3.85E-01	4.04E+00	0.00E+00	5.16E-01	-5.52E-01
Terrestrial eutrophication	mol N eq.	8.16E+01	1.24E+01	1.06E+00	1.40E+00	6.55E+01	0.00E+00	4.80E+00	6.06E+01	0.00E+00	1.30E+00	-5.66E+00
Photochemical ozone formation	kg NMVOC eq.	1.99E+01	3.95E+00	2.67E-01	3.75E-01	1.49E+01	0.00E+00	1.98E+00	1.30E+01	0.00E+00	3.87E-01	-1.61E+00
Abiotic resource depletion - metals and minerals	kg SB eq.	6.49E-02	6.41E-02	1.28E-06	4.27E-06	4.51E-04	0.00E+00	4.80E-08	4.51E-04	0.00E+00	3.44E-04	-3.41E-02
Abiotic resource depletion - fossils	MJ	2.01E+05	3.55E+04	4.54E+02	1.24E+03	1.62E+05	0.00E+00	3.38E+03	1.59E+05	0.00E+00	2.07E+03	1.45E+03
Water requirement	m3	3.36E+04	1.80E+03	1.24E-01	1.25E+01	2.34E+02	0.00E+00	1.39E+01	2.20E+02	0.00E+00	3.16E+04	-1.28E+05
<b>Optional indicators</b>												
Emission of fine particles	Disease occurrence	3.51E-04	5.94E-05	1.68E-06	3.84E-06	2.80E-04	0.00E+00	4.53E-06	2.76E-04	0.00E+00	6.42E-06	-2.83E-05
Ionizing radiation, human health	kg U235 eq.	2.33E+04	1.20E+04	7.92E-02	2.02E+03	9.26E+03	0.00E+00	1.21E+00	9.26E+03	0.00E+00	1.30E+01	8.45E+01
Ecotoxicity (freshwater)	CTUe	1.46E+05	3.71E+04	2.19E+01	2.24E+04	6.81E+04	1.82E-03	1.06E+03	6.71E+04	0.00E+00	1.86E+04	-6.09E+04
Human toxicity, carcinogenic effects	CTUh	3.84E-04	3.82E-04	5.72E-10	1.43E-06	7.51E-07	0.00E+00	2.47E-08	7.26E-07	0.00E+00	1.04E-07	-2.41E-05
Human toxicity, non-carcinogenic effects	CTUh	1.10E-04	6.40E-05	6.19E-08	5.78E-07	3.90E-05	4.29E-11	1.02E-05	2.88E-05	0.00E+00	6.72E-06	-7.93E-05
Impacts related to land use/soil quality	-	4.26E+02	2.50E+01	0.00E+00	3.74E+00	1.24E+02	0.00E+00	0.00E+00	1.24E+02	0.00E+00	2.73E+02	-1.95E+03

B1: Use; B2: Maintenance; B3: Repair; B4: Replacement; B5: Restoration; B6: Energy requirements; B7: Water requirements

## Environmental impacts at the declared unit, corresponding to the reference product

Impact indicators	Unit	Total A-C	Manufacturing A1-A3	Distribution A4	Installation A5	Use					End of life C1-C4	Benefits and loads D
						B1-B7	B1	B2	B6	B3-B5,B7		
<b>Resource use indicators</b>												
Total use of primary energy during the life cycle	MJ	2.33E+05	3.65E+04	4.54E+02	1.44E+03	1.92E+05	0.00E+00	3.38E+03	1.89E+05	0.00E+00	2.23E+03	5.51E+02
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	3.14E+04	5.45E+02	6.05E-01	1.86E+02	3.05E+04	0.00E+00	4.45E-02	3.05E+04	0.00E+00	1.61E+02	-9.02E+02
Use of renewable primary energy resources used as raw materials	MJ	5.18E+02	5.04E+02	0.00E+00	1.42E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	3.19E+04	1.05E+03	6.05E-01	2.00E+02	3.05E+04	0.00E+00	4.45E-02	3.05E+04	0.00E+00	1.61E+02	-9.02E+02
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	2.01E+05	3.50E+04	4.54E+02	1.24E+03	1.62E+05	0.00E+00	3.38E+03	1.59E+05	0.00E+00	2.07E+03	1.45E+03
Use of non-renewable primary energy resources used as raw materials	MJ	5.23E+02	5.22E+02	0.00E+00	6.11E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	2.01E+05	3.55E+04	4.54E+02	1.24E+03	1.62E+05	0.00E+00	3.38E+03	1.59E+05	0.00E+00	2.07E+03	1.45E+03
<b>Use of secondary materials, water and energy resources</b>												
Use of secondary materials	kg	2.79E+01	8.98E+00	0.00E+00	1.89E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of freshwater	m <sup>3</sup>	1.04E+03	4.19E+01	2.88E-03	2.93E-01	5.45E+00	0.00E+00	3.23E-01	5.13E+00	0.00E+00	9.88E+02	-3.16E+03
<b>Waste category indicators</b>												
Hazardous waste disposed	kg	2.60E+03	2.48E+03	0.00E+00	3.75E+00	1.17E+02	0.00E+00	3.78E-01	1.16E+02	0.00E+00	4.96E-02	6.81E+01
Non hazardous waste disposed	kg	1.37E+03	3.94E+02	1.14E+00	7.89E+01	8.96E+02	0.00E+00	5.01E-01	8.96E+02	0.00E+00	1.21E+00	-1.42E+01
Radioactive waste disposed	kg	5.11E-01	2.32E-01	8.13E-04	4.11E-02	2.37E-01	0.00E+00	4.97E-02	1.87E-01	0.00E+00	4.94E-05	-1.05E-02
<b>Output flow indicators</b>												
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	1.14E+02	3.23E+00	0.00E+00	6.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.05E+02	0.00E+00
Materials for energy recovery	kg	2.31E+01	1.98E+00	0.00E+00	5.57E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.56E+01	0.00E+00
Exported Energy	MJ	7.43E+00	2.54E+00	0.00E+00	4.89E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

B1: Use; B2: Maintenance; B3: Repair; B4: Replacement; B5: Restoration; B6: Energy requirements; B7: Water requirements

### Biogenic carbon content (according to the 0/0 assessment method)

- Biogenic carbon content of the product: 0,00E+00 kg C
- Biogenic carbon content of the associated packaging: 8,76E+00 kg C

## Environmental impacts per kW, corresponding to the functional unit

The impact of the product per kW of heating power supplied is calculated by dividing the reference product's impact concerned by the total heating capacity of 5.70 kW.

Impact indicators	Unit	Total A-C	Manufacturing A1-A3	Distribution A4	Installation A5	Use					End of life C1-C4	Benefits and loads D
						B1-B7	B1	B2	B6	B3-B5,B7		
<b>Mandatory indicators</b>												
Climate change - total (IPCC 2013)	kg CO2 eq.	1.41E+03	1.88E+02	5.71E+00	2.12E+01	1.15E+03	7.31E+00	4.87E+01	1.09E+03	0.00E+00	4.19E+01	-5.55E+01
Climate change - fossil fuels	kg CO2 eq.	1.40E+03	1.86E+02	5.71E+00	1.94E+01	1.15E+03	7.31E+00	4.87E+01	1.09E+03	0.00E+00	4.10E+01	-5.34E+01
Climate change - biogenics	kg CO2 eq.	6.71E+00	2.50E+00	0.00E+00	1.86E+00	1.46E+00	0.00E+00	0.00E+00	1.46E+00	0.00E+00	8.96E-01	-2.10E+00
Climate change - land use and land use transformation	kg CO2 eq.	4.94E-05	4.93E-05	0.00E+00	1.35E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ozone depletion (WMO 2014)	kg CFC-11 eq.	7.98E-05	3.30E-05	8.75E-09	1.22E-06	4.30E-05	0.00E+00	3.83E-05	4.67E-06	0.00E+00	2.58E-06	1.79E-05
Acidification (AP)	mol H+ eq.	8.48E+00	1.71E+00	3.61E-02	9.79E-02	6.44E+00	0.00E+00	2.06E-01	6.23E+00	0.00E+00	1.92E-01	-1.32E+00
Freshwater eutrophication	kg P eq.	4.79E-03	1.06E-03	2.14E-06	1.77E-04	3.00E-03	0.00E+00	5.42E-06	2.99E-03	0.00E+00	5.51E-04	-1.27E-01
Marine aquatic eutrophication	kg N eq.	1.11E+00	2.00E-01	1.69E-02	2.31E-02	7.76E-01	0.00E+00	6.75E-02	7.08E-01	0.00E+00	9.04E-02	-9.69E-02
Terrestrial eutrophication	mol N eq.	1.43E+01	2.17E+00	1.86E-01	2.45E-01	1.15E+01	0.00E+00	8.43E-01	1.06E+01	0.00E+00	2.28E-01	-9.92E-01
Photochemical ozone formation	kg NMVOC eq.	3.50E+00	6.94E-01	4.69E-02	6.58E-02	2.62E+00	0.00E+00	3.48E-01	2.27E+00	0.00E+00	6.79E-02	-2.82E-01
Abiotic resource depletion - metals and minerals	kg SB eq.	1.14E-02	1.12E-02	2.25E-07	7.49E-07	7.91E-05	0.00E+00	8.43E-09	7.91E-05	0.00E+00	6.04E-05	-5.98E-03
Abiotic resource depletion - fossils	MJ	3.53E+04	6.22E+03	7.96E+01	2.18E+02	2.84E+04	0.00E+00	5.92E+02	2.78E+04	0.00E+00	3.62E+02	2.55E+02
Water requirement	m3	5.90E+03	3.16E+02	2.17E-02	2.20E+00	4.11E+01	0.00E+00	2.43E+00	3.86E+01	0.00E+00	5.54E+03	-2.24E+04
<b>Optional indicators</b>												
Emission of fine particles	Disease occurrence	6.17E-05	1.04E-05	2.94E-07	6.74E-07	4.92E-05	0.00E+00	7.95E-07	4.84E-05	0.00E+00	1.13E-06	-4.97E-06
Ionizing radiation, human health	kg U235 eq.	4.08E+03	2.10E+03	1.39E-02	3.55E+02	1.62E+03	0.00E+00	2.12E-01	1.62E+03	0.00E+00	2.29E+00	1.48E+01
Ecotoxicity (freshwater)	CTUe	2.57E+04	6.51E+03	3.84E+00	3.93E+03	1.19E+04	3.19E-04	1.85E+02	1.18E+04	0.00E+00	3.26E+03	-1.07E+04
Human toxicity, carcinogenic effects	CTUh	6.73E-05	6.69E-05	1.00E-10	2.51E-07	1.32E-07	0.00E+00	4.34E-09	1.27E-07	0.00E+00	1.82E-08	-4.23E-06
Human toxicity, non-carcinogenic effects	CTUh	1.94E-05	1.12E-05	1.09E-08	1.01E-07	6.84E-06	7.53E-12	1.79E-06	5.05E-06	0.00E+00	1.18E-06	-1.39E-05
Impacts related to land use/soil quality	-	7.47E+01	4.39E+00	0.00E+00	6.57E-01	2.17E+01	0.00E+00	0.00E+00	2.17E+01	0.00E+00	4.79E+01	-3.42E+02

B1: Use; B2: Maintenance; B3: Repair; B4: Replacement; B5: Restoration; B6: Energy requirements; B7: Water requirements

## Environmental impacts per kW, corresponding to the functional unit

The PEP was drawn up under the assumption 1 kW of heating power being supplied. The real impact of the stages of the life cycle of a product installed in an actual situation is calculated by the user of the PEP by multiplying the impact concerned by the total heating capacity of 5.70 kW.

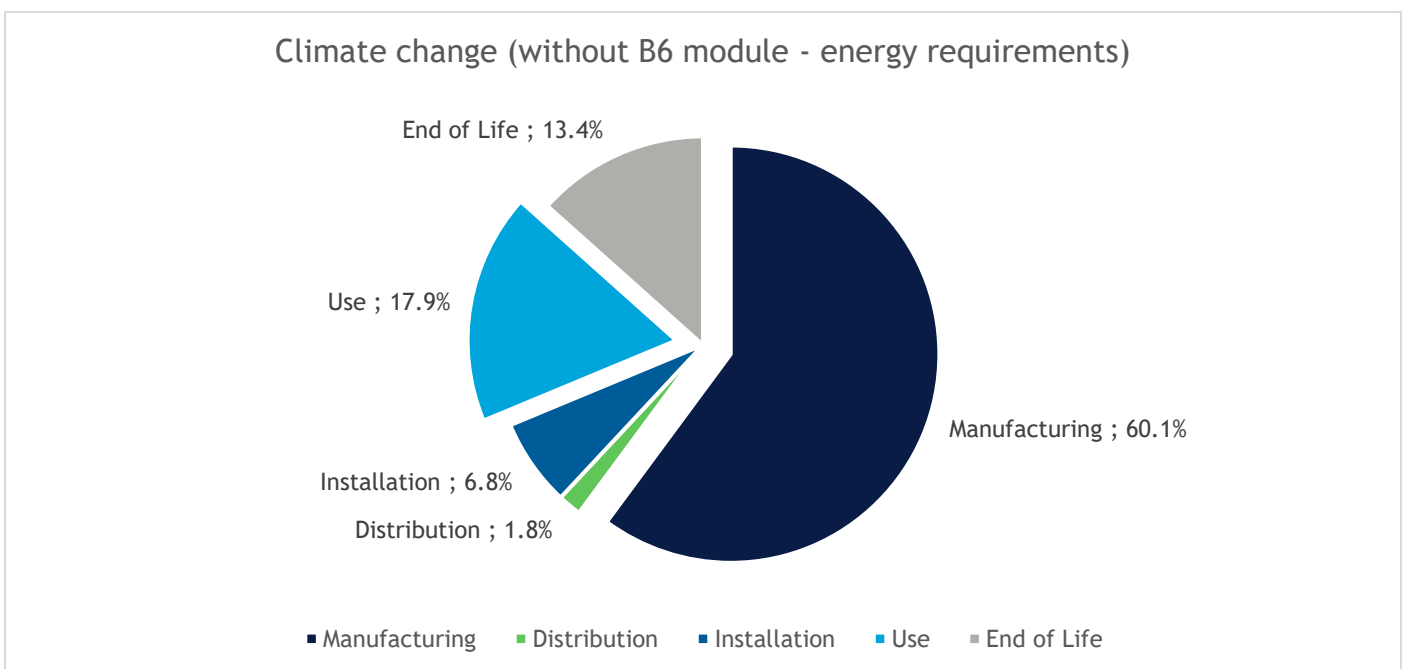
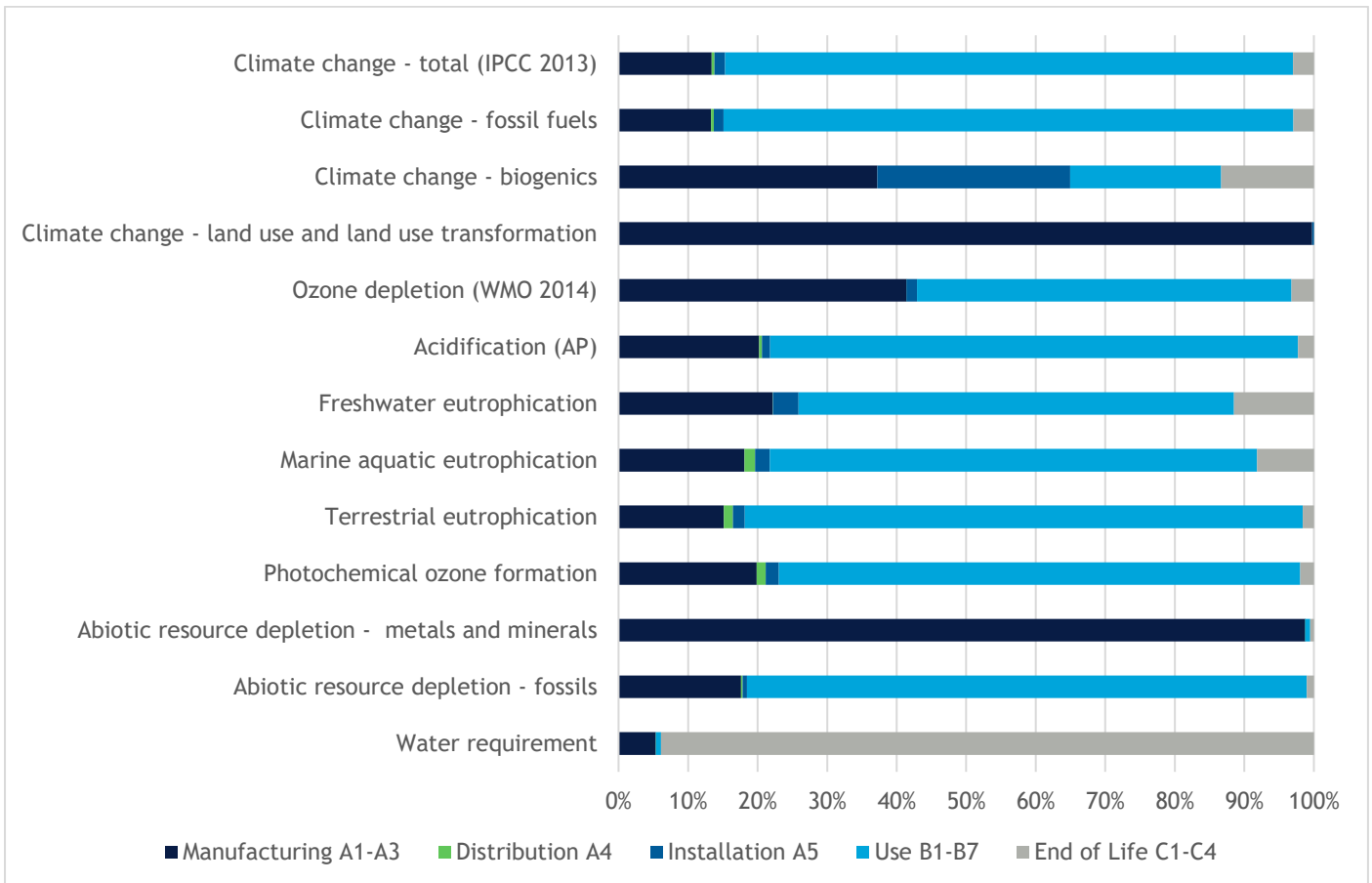
Impact indicators	Unit	Total A-C	Manufacturing A1-A3	Distribution A4	Installation A5	Use					End of life C1-C4	Benefits and loads D
						B1-B7	B1	B2	B6	B3-B5,B7		
<b>Resource use indicators</b>												
Total use of primary energy during the life cycle	MJ	4.09E+04	6.41E+03	7.97E+01	2.53E+02	3.38E+04	0.00E+00	5.92E+02	3.32E+04	0.00E+00	3.91E+02	9.66E+01
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	5.50E+03	9.57E+01	1.06E-01	3.26E+01	5.34E+03	0.00E+00	7.81E-03	5.34E+03	0.00E+00	2.82E+01	-1.58E+02
Use of renewable primary energy resources used as raw materials	MJ	9.09E+01	8.84E+01	0.00E+00	2.48E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	MJ	5.59E+03	1.84E+02	1.06E-01	3.51E+01	5.34E+03	0.00E+00	7.81E-03	5.34E+03	0.00E+00	2.82E+01	-1.58E+02
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	3.52E+04	6.13E+03	7.96E+01	2.18E+02	2.84E+04	0.00E+00	5.92E+02	2.78E+04	0.00E+00	3.62E+02	2.55E+02
Use of non-renewable primary energy resources used as raw materials	MJ	9.17E+01	9.16E+01	0.00E+00	1.07E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources	MJ	3.53E+04	6.22E+03	7.96E+01	2.18E+02	2.84E+04	0.00E+00	5.92E+02	2.78E+04	0.00E+00	3.62E+02	2.55E+02
<b>Use of secondary materials, water and energy resources</b>												
Use of secondary materials	kg	4.90E+00	1.57E+00	0.00E+00	3.32E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of freshwater	m3	1.82E+02	7.36E+00	5.05E-04	5.13E-02	9.57E-01	0.00E+00	5.67E-02	9.00E-01	0.00E+00	1.73E+02	-5.54E+02
<b>Waste category indicators</b>												
Hazardous waste disposed	kg	4.56E+02	4.35E+02	0.00E+00	6.58E-01	2.05E+01	0.00E+00	6.63E-02	2.04E+01	0.00E+00	8.71E-03	1.19E+01
Non hazardous waste disposed	kg	2.41E+02	6.90E+01	2.00E-01	1.38E+01	1.57E+02	0.00E+00	8.79E-02	1.57E+02	0.00E+00	2.12E-01	-2.49E+00
Radioactive waste disposed	kg	8.97E-02	4.07E-02	1.43E-04	7.20E-03	4.16E-02	0.00E+00	8.72E-03	3.29E-02	0.00E+00	8.66E-06	-1.84E-03
<b>Output flow indicators</b>												
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.01E+01	5.66E-01	0.00E+00	1.08E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E+01	0.00E+00
Materials for energy recovery	kg	4.06E+00	3.48E-01	0.00E+00	9.77E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.73E+00	0.00E+00
Exported Energy	MJ	1.30E+00	4.46E-01	0.00E+00	8.58E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

B1: Use; B2: Maintenance; B3: Repair; B4: Replacement; B5: Restoration; B6: Energy requirements; B7: Water requirements

### Biogenic carbon content (according to the 0/0 assessment method)

- Biogenic carbon content of the product: 0,00E+00 kg C
- Biogenic carbon content of the associated packaging: 1,54E+00 kg C

# Distribution of environmental impacts



# Extrapolation rules

## Calculation formula

At the declared unit, the environmental impacts for other covered references can be determined based on the formulas below and the data for each reference.

Phase	Extrapolation rules applied for the declared unit
Manufacturing	$\frac{\text{Mass of the product considered} + \text{Mass of packaging of the product considered (kg)}}{\text{Mass of the reference product} + \text{Mass of packaging of the reference product (kg)}}$
Distribution	$\frac{\text{Mass of the product considered} + \text{Mass of packaging of the product considered (kg)}}{\text{Mass of the reference product} + \text{Mass of packaging of the reference product (kg)}}$
Installation	$\frac{\text{Mass of packaging of the product considered (kg)}}{\text{Mass of packaging of the reference product (kg)}}$
Use - Emissions	1
Use - Maintenance	1
Use - Energy consumption	$\frac{\text{Total energy consumption of the product considered (kWh)}}{\text{Total energy consumption of the reference product (kWh)}}$
Use - Water consumption	1
End of life	$\frac{\text{Mass of the product considered, excluding packaging (kg)}}{\text{Mass of the reference product, excluding packaging (kg)}}$
Benefits and loads	$\frac{\text{Mass of the product considered} + \text{Mass of packaging of the product considered (kg)}}{\text{Mass of the reference product} + \text{Mass of packaging of the reference product (kg)}}$

To obtain the coefficients at the functional unit level, the coefficients at the declared unit level must be multiplied by the ratio between the power of the reference product and the power of the product considered.

$$\text{Extrapolation coefficient at the declared unit} \times \left( \frac{\text{Power of the reference product}}{\text{Power of the product considered}} \right)$$

For an air/water heat pump for heating only, the power of the product corresponds to  $P_h = P_{rated,h}$  expressed in kW.

## Input data to calculate the environmental impacts of other products in the range

### Electric technology

SYSMGR Auriga WH + Auriga...	Mass <sup>(1)</sup> (kg)		Capacity <sup>(2)</sup> (kW)	Total electricity consumption (kWh)
	Product (without packaging)	Packaging		
4 M-A	115,40	24,20	4,40	44892
6 M-A	115,40	24,20	5,70	54686
8 M-A	135,20	24,40	6,60	66336
10 M-A	135,20	24,40	7,67	74219
12 M-A	158,70	24,40	11,58	113354
16 M-A	158,70	24,40	13,02	128944
12 T-A	175,70	24,40	11,58	113354
16 T-A	175,70	24,40	13,02	128944

UIMB MURAL + Platinum BC Plus Monobloc 2 - ...	Mass <sup>(1)</sup> (kg)		Capacity <sup>(2)</sup> (kW)	Total electricity consumption (kWh)
	Product (without packaging)	Packaging		
4 MR	115,40	24,20	4,40	44892
6 MR	115,40	24,20	5,70	54686
8 MR	135,20	24,40	6,60	66336
10 MR	135,20	24,40	7,67	74219
12 MR	158,70	24,40	11,58	113354
16 MR	158,70	24,40	13,02	128944
12 TR	175,70	24,40	11,58	113354
16 TR	175,70	24,40	13,02	128944

(1) The indicated weight corresponds to the weight of the product within the framework of the PEP and may present slight variations with the indicated weight in the technical documentation.

(2) Capacity:  $P_{rated,h}$

### Extrapolation coefficients, at declared unit

For each stage of the life cycle, the environmental impacts of the product concerned are calculated by multiplying the impacts of the declaration corresponding to the reference product by the extrapolation coefficient. The "Total" column should be calculated by adding the environmental impacts of each stage of the life cycle.

### Electric technology

SYSMGR Auriga WH + Auriga...	4 M-A	6 M-A	8 M-A	10 M-A	12 M-A	16 M-A	12 T-A	16 T-A
Manufacturing (A1-A3)	1,000	1,000	1,143	1,143	1,312	1,312	1,433	1,433
Distribution (A4)	1,000	1,000	1,143	1,143	1,312	1,312	1,433	1,433
Installation (A5)	1,000	1,000	1,008	1,008	1,008	1,008	1,008	1,008
Use - Emissions (B1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

Use - Maintenance (B2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Use - Energy consumption (B6)	0,821	1,000	1,213	1,357	2,073	2,358	2,073	2,358
Use - Water consumption (B7)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
End of life (C1-C4)	1,000	1,000	1,172	1,172	1,375	1,375	1,523	1,523
Benefits and loads (D)	1,000	1,000	1,143	1,143	1,312	1,312	1,433	1,433

UIMB MURAL + Platinum BC Plus Monobloc 2 - ...	4 MR	6 MR	8 MR	10 MR	12 MR	16 MR	12 TR	16 TR
Manufacturing (A1-A3)	1,000	1,000	1,143	1,143	1,312	1,312	1,433	1,433
Distribution (A4)	1,000	1,000	1,143	1,143	1,312	1,312	1,433	1,433
Installation (A5)	1,000	1,000	1,008	1,008	1,008	1,008	1,008	1,008
Use - Emissions (B1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Use - Maintenance (B2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Use - Energy consumption (B6)	0,821	1,000	1,213	1,357	2,073	2,358	2,073	2,358
Use - Water consumption (B7)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
End of life (C1-C4)	1,000	1,000	1,172	1,172	1,375	1,375	1,523	1,523
Benefits and loads (D)	1,000	1,000	1,143	1,143	1,312	1,312	1,433	1,433

## Further information

For any other additional information on the PEP, please contact us at [PEP-RsB@BDRThermea.com](mailto:PEP-RsB@BDRThermea.com).