



PRODUCT ENVIRONMENTAL PROFILE



30KAV-ZE

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1. General Information

1.1 - Product description

Product family

Liquid chiller

Technical description

AquaForce™ Vision 30KAV-ZE liquid chillers with Greenspeed™ Intelligence are the premium solution for commercial and industrial applications where installers, consultants and building owners require superior reliability and optimal performances, especially at part load.

The 30KAV-ZE units are designed to exceed European Ecodesign directive requirements in terms of energy efficiency, versatility and operating sound levels. This result is achieved through the optimised combination of proven best-in-class technologies that include:

- The second generation of high-efficiency variable-speed twin screw compressors with built in volume index (Vi) control valve for optimal full and part load performance and Integrated Resonator Array (IRA) for low sound operation;
- The sixth generation of Carrier Flying Bird™ fans with AC or EC motor depending on options;
- Carrier flooded shell-and-tube evaporators with new copper tubes for low pressure drops;
- The third generation of "W" profile Carrier Novation™ microchannel heat exchangers with optional Enviro-Shield coatings;
- Carrier Smart View® control with a colour touch screen user interface that includes 10 languages and new smart energy monitoring function. - R1234-ZE refrigerant with a very low GWP.

Category

Thermodynamic generators with electric compression for room cooling.

Reference product

The most representative product in the studied range is the 30KAV-ZE 450.

1- .2 Functional unit

Producing 1 kW of cooling, based on the appropriate usage scenario defined in standard EN 14825 and throughout the product's reference service life (RSL).

The PEP was created using a cooling capacity value of 1 kW. The actual impact of the life cycle stages of the product when installed in a real-life situation should be calculated by the user of the PEP by multiplying the theoretical impact by the nominal cooling capacity in kW.

2. Environmental information

2.1 - Life cycle analysis methodology

Production

The Life Cycle Analysis on which this Product Environmental Profile (PEP) is based was conducted with respect to the criteria imposed by PCR-ed3-FR-2015 04 02 and PSR-0013-ed1.-FR-2018 04 06 of the PEP ecopassport® programme

The environmental analysis was conducted for the whole of the following life cycle: production, distribution, installation, use and end of life.

Energy model

The origin of the electricity consumed by the production site is 100% hydraulic.

The following environmental declaration conforms to the cut rule that stipulates a precision of +/- 5% on the mass of the modelled product.

For transport: if the origin of the components is known, the precise values are used. Otherwise, the unfavourable assumption indicated in the general rules (PCR) is used. The 30KAV-ZE product family is designed at a CARRIER site with ISO 14001 and ISO 50001 certification.

Distribution

Energy model

No energy resources are used at this stage, since the transport models already include fuel.

Transportation from the production plant to the installation site is defined based on the product order book. The distribution scenario (destinations) is provided in the description of each product.

Installation

Energy model

No energy resources are used at this stage, since the transport models already include fuel.

Installation operations are required for the products in this range; their flow and material consumption has been taken into account.

Processing of the packaging and connection to the hydraulic system are taken into account at this stage. The refrigerant is charged during production.

Use

Energy model

The standard scenario used to calculate the environmental impacts related to consumption of the product is defined in regulation no. 2016/2281. According to the NF EN 14825 standard, for a comfort application, the seasonal performance (SEER – Seasonal Energy Efficiency Ratio) of the liquid chiller is characterised by taking into account the operation time according to the load rate of the product after a typical cooling season in Europe. An electric mix is used, this represents the customer countries as a proportion of the sales volumes. This scenario is specific to each product range and indicated in the "Sales scenario" section. The usage phase also takes into account the maintenance operations. The mandatory site inspections are scheduled annually. Components with a shorter service life than the product must be replaced, which means the environmental impact of production, distribution and processing of these maintenance components must be taken into account. Refrigerant leaks resulting in recharging, production, transport or processing are taken into account.

End of life

The 30KAV-ZE range contains components (PCBs, LCD screen, batteries) that must be separated from the waste flow to optimise end of life processing. They are processed using the specific Eco'DEEEE method.

CARRIER partners the Eco-systèmes pro collection organisation, which dismantles our machines at end of life.

Energy model

No energy resources are used at this stage, since the transport models already include fuel.

3. 30KAV-ZE 350

3.1 - Product description

In accordance with the documents that provide the framework for the life cycle analysis, the reference service life (RSL) was set on the basis of the target customers.

The environmental indicators are normalised to the functional unit by dividing by the machine capacity.

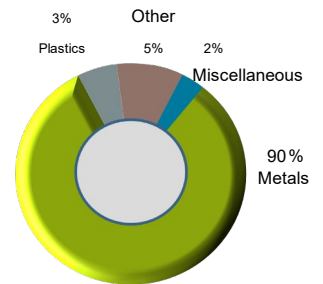
Capacity in heating mode:- SCOP: - Reference Service Life: 22 years
 Capacity in cooling mode: 372.00 kW SEER: 4.99 Customer type: Residential sector
 Fluid emission level: 2.00% of the total load/year collective housing/service sector
 Fluid type: R1234-ZE (GWP = 7 tCO₂eq)

3.2 - Component materials

Actual mass of the unit: 4782.00 kg
 Total modelled mass: 4640.66 kg, i.e. a total of 97.04% of the total mass including the product, its packaging and the additional components supplied with the reference product.

PEP material category	Material	Mass (kg)	Percentage
Metals	steel	1800.97	38.8%
Metals	cast iron	1487.30	32.0%
Metals	copper	331.12	7.1%
Metals	aluminium	303.56	6.5%
Metals	35% recycled steel	199.02	4.3%
Metals	ferrite magnet	56.23	1.2%
Miscellaneous	Miscellaneous	70.00	1.5%
Other	Refrigerant	99.00	2.1%
Other	solid wood, for pallets	66.31	1.4%
Other	lubricating oil	49.32	1.1%
Other	fibreglass	15.68	0.3%
Plastics	flexible polyurethane foam	69.00	1.5%
Plastics	polyamide 6.6 resin (PA6.6)	40.05	0.9%
Plastics	polypropylene (PP)	24.41	0.5%
Plastics	polyurethane glue	14.49	0.3%
Plastics	polybutylene terephthalate (PBT)	14.20	0.3%
Total		4640.66	100.0%

- Metals** : Steel - 35% recycled steel - Cast iron - Copper - Aluminium - Ferrite magnet
- Other** : Solid wood for pallets - Raw materials - Lubricating oil - Fibreglass - Refrigerant
- Plastics** : Flexible polyurethane foam - Polyamide 6.6 resin (PA6.6)
 - Polypropylene (PP) - Polyurethane glue - Polybutylene terephthalate (PBT)
- Miscellaneous** : Miscellaneous



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3.3 - Sales scenario

Sales of the 30KAV-ZE 350 product are distributed as follows:

Country name	%
Europe	100.00%

This distribution affects the distance travelled during the distribution phase and the electric mix used during the usage phase.

3.4 - Recyclability rate

% Recyclable materials	88.1%
% Energy recovery	0.5%
% Residual waste	11.3%

The products' recyclability potential was evaluated using the "Eco'DEEE method for calculating recyclability and recovery".

(Version V1, 20 Sep. 2008 presented to ADEME [French environment and energy management agency]).



■ % Recyclable materials ■ % Energy recovery ■ % Residual waste

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3.5 - Environmental impacts

A life cycle analysis identifies a product's potential environmental impacts. CARRIER decided to conduct an in-depth analysis of each of its products to obtain accurate results.

Environmental impacts per kW corresponding to the functional unit

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	2.4908E+03	9.4519E+01	2.6717E+00	3.6830E-02	2.3569E+03	3.6688E+01	
2	3.6665E-03	2.7516E-03	5.4133E-09	7.8211E-11	9.1486E-04	3.4082E-09	
3	1.2257E+01	4.3249E-01	1.2006E-02	1.6523E-04	1.1812E+01	6.5087E-04	
4	5.0478E-01	5.8885E-02	2.7589E-03	3.7973E-05	4.4294E-01	1.6117E-04	
5	5.9092E-01	3.1722E-02	8.5309E-04	1.1756E-05	5.5829E-01	4.6152E-05	
6	5.5481E-03	5.4512E-03	1.0694E-07	1.4732E-09	9.6761E-05	5.6081E-09	
7	1.6769E+04	6.3652E+02	3.7543E+01	5.1705E-01	1.6092E+04	1.9990E+00	
8	7.2291E+04	6.0646E+03	4.3945E+02	6.0531E+00	6.5758E+04	2.3022E+01	
9	9.2028E+04	1.4975E+04	1.0954E+02	1.5154E+00	7.6935E+04	6.3586E+00	
10	2.3591E+03	9.4893E+01	5.0354E-02	6.9358E-04	2.2642E+03	2.9362E-03	
11	2.0483E+00	2.0483E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	2.3612E+03	9.6941E+01	5.0354E-02	6.9358E-04	2.2642E+03	2.9362E-03	
13	3.0480E+04	1.0588E+03	3.7733E+01	5.2005E-01	2.9381E+04	2.0234E+00	
14	3.4072E+01	3.1543E+01	0.0000E+00	0.0000E+00	2.5293E+00	0.0000E+00	
15	3.0514E+04	1.0904E+03	3.7733E+01	5.2005E-01	2.9383E+04	2.0234E+00	
16	2.1681E+00	2.1647E+00	0.0000E+00	0.0000E+00	3.3871E-03	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	8.5293E+00	4.4503E+00	2.3915E-04	2.2658E-04	4.0788E+00	-2.7080E-04	
20	2.6979E+02	2.6734E+02	0.0000E+00	5.1734E-06	2.3750E+00	7.0429E-02	
21	5.8818E+03	3.9418E+01	9.4945E-02	1.3562E-03	5.8423E+03	7.8599E-03	
22	4.7873E+00	2.4902E-02	6.7623E-05	9.3622E-07	4.7623E+00	5.3277E-06	
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
24	6.0215E-06	6.0215E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
25	6.9890E-09	6.9890E-09	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
27	3.2876E+04	1.1873E+03	3.7784E+01	5.2074E-01	3.1648E+04	2.0263E+00	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	7.9495E+02	7.9972E-02	0.0000E+00	8.5566E-02	0.0000E+00	1.5618E+03	0.0000E+00
2	5.3544E-04	1.6117E-10	0.0000E+00	1.6953E-08	0.0000E+00	3.7941E-04	0.0000E+00
3	5.9946E-04	3.6608E-04	0.0000E+00	2.2041E-04	0.0000E+00	1.1811E+01	0.0000E+00
4	1.5743E-04	8.4722E-05	0.0000E+00	5.3758E-05	0.0000E+00	4.4273E-01	0.0000E+00
5	3.0614E-05	2.6708E-05	0.0000E+00	2.6680E-05	0.0000E+00	5.5823E-01	0.0000E+00
6	3.2889E-08	3.1838E-09	0.0000E+00	2.5581E-05	0.0000E+00	7.1147E-05	0.0000E+00
7	2.4009E+00	2.6649E-01	0.0000E+00	0.0000E+00	0.0000E+00	2.2013E+04	0.0000E+00
8	2.1796E+02	1.3083E+01	0.0000E+00	5.2860E+00	0.0000E+00	6.5535E+04	0.0000E+00
9	9.8507E+03	3.8361E+00	0.0000E+00	1.0292E+02	0.0000E+00	6.6982E+04	0.0000E+00
10	3.9214E-04	1.4991E-03	0.0000E+00	9.9807E-02	0.0000E+00	2.2641E+03	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	3.9214E-04	1.4991E-03	0.0000E+00	9.9807E-02	0.0000E+00	2.2641E+03	0.0000E+00
13	2.1855E+00	1.1234E+00	0.0000E+00	1.3122E+00	0.0000E+00	2.9377E+04	0.0000E+00
14	2.5290E+00	0.0000E+00	0.0000E+00	2.6129E-04	0.0000E+00	0.0000E+00	0.0000E+00
15	4.7145E+00	1.1234E+00	0.0000E+00	1.3125E+00	0.0000E+00	2.9377E+04	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	3.3871E-03	0.0000E+00	0.0000E+00	0.0000E+00

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17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	1.2217E-03	7.1202E-06	0.0000E+00	3.9210E-03	0.0000E+00	4.0737E+00	0.0000E+00
20	1.2430E-02	0.0000E+00	0.0000E+00	2.3625E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	1.5414E-01	2.8267E-03	0.0000E+00	5.5856E-02	0.0000E+00	5.8421E+03	0.0000E+00
22	1.0286E-05	2.0133E-06	0.0000E+00	4.6568E-05	0.0000E+00	4.7622E+00	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	4.7149E+00	1.1249E+00	0.0000E+00	1.4123E+00	0.0000E+00	3.1641E+04	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact. To obtain the results that correspond to your product, please contact your Carrier representative.

Environmental impacts for a piece of equipment corresponding to the product reference (Actual product)

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	7.9800E+05	2.3700E+04	8.9900E+02	1.1400E+01	7.7300E+05	3.3600E+02	
2	2.0500E-01	1.7600E-02	1.7400E-06	2.6300E-08	1.8800E-01	4.100E-05	
3	5.9700E+03	1.0800E+02	9.8300E+00	2.2800E-02	5.8500E+03	6.0700E-01	
4	2.3800E+02	1.6800E+01	1.3600E+00	6.0600E-03	2.1900E+02	1.5800E-1	
5	2.8600E+02	8.6900E+00	5.5100E-01	1.9700E-03	2.7600E+02	9.2400E-02	
6	1.6300E+00	1.6000E+00	3.5000E-05	1.2500E-07	3.5200E-02	7.1000E-06	
7	8.1800E+06	1.9700E+05	1.2300E+04	6.8600E+01	7.9600E+06	3.2800E+03	
8	3.4100E+07	1.4500E+06	1.4400E+05	7.9800E+02	3.2400E+07	2.6900E+04	
9	3.7800E+07	4.5000E+06	6.0200E+04	2.6600E+02	3.3200E+07	4.1100E+04	
10	8.7497E+05	3.2680E+04	1.8732E+01	2.5801E-01	8.4227E+05	1.0923E+00	
11	6.8185E+02	6.8185E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	8.7565E+05	3.3362E+04	1.8732E+01	2.5801E-01	8.4227E+05	1.0923E+00	
13	1.1267E+07	3.2211E+05	1.4037E+04	1.9346E+02	1.0930E+07	7.5269E+02	
14	7.3914E+03	6.4505E+03	0.0000E+00	0.0000E+00	9.4090E+02	0.0000E+00	
15	1.1275E+07	3.2856E+05	1.4037E+04	1.9346E+02	1.0931E+07	7.5269E+02	
16	8.0654E+02	8.0528E+02	0.0000E+00	0.0000E+00	1.2600E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	3.1171E+03	1.5997E+03	8.8966E-02	8.4288E-02	1.5173E+03	-1.0074E-01	
20	9.8753E+04	9.7843E+04	0.0000E+00	1.9245E-03	8.8349E+02	2.6200E+01	
21	2.1809E+06	7.5735E+03	3.5320E+01	5.0449E-01	2.1733E+06	2.9239E+00	
22	1.7755E+03	3.8524E+00	2.5156E-02	3.4827E-04	1.7716E+03	1.9819E-03	
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
24	2.2400E-03	2.2400E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
25	2.5999E-06	2.5999E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
27	1.2150E+07	3.6192E+05	1.4056E+04	1.9372E+02	1.1773E+07	7.5379E+02	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	2.9572E+05	2.9750E+01	0.0000E+00	3.1831E+01	0.0000E+00	5.8100E+05	0.0000E+00
2	1.9918E-01	5.9954E-08	0.0000E+00	6.3067E-06	0.0000E+00	1.4114E-01	0.0000E+00
3	2.2300E-01	1.3618E-01	0.0000E+00	8.1991E-02	0.0000E+00	4.3936E+03	0.0000E+00
4	5.8564E-02	3.1517E-02	0.0000E+00	1.9998E-02	0.0000E+00	1.6470E+02	0.0000E+00
5	1.1388E-02	9.9353E-03	0.0000E+00	9.9249E-03	0.0000E+00	2.0766E+02	0.0000E+00
6	1.2235E-05	1.1844E-06	0.0000E+00	9.5161E-03	0.0000E+00	2.6467E-02	0.0000E+00

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7	2.4009E+00	2.6649E-01	0.0000E+00	0.0000E+00	0.0000E+00	2.2013E+04	0.0000E+00
8	8.1083E+04	4.8670E+03	0.0000E+00	1.9664E+03	0.0000E+00	2.4379E+07	0.0000E+00
9	3.6645E+06	1.4270E+03	0.0000E+00	3.8286E+04	0.0000E+00	2.4917E+07	0.0000E+00
10	1.4588E-01	5.5768E-01	0.0000E+00	3.7128E+01	0.0000E+00	8.4223E+05	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	1.4588E-01	5.5768E-01	0.0000E+00	3.7128E+01	0.0000E+00	8.4223E+05	0.0000E+00
13	8.1299E+02	4.1791E+02	0.0000E+00	4.8814E+02	0.0000E+00	1.0928E+07	0.0000E+00
14	9.4080E+02	0.0000E+00	0.0000E+00	9.7200E-02	0.0000E+00	0.0000E+00	0.0000E+00
15	1.7538E+03	4.1791E+02	0.0000E+00	4.8824E+02	0.0000E+00	1.0928E+07	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	1.2600E+00	0.0000E+00	0.0000E+00	0.0000E+00
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	4.5448E-01	2.6487E-03	0.0000E+00	1.4586E+00	0.0000E+00	1.5154E+03	0.0000E+00
20	4.6239E+00	0.0000E+00	0.0000E+00	8.7887E+02	0.0000E+00	0.0000E+00	0.0000E+00
21	5.7342E+01	1.0515E+00	0.0000E+00	2.0778E+01	0.0000E+00	2.1733E+06	0.0000E+00
22	3.8265E-03	7.4894E-04	0.0000E+00	1.7323E-02	0.0000E+00	1.7716E+03	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	1.7539E+03	4.1847E+02	0.0000E+00	5.2537E+02	0.0000E+00	1.1771E+07	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact. To obtain the results that correspond to your product, please contact your Carrier representative.

4. 30KAV-ZE400

4.1 - Product description

In accordance with the documents that provide the framework for the life cycle analysis, the reference service life (RSL) was set on the basis of the target customers.

The environmental indicators are normalised to the functional unit by dividing by the machine capacity.

Capacity in heating mode:	-	SCOP:	-	Reference Service Life:	22 years
Capacity in cooling mode:	458 kW	SEER:	4.99	Customer type:	Residential sector
Fluid emission level:	2.00% of the total load/year				collective housing/service sector
Fluid type:	R1234-ZE (GWP = 7 tCO ₂ eq)				

4.2 - Component materials

Actual mass of the unit: 4796.00 kg

Total modelled mass: 4650.14 kg, i.e. a total of 96.96% of the total mass including the product, its packaging and the additional components supplied with the reference product.

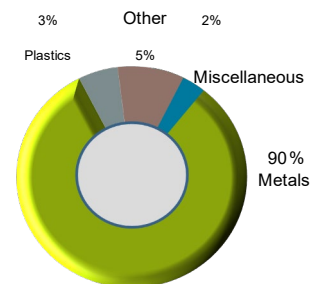
PEP material category	Material	Mass (kg)	Percentage
Metals	steel	1799.37	38.7%
Metals	cast iron	1487.30	32.0%
Metals	copper	341.18	7.3%
Metals	aluminium	303.56	6.5%
Metals	35% recycled steel	199.02	4.3%
Metals	ferrite magnet	56.23	1.2%
Miscellaneous	Miscellaneous	70.00	1.5%
Other	Refrigerant	101.00	2.2%
Other	solid wood, for pallets	66.31	1.4%
Other	lubricating oil	48.34	1.0%
Other	fibreglass	15.68	0.3%
Plastics	flexible polyurethane foam	69.00	1.5%
Plastics	polyamide resin 6.6 (PA6.6)	40.05	0.9%
Plastics	polypropylene (PP)	24.41	0.5%
Plastics	polyurethane glue	14.49	0.3%
Plastics	polybutylene terephthalate (PBT)	14.20	0.3%
Total		4650.14	100.0%

Metals : Steel - Cast iron - Copper - Aluminium - 35% recycled steel - Ferrite magnet

Other : Solid wood for pallets - Raw materials - Lubricating oil - Fibreglass - Refrigerant

Plastics : Flexible polyurethane foam - Polyamide 6.6 resin (PA6.6)
- Polypropylene (PP) - Polyurethane glue - Polybutylene terephthalate (PBT)

Miscellaneous : Miscellaneous



4. 30KAV-ZE 400

4.3 - Sales scenario

Sales of the 30KAV-ZE 400 product are distributed as follows:

Country name	%
Europe	100.00%

This distribution affects the distance travelled during the distribution phase and the electric mix used during the usage phase.

4.4 - Recyclability rate

% Recyclable materials	88.30%
% Energy recovery	0.30%
% Residual waste	11.7%

The products' recyclability potential was evaluated using the "Eco'DEEE method for calculating recyclability and recovery".

(Version V1, 20 Sep. 2008 presented to ADEME [French environment and energy management agency]).



■ % Recyclable materials ■ % Energy recovery ■ % Residual waste

4. 30KAV-ZE400

4.5 - Environmental impacts

A life cycle analysis identifies a product's potential environmental impacts. CARRIER decided to conduct an in-depth analysis of each of its products to obtain accurate results.

Environmental impacts per kW corresponding to the functional unit

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	2.0345E+03	6.5588E+01	1.1099E+00	5.5379E-02	1.9436E+03	2.4167E+01	
2	1.9427E-03	1.1992E-03	2.1481E-09	-3.1497E-10	7.4338E-04	8.3316E-08	
3	5.3944E+00	1.5214E-01	1.2671E-02	2.9341E-05	5.2282E+00	1.3504E-03	
4	4.7955E-01	2.6969E-02	1.7133E-03	2.0924E-05	4.5050E-01	3.4527E-04	
5	3.6426E-01	1.8614E-02	7.0417E-04	4.6236E-06	3.4472E-01	2.1739E-04	
6	3.1073E-03	2.9875E-03	4.3192E-08	-2.2639E-08	1.1978E-04	1.6400E-08	
7	2.2556E+04	5.1805E+02	1.5163E+01	9.9310E-02	2.2016E+04	7.3877E+00	
8	9.0871E+04	2.8539E+03	1.7749E+02	1.5433E+00	8.7782E+04	5.6190E+01	
9	1.0704E+05	1.2481E+04	7.6436E+01	8.0856E-01	9.3489E+04	9.8822E+02	
10	3.5833E+03	6.4453E+01	2.0105E-02	-6.0204E-03	3.5188E+03	1.0617E-02	
11	8.3975E+00	8.3975E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	3.5917E+03	7.2850E+01	2.0105E-02	-6.0204E-03	3.5188E+03	1.0617E-02	
13	3.3539E+04	1.3205E+03	1.5238E+01	8.7771E-02	3.2193E+04	1.0603E+01	
14	3.2847E+01	3.0591E+01	0.0000E+00	0.0000E+00	2.2560E+00	0.0000E+00	
15	3.3573E+04	1.3511E+03	1.5238E+01	8.7771E-02	3.2196E+04	1.0603E+01	
16	1.3993E+00	1.3993E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	4.9307E+03	4.9158E-01	9.5407E-05	4.8630E-04	4.9302E+03	1.0187E-03	
20	2.2990E+02	2.0615E+02	0.0000E+00	-7.3278E-05	1.1114E+01	1.2636E+01	
21	4.0993E+03	3.0333E+01	3.7916E-02	3.4740E-02	4.0689E+03	3.8480E-02	
22	4.1276E+00	2.0907E-02	2.6832E-05	-4.0554E-06	4.1066E+00	7.2412E-05	
23	9.1368E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	9.1368E-02	
24	1.0866E+01	3.4879E-01	0.0000E+00	3.9667E-01	0.0000E+00	1.0121E+01	
25	6.4280E-01	5.7897E-01	0.0000E+00	5.8240E-02	0.0000E+00	5.5921E-03	
26	5.5902E-03	0.0000E+00	0.0000E+00	5.5902E-03	0.0000E+00	0.0000E+00	
27	3.7164E+04	1.4239E+03	1.5258E+01	8.1751E-02	3.5714E+04	1.0614E+01	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	7.8385E+01	1.9067E-02	0.0000E+00	0.0000E+00	0.0000E+00	1.8652E+03	0.0000E+00
2	4.7763E-04	3.8425E-11	0.0000E+00	0.0000E+00	0.0000E+00	2.6575E-04	0.0000E+00
3	5.3058E-04	8.7279E-05	0.0000E+00	0.0000E+00	0.0000E+00	5.2275E+00	0.0000E+00
4	1.3947E-04	2.0199E-05	0.0000E+00	0.0000E+00	0.0000E+00	4.5034E-01	0.0000E+00
5	2.7006E-05	6.3676E-06	0.0000E+00	0.0000E+00	0.0000E+00	3.4468E-01	0.0000E+00
6	2.9302E-08	7.5908E-10	0.0000E+00	0.0000E+00	0.0000E+00	1.1975E-04	0.0000E+00
7	2.4009E+00	2.6649E-01	0.0000E+00	0.0000E+00	0.0000E+00	2.2013E+04	0.0000E+00
8	1.9428E+02	3.1193E+00	0.0000E+00	0.0000E+00	0.0000E+00	8.7584E+04	0.0000E+00
9	2.0498E+02	9.1459E-01	0.0000E+00	0.0000E+00	0.0000E+00	9.3283E+04	0.0000E+00
10	3.3279E-04	3.5742E-04	0.0000E+00	0.0000E+00	0.0000E+00	3.5188E+03	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	3.3279E-04	3.5742E-04	0.0000E+00	0.0000E+00	0.0000E+00	3.5188E+03	0.0000E+00
13	1.9368E+00	2.6784E-01	0.0000E+00	0.0000E+00	0.0000E+00	3.2191E+04	0.0000E+00
14	2.2560E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	4.1928E+00	2.6784E-01	0.0000E+00	0.0000E+00	0.0000E+00	3.2191E+04	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

4. 30KAV-ZE 400

17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	1.0897E-03	1.6976E-06	0.0000E+00	0.0000E+00	0.0000E+00	4.9302E+03	0.0000E+00
20	1.1088E-02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	1.1103E+01	0.0000E+00
21	1.3747E-01	6.7394E-04	0.0000E+00	0.0000E+00	0.0000E+00	4.0688E+03	0.0000E+00
22	9.1529E-06	4.8000E-07	0.0000E+00	0.0000E+00	0.0000E+00	4.1065E+00	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	4.1931E+00	2.6820E-01	0.0000E+00	0.0000E+00	0.0000E+00	3.5710E+04	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact. To obtain the results that correspond to your product, please contact your Carrier representative.

Environmental impacts for a piece of equipment corresponding to the product reference (Actual product)

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	5.4661E+05	2.3819E+04	9.0107E+02	1.1425E+01	5.0740E+05	1.4480E+04	
2	1.4103E-01	1.7730E-02	1.7496E-06	2.6423E-08	1.2324E-01	6.5928E-05	
3	3.9579E+03	1.1087E+02	9.8547E+00	2.2812E-02	3.8366E+03	6.2172E-01	
4	1.6241E+02	1.7039E+01	1.3590E+00	6.0669E-03	1.4385E+02	1.5673E-01	
5	1.9081E+02	8.8171E+00	5.5201E-01	1.9710E-03	1.8134E+02	9.5197E-02	
6	1.7316E+00	1.7084E+00	3.5134E-05	1.2528E-07	2.3112E-02	7.1459E-06	
7	5.4380E+06	1.9562E+05	1.2334E+04	6.8592E+01	5.2262E+06	3.7232E+03	
8	2.2940E+07	1.4716E+06	1.4438E+05	7.9835E+02	2.1292E+07	3.1212E+04	
9	2.6426E+07	4.5594E+06	6.0315E+04	2.6666E+02	2.1763E+07	4.2297E+04	
10	7.7066E+05	3.5246E+04	1.6368E+01	2.1712E-01	7.3539E+05	4.4556E+00	
11	1.2601E+03	1.2601E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	7.7192E+05	3.6506E+04	1.6368E+01	2.1712E-01	7.3539E+05	4.4556E+00	
13	9.9066E+06	3.4656E+05	1.2396E+04	6.9618E+01	9.5425E+06	5.0377E+03	
14	8.8355E+03	8.8355E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	9.9154E+06	3.5539E+05	1.2396E+04	6.9618E+01	9.5425E+06	5.0377E+03	
16	6.5488E+02	6.5488E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	2.6693E+03	1.3453E+03	7.7676E-02	1.0400E-01	1.3232E+03	6.1447E-01	
20	9.3581E+04	8.8416E+04	0.0000E+00	3.4867E-03	1.6279E-03	5.1646E+03	
21	1.9110E+06	1.3367E+04	3.0867E+01	6.0681E+00	1.8976E+06	1.5611E+01	
22	1.5554E+03	8.5090E+00	2.1854E-02	3.1445E-04	1.5468E+03	3.8680E-02	
23	8.8509E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	8.8509E+01	
24	4.3482E+03	1.2438E+02	0.0000E+00	7.1666E+01	0.0000E+00	4.1522E+03	
25	2.4835E+02	2.3316E+02	0.0000E+00	8.3670E+00	0.0000E+00	6.8239E+00	
26	1.0320E+00	0.0000E+00	0.0000E+00	1.0320E+00	0.0000E+00	0.0000E+00	
27	1.0687E+07	3.9190E+05	1.2412E+04	6.9835E+01	1.0278E+07	5.0422E+03	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	7.6462E+01	2.9750E+01	0.0000E+00	4.8817E+00	0.0000E+00	5.0728E+05	0.0000E+00
2	2.2908E-06	5.9954E-08	0.0000E+00	8.5909E-09	0.0000E+00	1.2323E-01	0.0000E+00
3	1.0522E-01	1.3618E-01	0.0000E+00	1.2112E-01	0.0000E+00	3.8362E+03	0.0000E+00
4	7.8306E-03	3.1517E-02	0.0000E+00	1.2422E-02	0.0000E+00	1.4380E+02	0.0000E+00
5	8.2103E-03	9.9353E-03	0.0000E+00	6.0888E-03	0.0000E+00	1.8132E+02	0.0000E+00
6	1.6788E-06	1.1844E-06	0.0000E+00	1.7943E-07	0.0000E+00	2.3109E-02	0.0000E+00

4. 30KAV-ZE400

7	2.4009E+00	2.6649E-01	0.0000E+00	0.0000E+00	0.0000E+00	2.2013E+04	0.0000E+00
8	7.9524E+02	4.8670E+03	0.0000E+00	7.3743E+02	0.0000E+00	2.1286E+07	0.0000E+00
9	5.4242E+03	1.4270E+03	0.0000E+00	6.0557E+02	0.0000E+00	2.1756E+07	0.0000E+00
10	1.3810E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	7.3537E+05	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	1.3810E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	7.3537E+05	0.0000E+00
13	1.9696E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	9.5419E+06	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	1.9696E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	9.5419E+06	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	2.7609E-02	2.6487E-03	0.0000E+00	3.8603E-04	0.0000E+00	1.3231E+03	0.0000E+00
20	1.6279E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	3.5726E+01	1.0515E+00	0.0000E+00	1.5376E-01	0.0000E+00	1.8975E+06	0.0000E+00
22	2.8741E-02	7.4894E-04	0.0000E+00	1.0729E-04	0.0000E+00	1.5468E+03	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	2.1077E+02	4.1847E+02	0.0000E+00	6.3371E+01	0.0000E+00	1.0277E+07	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.
With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact. To obtain the results that correspond to your product, please contact your Carrier representative.

5. 30KAV-ZE 450

5.1 - Product description

In accordance with the documents that provide the framework for the life cycle analysis, the reference service life (RSL) was set on the basis of the target customers.

The environmental indicators are normalised to the functional unit by dividing by the machine capacity.

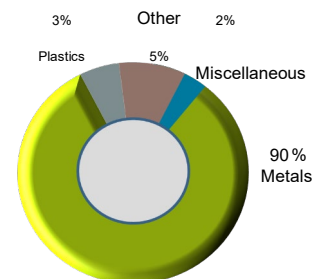
Capacity in heating mode: - SCOP: - Reference Service Life: 22 years
 Capacity in cooling mode: 458 kW SEER: 5.20 Customer type: Residential sector
 Fluid emission level: 2.00% of the total load/year collective housing/service sector
 Fluid type: R1234-ZE (GWP = 7 tCO₂eq)

5.2 - Component materials

Actual mass of the unit: 5170.00 kg
 Total modelled mass: 4983.30 kg, i.e. a total of 96.39% of the total mass including the product, its packaging and the additional components supplied with the reference product

PEP material category	Material	Mass (kg)	Percentage
Metals	steel	1848.28	37.1%
Metals	cast iron	1496.70	30.0%
Metals	aluminium	390.69	7.8%
Metals	copper	376.43	7.6%
Metals	35% recycled steel	306.82	6.2%
Metals	ferrite magnet	73.47	1.5%
Miscellaneous	Miscellaneous	74.09	1.5%
Other	Refrigerant	115.00	2.3%
Other	solid wood, for pallets	81.19	1.6%
Other	lubricating oil	47.36	1.0%
Other	fibreglass	19.19	0.4%
Plastics	flexible polyurethane foam	48.02	1.0%
Plastics	polyamide resin 6.6 (PA6.6)	43.89	0.9%
Plastics	polypropylene (PP)	30.28	0.6%
Plastics	polybutylene terephthalate (PBT)	17.40	0.3%
Plastics	polyurethane glue	14.49	0.3%
Total		4983.30	100.0%

- Metals** : Steel - Cast iron - Aluminium - Copper - 35% recycled steel - Ferrite magnet
- Other** : Raw materials - Solid wood for pallets - Lubricating oil - Fibreglass - Refrigerant
- Plastics** : Flexible polyurethane foam - Polyamide resin 6.6 (PA6.6) - Polypropylene (PP) - Polybutylene terephthalate (PBT) - Polyurethane glue



5. 30KAV-ZE450

5.3 - Sales scenario

Sales of the 30KAV-ZE 450 product are distributed as follows:

Country name	%
Europe	100.00%

This distribution affects the distance travelled during the distribution phase and the electric mix used during the usage phase.

5.4 - Recyclability rate

% Recyclable materials	88.40%	
% Energy recovery	0.50%	
% Residual waste	11.70%	
88.40%	0.50%	11.70%

The products' recyclability potential was evaluated using the "Eco'DEEE method for calculating recyclability and recovery".
(Version V1, 20 Sep. 2008 presented to ADEME [French environment and energy management agency]).

■ % Recyclable materials ■ % Energy recovery ■ % Residual waste

5. 30KAV-ZE 450

5.5 - Environmental impacts

A life cycle analysis identifies a product's potential environmental impacts. CARRIER decided to conduct an in-depth analysis of each of its products to obtain accurate results.

Environmental impacts per kW corresponding to the functional unit

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	2.0472E+03	5.7961E+01	2.1244E+00	2.8199E-02	1.9524E+03	3.4675E+01	
2	5.1633E-04	4.1927E-05	4.1248E-09	6.4898E-11	4.7424E-04	1.5634E-07	
3	1.5094E+01	3.0559E-01	2.3234E-02	5.9357E-05	1.4763E+01	1.4669E-03	
4	6.0214E-01	4.5056E-02	3.2040E-03	1.5587E-05	5.5350E-01	3.6992E-04	
5	7.2213E-01	2.2793E-02	1.3014E-03	5.0443E-06	6.9781E-01	2.2463E-04	
6	3.9296E-03	3.8406E-03	8.2831E-08	3.4474E-10	8.8936E-05	1.6859E-08	
7	2.0627E+04	4.7833E+02	2.9079E+01	1.7914E-01	2.0111E+04	8.7972E+00	
8	8.6014E+04	3.6697E+03	3.4039E+02	2.0862E+00	8.1928E+04	7.3805E+01	
9	9.4949E+04	1.0966E+04	1.4220E+02	6.7983E-01	8.3740E+04	9.9794E+01	
10	2.9142E+03	8.4208E+01	3.8589E-02	5.3571E-04	2.8299E+03	1.0511E-02	
11	3.3687E+00	3.3687E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	2.9175E+03	8.7577E+01	3.8589E-02	5.3571E-04	2.8299E+03	1.0511E-02	
13	3.7629E+04	8.6644E+02	2.9224E+01	1.8165E-01	3.6721E+04	1.1897E+01	
14	1.9470E+01	1.9470E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	3.7648E+04	8.8591E+02	2.9224E+01	1.8165E-01	3.6721E+04	1.1897E+01	
16	1.5352E+00	1.5352E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	8.0500E+00	2.9562E+00	1.8313E-04	2.4749E-04	5.0919E+00	1.4520E-03	
20	2.1303E+02	2.0085E+02	0.0000E+00	8.2751E-06	4.0471E-06	1.2178E+01	
21	7.3371E+03	3.4697E+01	7.2773E-02	1.4372E-02	7.3023E+03	3.6837E-02	
22	5.9756E+00	2.2910E-02	5.1523E-05	7.7346E-07	5.9525E+00	9.1471E-05	
23	2.1210E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	2.1210E-01	
24	1.0252E+01	2.9370E-01	0.0000E+00	1.6922E-01	0.0000E+00	9.7887E+00	
25	5.8642E-01	5.5056E-01	0.0000E+00	1.9757E-02	0.0000E+00	1.6101E-02	
26	2.4368E-03	0.0000E+00	0.0000E+00	2.4368E-03	0.0000E+00	0.0000E+00	
27	4.0566E+04	9.7348E+02	2.9262E+01	1.8219E-01	3.9551E+04	1.1908E+01	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	1.8997E-01	6.4955E-02	0.0000E+00	1.0659E-02	0.0000E+00	1.9522E+03	0.0000E+00
2	5.6949E-09	1.3090E-10	0.0000E+00	1.8757E-11	0.0000E+00	4.7423E-04	0.0000E+00
3	2.6105E-04	2.9734E-04	0.0000E+00	2.6444E-04	0.0000E+00	1.4763E+01	0.0000E+00
4	1.9343E-05	6.8814E-05	0.0000E+00	2.7122E-05	0.0000E+00	5.5338E-01	0.0000E+00
5	2.0372E-05	2.1693E-05	0.0000E+00	1.3294E-05	0.0000E+00	6.9775E-01	0.0000E+00
6	4.1690E-09	2.5860E-09	0.0000E+00	3.9178E-10	0.0000E+00	8.8929E-05	0.0000E+00
7	2.8588E-01	9.0786E-01	0.0000E+00	1.3753E-01	0.0000E+00	2.0110E+04	0.0000E+00
8	1.9579E+00	1.0627E+01	0.0000E+00	1.6101E+00	0.0000E+00	8.1914E+04	0.0000E+00
9	1.3479E+01	3.1158E+00	0.0000E+00	1.3222E+00	0.0000E+00	8.3722E+04	0.0000E+00
10	3.4329E-02	1.2176E-03	0.0000E+00	1.7796E-04	0.0000E+00	2.8299E+03	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	3.4329E-02	1.2176E-03	0.0000E+00	1.7796E-04	0.0000E+00	2.8299E+03	0.0000E+00
13	4.8801E-01	9.1247E-01	0.0000E+00	1.3819E-01	0.0000E+00	3.6720E+04	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	4.8801E-01	9.1247E-01	0.0000E+00	1.3819E-01	0.0000E+00	3.6720E+04	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

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17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	6.8628E-05	5.7832E-06	0.0000E+00	8.4285E-07	0.0000E+00	5.0918E+00	0.0000E+00
20	4.0471E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	8.8813E-02	2.2959E-03	0.0000E+00	3.3572E-04	0.0000E+00	7.3022E+03	0.0000E+00
22	7.1449E-05	1.6352E-06	0.0000E+00	2.3425E-07	0.0000E+00	5.9525E+00	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	5.2234E-01	9.1368E-01	0.0000E+00	1.3837E-01	0.0000E+00	3.9549E+04	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact. To obtain the results that correspond to your product, please contact your Carrier representative.

Environmental impacts for a piece of equipment corresponding to the product reference (Actual product)

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	9.3762E+05	2.6546E+04	9.7296E+02	1.2915E+01	8.9421E+05	1.5881E+04	
2	2.3648E-01	1.9203E-02	1.8892E-06	2.9723E-08	2.1720E-01	7.1605E-05	
3	6.9130E+03	1.3996E+02	1.0641E+01	2.7186E-02	6.7617E+03	6.7186E-01	
4	2.7578E+02	2.0636E+01	1.4674E+00	7.1390E-03	2.5350E+02	1.6942E-01	
5	3.3074E+02	1.0439E+01	5.9605E-01	2.3103E-03	3.1960E+02	1.0288E-01	
6	1.7998E+00	1.7590E+00	3.7937E-05	1.5789E-07	4.0733E-02	7.7213E-06	
7	9.4473E+06	2.1908E+05	1.3318E+04	8.2046E+01	9.2108E+06	4.0291E+03	
8	3.9395E+07	1.6807E+06	1.5590E+05	9.5546E+02	3.7523E+07	3.3803E+04	
9	4.3487E+07	5.0226E+06	6.5127E+04	3.1136E+02	3.8353E+07	4.5706E+04	
10	1.3347E+06	3.8567E+04	1.7674E+01	2.4536E-01	1.2961E+06	4.8141E+00	
11	1.5428E+03	1.5428E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	1.3362E+06	4.0110E+04	1.7674E+01	2.4536E-01	1.2961E+06	4.8141E+00	
13	1.7234E+07	3.9683E+05	1.3385E+04	8.3196E+01	1.6818E+07	5.4490E+03	
14	8.9174E+03	8.9174E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	1.7243E+07	4.0574E+05	1.3385E+04	8.3196E+01	1.6818E+07	5.4490E+03	
16	7.0310E+02	7.0310E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	3.6870E+03	1.3540E+03	8.3873E-02	1.1335E-01	2.3321E+03	6.6499E-01	
20	9.7567E+04	9.1990E+04	0.0000E+00	3.7900E-03	1.8536E-03	5.5774E+03	
21	3.3603E+06	1.5891E+04	3.3330E+01	6.5824E+00	3.3444E+06	1.6872E+01	
22	2.7369E+03	1.0493E+01	2.3597E-02	3.5424E-04	2.7263E+03	4.1894E-02	
23	9.7141E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	9.7141E+01	
24	4.6952E+03	1.3451E+02	0.0000E+00	7.7503E+01	0.0000E+00	4.4832E+03	
25	2.6857E+02	2.5215E+02	0.0000E+00	9.0485E+00	0.0000E+00	7.3743E+00	
26	1.1160E+00	0.0000E+00	0.0000E+00	1.1160E+00	0.0000E+00	0.0000E+00	
27	1.8579E+07	4.4585E+05	1.3402E+04	8.3441E+01	1.8114E+07	5.4539E+03	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	8.7007E+01	2.9750E+01	0.0000E+00	4.8817E+00	0.0000E+00	8.9409E+05	0.0000E+00
2	2.6082E-06	5.9954E-08	0.0000E+00	8.5909E-09	0.0000E+00	2.1720E-01	0.0000E+00
3	1.1956E-01	1.3618E-01	0.0000E+00	1.2112E-01	0.0000E+00	6.7613E+03	0.0000E+00
4	8.8593E-03	3.1517E-02	0.0000E+00	1.2422E-02	0.0000E+00	2.5345E+02	0.0000E+00
5	9.3305E-03	9.9353E-03	0.0000E+00	6.0888E-03	0.0000E+00	3.1957E+02	0.0000E+00
6	1.9094E-06	1.1844E-06	0.0000E+00	1.7943E-07	0.0000E+00	4.0729E-02	0.0000E+00

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7	1.3093E+02	4.1580E+02	0.0000E+00	6.2987E+01	0.0000E+00	9.2102E+06	0.0000E+00
8	8.9672E+02	4.8670E+03	0.0000E+00	7.3743E+02	0.0000E+00	3.7517E+07	0.0000E+00
9	6.1735E+03	1.4270E+03	0.0000E+00	6.0557E+02	0.0000E+00	3.8345E+07	0.0000E+00
10	1.5723E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	1.2961E+06	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	1.5723E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	1.2961E+06	0.0000E+00
13	2.2351E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	1.6818E+07	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	2.2351E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	1.6818E+07	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	3.1432E-02	2.6487E-03	0.0000E+00	3.8603E-04	0.0000E+00	2.3320E+03	0.0000E+00
20	1.8536E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	4.0676E+01	1.0515E+00	0.0000E+00	1.5376E-01	0.0000E+00	3.3444E+06	0.0000E+00
22	3.2724E-02	7.4894E-04	0.0000E+00	1.0729E-04	0.0000E+00	2.7262E+03	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	2.3923E+02	4.1847E+02	0.0000E+00	6.3371E+01	0.0000E+00	1.8114E+07	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact.

To obtain the results that correspond to your product, please contact your Carrier representative.

6. 30KAV-ZE500

6.1 - Product description

In accordance with the documents that provide the framework for the life cycle analysis, the reference service life (RSL) was set on the basis of the target customers.

The environmental indicators are normalised to the functional unit by dividing by the machine capacity.

Capacity in heating mode: -	SCOP: -	Reference Service Life: 22 years
Capacity in cooling mode: 483 kW	SEER: 5.19	Customer type: Residential sector
Fluid emission level: 2.00% of the total load/year		collective housing/service sector
Fluid type: R1234-ZE (GWP = 7 tCO ₂ eq)		

6.2 - Component materials

Actual mass of the unit: 5184.00 kg
 Total modelled mass: 4994.50 kg, i.e. a total of 96.34% of the total mass including the product, its packaging and the additional components supplied with the reference product

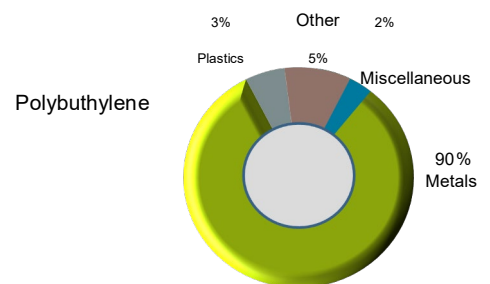
PEP material category	Material	Mass (kg)	Percentage
Metals	steel	1846.38	37.0%
Metals	cast iron	1496.70	30.0%
Metals	aluminium	390.69	7.8%
Metals	copper	385.48	7.7%
Metals	35% recycled steel	306.82	6.1%
Metals	ferrite magnet	73.47	1.5%
Miscellaneous	Miscellaneous	74.09	1.5%
Other	Refrigerant	121.00	2.4%
Other	solid wood, for pallets	81.19	1.6%
Other	lubricating oil	45.41	0.9%
Other	fibreglass	19.19	0.4%
Plastics	flexible polyurethane foam	48.02	1.0%
Plastics	polyamide resin 6.6 (PA6.6)	43.89	0.9%
Plastics	polypropylene (PP)	30.28	0.6%
Plastics	polybutylene terephthalate (PBT)	17.40	0.3%
Plastics	polyurethane glue	14.49	0.3%
Total		4994.50	100.0%

Metals : Steel - Cast iron - Aluminium - Copper - 35% recycled steel - Ferrite magnet

Other : Raw materials - Solid wood for pallets - Lubricating oil - Fibreglass - Refrigerant

Plastics : Flexible polyurethane foam - Polyamide resin 6.6 (PA6.6) - Polypropylene (PP) - Polybutylene terephthalate (PBT) - Polyurethane glue

Miscellaneous : Miscellaneous



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6.3 - Sales scenario

Sales of the 30KAV-ZE 500 product are distributed as follows:

Country name	%
Europe	100.00%

This distribution affects the distance travelled during the distribution phase and the electric mix used during the usage phase.

6.4 - Recyclability rate

% Recyclable materials	88.30%
% Energy recovery	0.30%
% Residual waste	11.70%

The products' recyclability potential was evaluated using the "Eco'DEEE method for calculating recyclability and recovery".

(Version V1, 20 Sep. 2008 presented to ADEME [French environment and energy management agency]).

88.30%	0.30%	11.70%
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■ % Recyclable materials

■ % Energy recovery

■ % Residual waste

6. 30KAV-ZE500

6.5 - Environmental impacts

A life cycle analysis identifies a product's potential environmental impacts. CARRIER decided to conduct an in-depth analysis of each of its products to obtain accurate results.

Environmental impacts per kW corresponding to the functional unit

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	2.0640E+03	5.5075E+01	2.0245E+00	2.6805E-02	1.9700E+03	3.6881E+01	
2	5.1858E-04	3.9914E-05	3.9309E-09	6.1823E-11	4.7850E-04	1.5625E-07	
3	1.5210E+01	2.9021E-01	2.2141E-02	5.6301E-05	1.4896E+01	1.4227E-03	
4	6.0470E-01	4.2809E-02	3.0534E-03	1.4792E-05	5.5847E-01	3.5915E-04	
5	7.2718E-01	2.1643E-02	1.2402E-03	4.7882E-06	7.0408E-01	2.1597E-04	
6	3.7519E-03	3.6620E-03	7.8937E-08	3.2635E-10	8.9736E-05	1.6235E-08	
7	2.0782E+04	4.5424E+02	2.7712E+01	1.6990E-01	2.0292E+04	8.5654E+00	
8	8.6555E+04	3.4916E+03	3.2439E+02	1.9786E+00	8.2664E+04	7.2545E+01	
9	9.5206E+04	1.0482E+04	1.3551E+02	6.4561E-01	8.4493E+04	9.5440E+01	
10	2.9356E+03	8.0194E+01	3.6775E-02	5.0923E-04	2.8554E+03	1.0088E-02	
11	3.1943E+00	3.1943E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	2.9388E+03	8.3388E+01	3.6775E-02	5.0923E-04	2.8554E+03	1.0088E-02	
13	3.7913E+04	8.2244E+02	2.7850E+01	1.7231E-01	3.7051E+04	1.1515E+01	
14	1.8292E+01	1.8292E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	3.7931E+04	8.4073E+02	2.7850E+01	1.7231E-01	3.7051E+04	1.1515E+01	
16	1.4585E+00	1.4585E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	7.9448E+00	2.8053E+00	1.7452E-04	2.4311E-04	5.1377E+00	1.4103E-03	
20	2.0392E+02	1.9234E+02	0.0000E+00	8.0525E-06	4.0378E-06	1.1576E+01	
21	7.4009E+03	3.2927E+01	6.9351E-02	1.3686E-02	7.3679E+03	3.5280E-02	
22	6.0280E+00	2.1740E-02	4.9101E-05	7.3547E-07	6.0061E+00	8.9266E-05	
23	2.2604E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	2.2604E-01	
24	9.7454E+00	2.7967E-01	0.0000E+00	1.6114E-01	0.0000E+00	9.3046E+00	
25	5.5838E-01	5.2427E-01	0.0000E+00	1.8813E-02	0.0000E+00	1.5299E-02	
26	2.3204E-03	0.0000E+00	0.0000E+00	2.3204E-03	0.0000E+00	0.0000E+00	
27	4.0871E+04	9.2412E+02	2.7887E+01	1.7281E-01	3.9907E+04	1.1525E+01	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	1.8966E-01	6.1593E-02	0.0000E+00	1.0107E-02	0.0000E+00	1.9697E+03	0.0000E+00
2	5.6821E-09	1.2413E-10	0.0000E+00	1.7787E-11	0.0000E+00	4.7850E-04	0.0000E+00
3	2.6099E-04	2.8195E-04	0.0000E+00	2.5076E-04	0.0000E+00	1.4895E+01	0.0000E+00
4	1.9424E-05	6.5252E-05	0.0000E+00	2.5718E-05	0.0000E+00	5.5836E-01	0.0000E+00
5	2.0365E-05	2.0570E-05	0.0000E+00	1.2606E-05	0.0000E+00	7.0403E-01	0.0000E+00
6	4.1642E-09	2.4521E-09	0.0000E+00	3.7150E-10	0.0000E+00	8.9729E-05	0.0000E+00
7	2.8688E-01	8.6087E-01	0.0000E+00	1.3041E-01	0.0000E+00	2.0290E+04	0.0000E+00
8	1.9728E+00	1.0077E+01	0.0000E+00	1.5268E+00	0.0000E+00	8.2651E+04	0.0000E+00
9	1.3454E+01	2.9545E+00	0.0000E+00	1.2538E+00	0.0000E+00	8.4475E+04	0.0000E+00
10	3.4253E-02	1.1546E-03	0.0000E+00	1.6875E-04	0.0000E+00	2.8554E+03	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	3.4253E-02	1.1546E-03	0.0000E+00	1.6875E-04	0.0000E+00	2.8554E+03	0.0000E+00
13	4.8855E-01	8.6524E-01	0.0000E+00	1.3103E-01	0.0000E+00	3.7050E+04	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	4.8855E-01	8.6524E-01	0.0000E+00	1.3103E-01	0.0000E+00	3.7050E+04	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

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17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	6.8482E-05	5.4839E-06	0.0000E+00	7.9923E-07	0.0000E+00	5.1376E+00	0.0000E+00
20	4.0378E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	8.8614E-02	2.1771E-03	0.0000E+00	3.1834E-04	0.0000E+00	7.3679E+03	0.0000E+00
22	7.1289E-05	1.5506E-06	0.0000E+00	2.2212E-07	0.0000E+00	6.0060E+00	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	5.2281E-01	8.6639E-01	0.0000E+00	1.3120E-01	0.0000E+00	3.9905E+04	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact. To obtain the results that correspond to your product, please contact your Carrier representative.

Environmental impacts for a piece of equipment corresponding to the product reference (Actual product)

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	9.9691E+05	2.6601E+04	9.7783E+02	1.2947E+01	9.5150E+05	1.7814E+04	
2	2.5047E-01	1.9278E-02	1.8986E-06	2.9860E-08	2.3112E-01	7.5468E-05	
3	7.3464E+03	1.4017E+02	1.0694E+01	2.7194E-02	7.1949E+03	6.8716E-01	
4	2.9207E+02	2.0677E+01	1.4748E+00	7.1447E-03	2.6974E+02	1.7347E-01	
5	3.5123E+02	1.0453E+01	5.9904E-01	2.3127E-03	3.4007E+02	1.0431E-01	
6	1.8122E+00	1.7688E+00	3.8127E-05	1.5763E-07	4.3342E-02	7.8414E-06	
7	1.0038E+07	2.1940E+05	1.3385E+04	8.2064E+01	9.8009E+06	4.1371E+03	
8	4.1806E+07	1.6865E+06	1.5668E+05	9.5567E+02	3.9927E+07	3.5039E+04	
9	4.5985E+07	5.0627E+06	6.5453E+04	3.1183E+02	4.0810E+07	4.6098E+04	
10	1.4180E+06	3.8734E+04	1.7762E+01	2.4596E-01	1.3792E+06	4.8727E+00	
11	1.5428E+03	1.5428E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	1.4195E+06	4.0277E+04	1.7762E+01	2.4596E-01	1.3792E+06	4.8727E+00	
13	1.8312E+07	3.9724E+05	1.3451E+04	8.3223E+01	1.7896E+07	5.5619E+03	
14	8.8352E+03	8.8352E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	1.8321E+07	4.0607E+05	1.3451E+04	8.3223E+01	1.7896E+07	5.5619E+03	
16	7.0446E+02	7.0446E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	3.8374E+03	1.3550E+03	8.4293E-02	1.1742E-01	2.4815E+03	6.8119E-01	
20	9.8489E+04	9.2898E+04	0.0000E+00	3.8894E-03	1.9503E-03	5.5913E+03	
21	3.5747E+06	1.5904E+04	3.3497E+01	6.6103E+00	3.5587E+06	1.7040E+01	
22	2.9115E+03	1.0500E+01	2.3716E-02	3.5523E-04	2.9009E+03	4.3115E-02	
23	1.0918E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	1.0918E+02	
24	4.7070E+03	1.3508E+02	0.0000E+00	7.7832E+01	0.0000E+00	4.4941E+03	
25	2.6970E+02	2.5322E+02	0.0000E+00	9.0869E+00	0.0000E+00	7.3894E+00	
26	1.1208E+00	0.0000E+00	0.0000E+00	1.1208E+00	0.0000E+00	0.0000E+00	
27	1.9740E+07	4.4635E+05	1.3469E+04	8.3469E+01	1.9275E+07	5.5668E+03	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	9.1604E+01	2.9750E+01	0.0000E+00	4.8817E+00	0.0000E+00	9.5137E+05	0.0000E+00
2	2.7444E-06	5.9954E-08	0.0000E+00	8.5909E-09	0.0000E+00	2.3111E-01	0.0000E+00
3	1.2606E-01	1.3618E-01	0.0000E+00	1.2112E-01	0.0000E+00	7.1945E+03	0.0000E+00
4	9.3820E-03	3.1517E-02	0.0000E+00	1.2422E-02	0.0000E+00	2.6969E+02	0.0000E+00
5	9.8363E-03	9.9353E-03	0.0000E+00	6.0888E-03	0.0000E+00	3.4004E+02	0.0000E+00
6	2.0113E-06	1.1844E-06	0.0000E+00	1.7943E-07	0.0000E+00	4.3339E-02	0.0000E+00

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7	1.3856E+02	4.1580E+02	0.0000E+00	6.2987E+01	0.0000E+00	9.8003E+06	0.0000E+00
8	9.5284E+02	4.8670E+03	0.0000E+00	7.3743E+02	0.0000E+00	3.9920E+07	0.0000E+00
9	6.4983E+03	1.4270E+03	0.0000E+00	6.0557E+02	0.0000E+00	4.0801E+07	0.0000E+00
10	1.6544E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	1.3791E+06	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	1.6544E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	1.3791E+06	0.0000E+00
13	2.3597E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	1.7895E+07	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	2.3597E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	1.7895E+07	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	3.3077E-02	2.6487E-03	0.0000E+00	3.8603E-04	0.0000E+00	2.4815E+03	0.0000E+00
20	1.9503E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	4.2801E+01	1.0515E+00	0.0000E+00	1.5376E-01	0.0000E+00	3.5587E+06	0.0000E+00
22	3.4432E-02	7.4894E-04	0.0000E+00	1.0729E-04	0.0000E+00	2.9009E+03	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	2.5252E+02	4.1847E+02	0.0000E+00	6.3371E+01	0.0000E+00	1.9274E+07	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.
With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact.
To obtain the results that correspond to your product, please contact your Carrier representative.

7. 30KAV-ZE 550

7.1 - Product description

In accordance with the documents that provide the framework for the life cycle analysis, the reference service life (RSL) was set on the basis of the target customers.

The environmental indicators are normalised to the functional unit by dividing by the machine capacity.

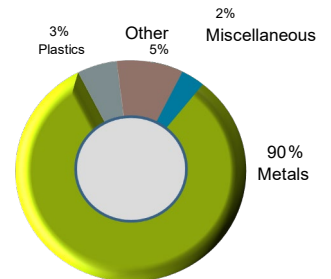
Capacity in heating mode:	-	SCOP:	-	Reference Service Life:	22 years
Capacity in cooling mode:	533 kW	SEER:	5.30	Customer type:	Residential sector
Fluid emission level:	2.00% of the total load/year				collective housing/service sector
Fluid type:	R1234-ZE (GWP = 7 tCO ₂ eq)				

7.2 - Component materials

Actual mass of the unit: 5647.00 kg
 Total modelled mass: 5435.12 kg, i.e. a total of 96.25% of the total mass including the product, its packaging and the additional components supplied with the reference product.

PEP material category	Material	Mass (kg)	Percentage
Metals	steel	2034.14	37.4%
Metals	cast iron	1523.10	28.0%
Metals	aluminium	481.38	8.9%
Metals	copper	424.80	7.8%
Metals	35% recycled steel	332.97	6.1%
Metals	ferrite magnet	90.71	1.7%
Miscellaneous	Miscellaneous	80.57	1.5%
Other	Refrigerant	139.00	2.6%
Other	solid wood, for pallets	89.42	1.6%
Other	lubricating oil	42.47	0.8%
Other	fibreglass	22.70	0.4%
Plastics	polyamide resin 6.6 (PA6.6)	55.65	1.0%
Plastics	ethylene propylene diene copolymer (EPDM)	44.58	0.8%
Plastics	polypropylene (PP)	36.15	0.7%
Plastics	polybutylene terephthalate (PBT)	20.60	0.4%
Plastics	flexible polyurethane foam	16.88	0.3%

- Metals** : Steel - Cast iron - Aluminium - Copper - 35% recycled steel - Ferrite magnet
- Other** : Raw materials - Solid wood for pallets - Lubricating oil - Fibreglass - Refrigerant
- Plastics** : Flexible polyurethane foam - Polyamide resin 6.6 (PA6.6) - Polypropylene (PP) - Polybutylene terephthalate (PBT) - Polyurethane glue
- Miscellaneous** : Miscellaneous



7. 30KAVze 550

7.3 - Sales scenario

Sales of the 30KAV-ZE 550 product are distributed as follows:

Country name	%
Europe	100.00%

This distribution affects the distance travelled during the distribution phase and the electric mix used during the usage phase.

7.4 - Recyclability rate

% Recyclable materials	88.00%
% Energy recovery	0.30%
% Residual waste	11.70%

The products' recyclability potential was evaluated using the "Eco'DEEE method for calculating recyclability and recovery".

(Version V1, 20 Sep. 2008 presented to ADEME [French environment and energy management agency]).

88.00%	0.30%	11.70%
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■ % Recyclable materials ■ % Energy recovery ■ % Residual waste

7. 30KAV-ZE 550

7.5 - Environmental impacts

A life cycle analysis identifies a product's potential environmental impacts. CARRIER decided to conduct an in-depth analysis of each of its products to obtain accurate results.

Environmental impacts per kW corresponding to the functional unit

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	2.0399E+03	5.7111E+01	2.0039E+00	2.6520E-02	1.9800E+03	8.0466E-01	
2	5.2057E-04	3.9476E-05	3.8909E-09	6.1337E-11	4.8093E-04	1.5569E-07	
3	1.5336E+01	3.4133E-01	2.1916E-02	5.5721E-05	1.4972E+01	1.4104E-03	
4	6.1290E-01	4.8214E-02	3.0223E-03	1.4638E-05	5.6129E-01	3.5644E-04	
5	7.3314E-01	2.4041E-02	1.2276E-03	4.7389E-06	7.0765E-01	2.1395E-04	
6	3.6392E-03	3.5489E-03	7.8133E-08	3.2320E-10	9.0191E-05	1.6082E-08	
7	2.0905E+04	4.7478E+02	2.7429E+01	1.6817E-01	2.0395E+04	8.4992E+00	
8	8.7194E+04	3.7166E+03	3.2109E+02	1.9585E+00	8.3083E+04	7.2055E+01	
9	9.5820E+04	1.0669E+04	1.3413E+02	6.3922E-01	8.4921E+04	9.4514E+01	
10	2.9501E+03	8.0159E+01	3.6400E-02	5.0377E-04	2.8699E+03	9.9985E-03	
11	3.1881E+00	3.1881E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	2.9533E+03	8.3347E+01	3.6400E-02	5.0377E-04	2.8699E+03	9.9985E-03	
13	3.8126E+04	8.4803E+02	2.7566E+01	1.7057E-01	3.7239E+04	1.1418E+01	
14	1.9363E+01	1.9363E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	3.8146E+04	8.6739E+02	2.7566E+01	1.7057E-01	3.7239E+04	1.1418E+01	
16	1.3708E+00	1.3708E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	7.7541E+00	2.5886E+00	1.7274E-04	2.5144E-04	5.1637E+00	1.3916E-03	
20	1.9864E+02	1.8716E+02	0.0000E+00	8.2184E-06	4.2034E-06	1.1483E+01	
21	7.4405E+03	3.5067E+01	6.8645E-02	1.3536E-02	7.4053E+03	3.5017E-02	
22	6.0603E+00	2.3671E-02	4.8601E-05	7.2780E-07	6.0365E+00	8.8669E-05	
23	2.2752E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	2.2752E-01	
24	9.6154E+00	2.7655E-01	0.0000E+00	1.5934E-01	0.0000E+00	9.1795E+00	
25	5.5216E-01	5.1841E-01	0.0000E+00	1.8603E-02	0.0000E+00	1.5147E-02	
26	2.2945E-03	0.0000E+00	0.0000E+00	2.2945E-03	0.0000E+00	0.0000E+00	
27	4.1099E+04	9.5074E+02	2.7603E+01	1.7107E-01	4.0109E+04	1.1428E+01	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	1.9743E-01	5.5815E-02	0.0000E+00	9.1588E-03	0.0000E+00	1.9797E+03	0.0000E+00
2	5.9150E-09	1.1248E-10	0.0000E+00	1.6118E-11	0.0000E+00	4.8092E-04	0.0000E+00
3	2.7170E-04	2.5550E-04	0.0000E+00	2.2723E-04	0.0000E+00	1.4971E+01	0.0000E+00
4	2.0222E-05	5.9131E-05	0.0000E+00	2.3306E-05	0.0000E+00	5.6119E-01	0.0000E+00
5	2.1200E-05	1.8640E-05	0.0000E+00	1.1424E-05	0.0000E+00	7.0760E-01	0.0000E+00
6	4.3350E-09	2.2221E-09	0.0000E+00	3.3665E-10	0.0000E+00	9.0184E-05	0.0000E+00
7	2.9866E-01	7.8011E-01	0.0000E+00	1.1818E-01	0.0000E+00	2.0393E+04	0.0000E+00
8	2.0538E+00	9.1314E+00	0.0000E+00	1.3836E+00	0.0000E+00	8.3070E+04	0.0000E+00
9	1.4006E+01	2.6773E+00	0.0000E+00	1.1362E+00	0.0000E+00	8.4904E+04	0.0000E+00
10	3.5657E-02	1.0463E-03	0.0000E+00	1.5292E-04	0.0000E+00	2.8698E+03	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	3.5657E-02	1.0463E-03	0.0000E+00	1.5292E-04	0.0000E+00	2.8698E+03	0.0000E+00
13	5.0860E-01	7.8407E-01	0.0000E+00	1.1874E-01	0.0000E+00	3.7238E+04	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	5.0860E-01	7.8407E-01	0.0000E+00	1.1874E-01	0.0000E+00	3.7238E+04	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

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17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	7.1290E-05	4.9694E-06	0.0000E+00	7.2425E-07	0.0000E+00	5.1637E+00	0.0000E+00
20	4.2034E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	9.2247E-02	1.9729E-03	0.0000E+00	2.8848E-04	0.0000E+00	7.4052E+03	0.0000E+00
22	7.4211E-05	1.4051E-06	0.0000E+00	2.0129E-07	0.0000E+00	6.0365E+00	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	5.4426E-01	7.8512E-01	0.0000E+00	1.1890E-01	0.0000E+00	4.0108E+04	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact. To obtain the results that correspond to your product, please contact your Carrier representative.

Environmental impacts for a piece of equipment corresponding to the product reference (Actual product)

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	1.0873E+06	3.0440E+04	1.0681E+03	1.4135E+01	1.0553E+06	4.2889E+02	
2	2.7746E-01	2.1041E-02	2.0738E-06	3.2693E-08	2.5634E-01	8.2982E-05	
3	8.1743E+03	1.8193E+02	1.1681E+01	2.9699E-02	7.9799E+03	7.5176E-01	
4	3.2668E+02	2.5698E+01	1.6109E+00	7.8022E-03	2.9917E+02	1.8998E-01	
5	3.9076E+02	1.2814E+01	6.5432E-01	2.5258E-03	3.7718E+02	1.1404E-01	
6	1.9397E+00	1.8916E+00	4.1645E-05	1.7227E-07	4.8072E-02	8.5716E-06	
7	1.1143E+07	2.5306E+05	1.4620E+04	8.9637E+01	1.0870E+07	4.5301E+03	
8	4.6475E+07	1.9809E+06	1.7114E+05	1.0439E+03	4.4283E+07	3.8405E+04	
9	5.1072E+07	5.6867E+06	7.1493E+04	3.4071E+02	4.5263E+07	5.0376E+04	
10	1.5723E+06	4.2725E+04	1.9401E+01	2.6851E-01	1.5296E+06	5.3292E+00	
11	1.6993E+03	1.6993E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	1.5740E+06	4.4424E+04	1.9401E+01	2.6851E-01	1.5296E+06	5.3292E+00	
13	2.0321E+07	4.5200E+05	1.4693E+04	9.0913E+01	1.9848E+07	6.0860E+03	
14	1.0320E+04	1.0320E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	2.0331E+07	4.6232E+05	1.4693E+04	9.0913E+01	1.9848E+07	6.0860E+03	
16	7.3066E+02	7.3066E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	4.1330E+03	1.3797E+03	9.2072E-02	1.3402E-01	2.7523E+03	7.4173E-01	
20	1.0588E+05	9.9756E+04	0.0000E+00	4.3804E-03	2.2404E-03	6.1206E+03	
21	3.9658E+06	1.8690E+04	3.6588E+01	7.2146E+00	3.9470E+06	1.8664E+01	
22	3.2302E+03	1.2617E+01	2.5904E-02	3.8792E-04	3.2175E+03	4.7261E-02	
23	1.2127E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	1.2127E+02	
24	5.1250E+03	1.4740E+02	0.0000E+00	8.4929E+01	0.0000E+00	4.8927E+03	
25	2.9430E+02	2.7631E+02	0.0000E+00	9.9155E+00	0.0000E+00	8.0733E+00	
26	1.2230E+00	0.0000E+00	0.0000E+00	1.2230E+00	0.0000E+00	0.0000E+00	
27	2.1906E+07	5.0674E+05	1.4712E+04	9.1181E+01	2.1378E+07	6.0913E+03	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	1.0523E+02	2.9750E+01	0.0000E+00	4.8817E+00	0.0000E+00	1.0552E+06	0.0000E+00
2	3.1527E-06	5.9954E-08	0.0000E+00	8.5909E-09	0.0000E+00	2.5633E-01	0.0000E+00
3	1.4482E-01	1.3618E-01	0.0000E+00	1.2112E-01	0.0000E+00	7.9795E+03	0.0000E+00
4	1.0778E-02	3.1517E-02	0.0000E+00	1.2422E-02	0.0000E+00	2.9911E+02	0.0000E+00
5	1.1300E-02	9.9353E-03	0.0000E+00	6.0888E-03	0.0000E+00	3.7715E+02	0.0000E+00
6	2.3105E-06	1.1844E-06	0.0000E+00	1.7943E-07	0.0000E+00	4.8068E-02	0.0000E+00

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7	1.5919E+02	4.1580E+02	0.0000E+00	6.2987E+01	0.0000E+00	1.0870E+07	0.0000E+00
8	1.0947E+03	4.8670E+03	0.0000E+00	7.3743E+02	0.0000E+00	4.4276E+07	0.0000E+00
9	7.4650E+03	1.4270E+03	0.0000E+00	6.0557E+02	0.0000E+00	4.5254E+07	0.0000E+00
10	1.9005E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	1.5296E+06	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	1.9005E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	1.5296E+06	0.0000E+00
13	2.7108E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	1.9848E+07	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	2.7108E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	1.9848E+07	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	3.7997E-02	2.6487E-03	0.0000E+00	3.8603E-04	0.0000E+00	2.7522E+03	0.0000E+00
20	2.2404E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	4.9168E+01	1.0515E+00	0.0000E+00	1.5376E-01	0.0000E+00	3.9470E+06	0.0000E+00
22	3.9555E-02	7.4894E-04	0.0000E+00	1.0729E-04	0.0000E+00	3.2174E+03	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	2.9009E+02	4.1847E+02	0.0000E+00	6.3371E+01	0.0000E+00	2.1377E+07	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact.

To obtain the results that correspond to your product, please contact your Carrier representative.

8. 30KAV-ZE 600

8.1 - Product description

In accordance with the documents that provide the framework for the life cycle analysis, the reference service life (RSL) was set on the basis of the target customers.

The environmental indicators are normalised to the functional unit by dividing by the machine capacity.

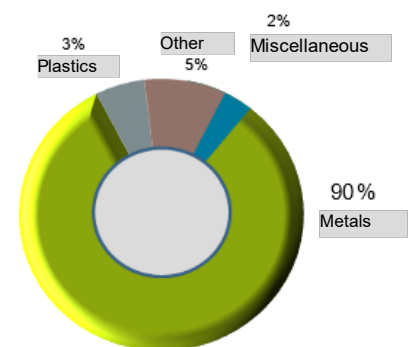
Capacity in heating mode: -	SCOP: -	Reference Service Life: 22 years
Capacity in cooling mode: 606 kW	SEER: 5.20	Customer type: Residential sector
Fluid emission level: 2.00% of the total load/year		collective housing/service sector
Fluid type: R1234-ZE (GWP = 7 tCO ₂ eq)		

8.2 - Component materials

Actual mass of the unit: 6090.00 kg
 Total modelled mass: 5826.49 kg, i.e. a total of 95.67% of the total mass including the product, its packaging and the additional components supplied with the reference product.

PEP material category	Material	Mass (kg)	Percentage
Metals	steel	2118.63	36.4%
Metals	cast iron	1738.80	29.8%
Metals	aluminium	490.86	8.4%
Metals	copper	463.81	8.0%
Metals	35% recycled steel	335.44	5.8%
Metals	ferrite magnet	91.61	1.6%
Miscellaneous	Miscellaneous	77.94	1.3%
Other	Refrigerant	155.00	2.7%
Other	solid wood, for pallets	77.04	1.3%
Other	lubricating oil	45.41	0.8%
Other	fibreglass	23.63	0.4%
Plastics	polyamide resin 6.6 (PA6.6)	87.65	1.5%
Plastics	ethylene propylene diene copolymer (EPDM)	49.44	0.8%
Plastics	polypropylene (PP)	36.15	0.6%
Plastics	polybutylene terephthalate (PBT)	20.60	0.4%
Plastics	polyurethane glue	14.49	0.2%
Total		5826.49	100.0%

Metals : Steel - Cast iron - Aluminium - Copper - 35% recycled steel - Ferrite magnet
Other : Raw materials - Solid wood for pallets - Lubricating oil - Fibreglass - Refrigerant
Plastics : Polyamide 6.6 resin (PA6.6) - Ethylene propylene diene copolymer (EPDM) - polypropylene (PP) - polybutylene terephthalate (PBT) polyurethane glue
Miscellaneous : Miscellaneous



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8.3 - Sales scenario

Sales of the 30KAV-ZE 600 product are distributed as follows:

Country name	%
Europe	100.00%

This distribution affects the distance travelled during the distribution phase and the electric mix used during the usage phase.

8.4 - Recyclability rate

% Recyclable materials	87.80%
% Energy recovery	0.30%
% Residual waste	11.90%

87.80%	0.30%	11.90%
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The products' recyclability potential was evaluated using the "Eco'DEEE method for calculating recyclability and recovery".

(Version V1, 20 Sep. 2008 presented to ADEME [French environment and energy management agency]).

■ % Recyclable materials ■ % Energy recovery ■ % Residual waste

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8.5 - Environmental impacts

A life cycle analysis identifies a product's potential environmental impacts. CARRIER decided to conduct an in-depth analysis of each of its products to obtain accurate results.

Environmental impacts per kW corresponding to the functional unit

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	2.0526E+03	7.4407E+01	1.8929E+00	1.6584E-02	1.9755E+03	7.4684E-01	
2	5.1725E-04	3.7248E-05	3.6753E-09	4.0845E-11	4.7985E-04	1.4229E-07	
3	1.5815E+01	8.5476E-01	2.0702E-02	1.4680E-05	1.4938E+01	1.3181E-03	
4	6.6179E-01	9.8572E-02	2.8548E-03	5.1026E-06	5.6003E-01	3.3309E-04	
5	7.5691E-01	4.9484E-02	1.1596E-03	1.7786E-06	7.0606E-01	2.0091E-04	
6	3.6045E-03	3.5144E-03	7.3805E-08	-3.2488E-11	8.9989E-05	1.5089E-08	
7	2.1089E+04	7.0612E+02	2.5910E+01	4.0187E-02	2.0349E+04	7.9112E+00	
8	8.9735E+04	6.4692E+03	3.0330E+02	4.6099E-01	8.2895E+04	6.6637E+01	
9	9.7721E+04	1.2774E+04	1.2670E+02	2.5748E-01	8.4731E+04	8.9043E+01	
10	2.9392E+03	7.5794E+01	3.4384E-02	3.1628E-04	2.8634E+03	9.4090E-03	
11	2.4157E+00	2.4157E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	2.9417E+03	7.8210E+01	3.4384E-02	3.1628E-04	2.8634E+03	9.4090E-03	
13	3.8246E+04	1.0530E+03	2.6039E+01	4.1851E-02	3.7156E+04	1.0671E+01	
14	1.9052E+01	1.9052E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	3.8265E+04	1.0721E+03	2.6039E+01	4.1851E-02	3.7156E+04	1.0671E+01	
16	1.3436E+00	1.3436E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	7.7634E+00	2.6095E+00	1.6317E-04	2.4082E-04	5.1522E+00	1.2885E-03	
20	1.8897E+02	1.7810E+02	0.0000E+00	7.8537E-06	4.1226E-06	1.0874E+01	
21	7.4215E+03	3.2699E+01	6.4842E-02	1.2467E-02	7.3887E+03	3.3039E-02	
22	6.0452E+00	2.2037E-02	4.5908E-05	4.7319E-07	6.0230E+00	8.2394E-05	
23	1.9860E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	1.9860E-01	
24	9.0855E+00	2.6081E-01	0.0000E+00	1.5027E-01	0.0000E+00	8.6744E+00	
25	5.2078E-01	4.8891E-01	0.0000E+00	1.7545E-02	0.0000E+00	1.4324E-02	
26	2.1639E-03	0.0000E+00	0.0000E+00	2.1639E-03	0.0000E+00	0.0000E+00	
27	4.1206E+04	1.1503E+03	2.6073E+01	4.2167E-02	4.0019E+04	1.0680E+01	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	1.9354E-01	4.9092E-02	0.0000E+00	8.0555E-03	0.0000E+00	1.9753E+03	0.0000E+00
2	5.8011E-09	9.8934E-11	0.0000E+00	1.4176E-11	0.0000E+00	4.7985E-04	0.0000E+00
3	2.6601E-04	2.2472E-04	0.0000E+00	1.9986E-04	0.0000E+00	1.4937E+01	0.0000E+00
4	1.9726E-05	5.2008E-05	0.0000E+00	2.0498E-05	0.0000E+00	5.5993E-01	0.0000E+00
5	2.0759E-05	1.6395E-05	0.0000E+00	1.0048E-05	0.0000E+00	7.0601E-01	0.0000E+00
6	4.2476E-09	1.9544E-09	0.0000E+00	2.9609E-10	0.0000E+00	8.9982E-05	0.0000E+00
7	2.9150E-01	6.8614E-01	0.0000E+00	1.0394E-01	0.0000E+00	2.0348E+04	0.0000E+00
8	1.9978E+00	8.0314E+00	0.0000E+00	1.2169E+00	0.0000E+00	8.2884E+04	0.0000E+00
9	1.3732E+01	2.3548E+00	0.0000E+00	9.9929E-01	0.0000E+00	8.4714E+04	0.0000E+00
10	3.4970E-02	9.2027E-04	0.0000E+00	1.3450E-04	0.0000E+00	2.8634E+03	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	3.4970E-02	9.2027E-04	0.0000E+00	1.3450E-04	0.0000E+00	2.8634E+03	0.0000E+00
13	4.9740E-01	6.8962E-01	0.0000E+00	1.0444E-01	0.0000E+00	3.7154E+04	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	4.9740E-01	6.8962E-01	0.0000E+00	1.0444E-01	0.0000E+00	3.7154E+04	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

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17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	6.9910E-05	4.3708E-06	0.0000E+00	6.3701E-07	0.0000E+00	5.1521E+00	0.0000E+00
20	4.1226E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	9.0471E-02	1.7352E-03	0.0000E+00	2.5373E-04	0.0000E+00	7.3887E+03	0.0000E+00
22	7.2782E-05	1.2359E-06	0.0000E+00	1.7704E-07	0.0000E+00	6.0229E+00	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	5.3237E-01	6.9054E-01	0.0000E+00	1.0457E-01	0.0000E+00	4.0018E+04	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact. To obtain the results that correspond to your product, please contact your Carrier representative.

Environmental impacts for a piece of equipment corresponding to the product reference (Actual product)

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	1.24E06	2.6235E+03	4.4397E+01	2.2152E+00	7.7745E+04	9.6668E+02	
2	7.7707E-02	4.7968E-02	8.5925E-08	-1.2599E-08	2.9735E-02	3.3326E-06	
3	2.1577E+02	6.0855E+00	5.0683E-01	1.1736E-03	2.0913E+02	5.4016E-02	
4	1.9182E+01	1.0788E+00	6.8530E-02	8.3697E-04	1.8020E+01	1.3811E-02	
5	1.4570E+01	7.4457E-01	2.8167E-02	1.8494E-04	1.3789E+01	8.6957E-03	
6	1.2429E-01	1.1950E-01	1.7277E-06	-9.0558E-07	4.7912E-03	6.5602E-07	
7	9.0226E+05	2.0722E+04	6.0651E+02	3.9724E+00	8.8063E+05	2.9551E+02	
8	3.6348E+06	1.1416E+05	7.0998E+03	6.1733E+01	3.5113E+06	2.2476E+03	
9	4.2814E+06	4.9924E+05	3.0574E+03	3.2342E+01	3.7396E+06	3.9529E+04	
10	1.4333E+05	2.5781E+03	8.0422E-01	-2.4082E-01	1.4075E+05	4.2469E-01	
11	3.3590E+02	3.3590E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	1.4366E+05	2.9140E+03	8.0422E-01	-2.4082E-01	1.4075E+05	4.2469E-01	
13	1.3416E+06	5.2819E+04	6.0953E+02	3.5108E+00	1.2877E+06	4.2413E+02	
14	1.3139E+03	1.2237E+03	0.0000E+00	0.0000E+00	9.0240E+01	0.0000E+00	
15	1.3429E+06	5.4043E+04	6.0953E+02	3.5108E+00	1.2878E+06	4.2413E+02	
16	5.5972E+01	5.5972E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	1.9723E+05	1.9663E+01	3.8163E-03	1.9452E-02	1.9721E+05	4.0747E-02	
20	9.1960E+03	8.2460E+03	0.0000E+00	-2.9311E-03	4.4456E+02	5.0546E+02	
21	1.6398E+05	1.2133E+03	1.5166E+00	1.3896E+00	1.6276E+05	1.5392E+00	
22	1.6510E+02	8.3627E-01	1.0733E-03	-1.6221E-04	1.6426E+02	2.8965E-03	
23	3.6547E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	3.6547E+00	
24	4.3467E+02	1.3952E+01	0.0000E+00	1.5867E+01	0.0000E+00	4.0485E+02	
25	2.5712E+01	2.3159E+01	0.0000E+00	2.3296E+00	0.0000E+00	2.2368E-01	
26	2.2361E-01	0.0000E+00	0.0000E+00	2.2361E-01	0.0000E+00	0.0000E+00	
27	1.4866E+06	5.6957E+04	6.1034E+02	3.2700E+00	1.4286E+06	4.2456E+02	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	3.1354E+03	7.6267E-01	0.0000E+00	0.0000E+00	0.0000E+00	7.4608E+04	0.0000E+00
2	1.9105E-02	1.5370E-09	0.0000E+00	0.0000E+00	0.0000E+00	1.0630E-02	0.0000E+00
3	2.1223E-02	3.4912E-03	0.0000E+00	0.0000E+00	0.0000E+00	2.0910E+02	0.0000E+00
4	5.5789E-03	8.0797E-04	0.0000E+00	0.0000E+00	0.0000E+00	1.8013E+01	0.0000E+00
5	1.0802E-03	2.5471E-04	0.0000E+00	0.0000E+00	0.0000E+00	1.3787E+01	0.0000E+00
6	1.1721E-06	3.0363E-08	0.0000E+00	0.0000E+00	0.0000E+00	4.7900E-03	0.0000E+00

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7	9.6035E+01	1.0660E+01	0.0000E+00	0.0000E+00	0.0000E+00	8.8052E+05	0.0000E+00
8	7.7714E+03	1.2477E+02	0.0000E+00	0.0000E+00	0.0000E+00	3.5034E+06	0.0000E+00
9	8.1991E+03	3.6584E+01	0.0000E+00	0.0000E+00	0.0000E+00	3.7313E+06	0.0000E+00
10	1.3312E-02	1.4297E-02	0.0000E+00	0.0000E+00	0.0000E+00	1.4075E+05	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	1.3312E-02	1.4297E-02	0.0000E+00	0.0000E+00	0.0000E+00	1.4075E+05	0.0000E+00
13	7.7471E+01	1.0714E+01	0.0000E+00	0.0000E+00	0.0000E+00	1.2876E+06	0.0000E+00
14	9.0240E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	1.6771E+02	1.0714E+01	0.0000E+00	0.0000E+00	0.0000E+00	1.2876E+06	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	4.3590E-02	6.7903E-05	0.0000E+00	0.0000E+00	0.0000E+00	1.9721E+05	0.0000E+00
20	4.4352E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	4.4411E+02	0.0000E+00
21	5.4988E+00	2.6958E-02	0.0000E+00	0.0000E+00	0.0000E+00	1.6275E+05	0.0000E+00
22	3.6612E-04	1.9200E-05	0.0000E+00	0.0000E+00	0.0000E+00	1.6426E+02	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	1.6772E+02	1.0728E+01	0.0000E+00	0.0000E+00	0.0000E+00	1.4284E+06	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact.

To obtain the results that correspond to your product, please contact your Carrier representative.

9. 30KAV-ZE650

9.1 - Product description

In accordance with the documents that provide the framework for the life cycle analysis, the reference service life (RSL) was set on the basis of the target customers.

The environmental indicators are normalised to the functional unit by dividing by the machine capacity.

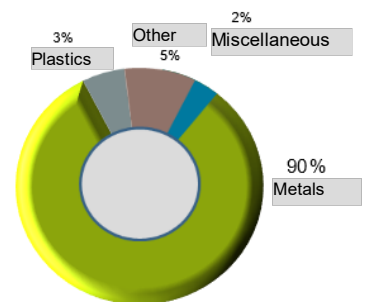
Capacity in heating mode: -	SCOP:-	Reference Service Life: 22 years
Capacity in cooling mode: 673 kW	SEER: 5.19	Customer type: Residential sector
Fluid emission level: 2.00% of the total load/year		collective housing/service sector
Fluid type: R1234-ZE (GWP = 7 tCO ₂ eq)		

9.2 - Component materials

Actual mass of the unit: 6531.00 kg
 Total modelled mass: 6241.41 kg, i.e. a total of 95.57% of the total mass including the product, its packaging and the additional components supplied with the reference product

PEP material category	Material	Mass (kg)	Percentage
Metals	steel	2251.20	36.1%
Metals	cast iron	1752.90	28.1%
Metals	aluminium	579.77	9.3%
Metals	copper	509.43	8.2%
Metals	35% recycled steel	407.56	6.5%
Metals	ferrite magnet	108.85	1.7%
Miscellaneous	Miscellaneous	87.61	1.4%
Other	Refrigerant	166.00	2.7%
Other	solid wood, for pallets	95.92	1.5%
Other	lubricating oil	42.47	0.7%
Other	fibreglass	27.14	0.4%
Plastics	polyamide resin 6.6 (PA6.6)	101.62	1.6%
Plastics	polypropylene (PP)	42.02	0.7%
Plastics	polybutylene terephthalate (PBT)	23.80	0.4%
Plastics	flexible polyurethane foam	23.60	0.4%
Plastics	ethylene propylene diene copolymer (EPDM)	21.52	0.3%
Total		6241.41	100.0%

- Metals** : Steel - Cast iron - Aluminium - Copper - 35% recycled steel - Ferrite magnet
- Other** : Raw materials - Solid wood for pallets - Lubricating oil - Fibreglass - Refrigerant
- Plastics** : Polyamide 6.6 resin (PA6.6) - Ethylene propylene diene copolymer (EPDM) - polypropylene (PP) - polybutylene terephthalate (PBT) polyurethane glue
- Miscellaneous** : Miscellaneous



9. 30KAV-ZE650

9.3 - Sales scenario

Sales of the 30KAV-ZE 650 product are distributed as follows:

Country name	%
Europe	100.00%

This distribution affects the distance travelled during the distribution phase and the electric mix used during the usage phase.

9.4 - Recyclability rate

% Recyclable materials	87.90%	
% Energy recovery	0.30%	
% Residual waste	11.70%	
87.90%	0.30%	11.70%

The products' recyclability potential was evaluated using the "Eco'DEEE method for calculating recyclability and recovery".

(Version V1, 20 Sep. 2008 presented to ADEME [French environment and energy management agency]).

■ % Recyclable materials ■ % Energy recovery ■ % Residual waste

9. 30KAV-ZE650

9.5 - Environmental impacts

A life cycle analysis identifies a product's potential environmental impacts. CARRIER decided to conduct an in-depth analysis of each of its products to obtain accurate results.

Environmental impacts per kW corresponding to the functional unit

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	2.0501E+03	7.5993E+01	1.8371E+00	2.3440E-02	1.9715E+03	7.4547E-01	
2	5.1535E-04	3.6313E-05	3.5671E-09	5.4713E-11	4.7888E-04	1.4540E-07	
3	1.5868E+01	9.3884E-01	2.0092E-02	4.7317E-05	1.4908E+01	1.3031E-03	
4	6.6921E-01	1.0721E-01	2.7708E-03	1.2550E-05	5.5889E-01	3.2985E-04	
5	7.5920E-01	5.3242E-02	1.1254E-03	4.0759E-06	7.0463E-01	1.9683E-04	
6	3.3191E-03	3.2292E-03	7.1631E-08	2.6333E-10	8.9806E-05	1.4806E-08	
7	2.1075E+04	7.3440E+02	2.5147E+01	1.4244E-01	2.0308E+04	7.8578E+00	
8	8.9963E+04	6.8735E+03	2.9436E+02	1.6583E+00	8.2727E+04	6.6861E+01	
9	9.7702E+04	1.2933E+04	1.2297E+02	5.5189E-01	8.4559E+04	8.6742E+01	
10	2.9320E+03	7.4214E+01	3.3371E-02	4.4535E-04	2.8577E+03	9.2034E-03	
11	2.7083E+00	2.7083E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	2.9347E+03	7.6922E+01	3.3371E-02	4.4535E-04	2.8577E+03	9.2034E-03	
13	3.8204E+04	1.0879E+03	2.5272E+01	1.4460E-01	3.7080E+04	1.0531E+01	
14	1.6729E+01	1.6729E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	3.8221E+04	1.1046E+03	2.5272E+01	1.4460E-01	3.7080E+04	1.0531E+01	
16	1.2706E+00	1.2706E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	7.5752E+00	2.4317E+00	1.5837E-04	2.4652E-04	5.1418E+00	1.2733E-03	
20	1.7916E+02	1.6863E+02	0.0000E+00	7.9004E-06	3.9756E-06	1.0531E+01	
21	7.4076E+03	3.3652E+01	6.2932E-02	1.2347E-02	7.3738E+03	3.2271E-02	
22	6.0341E+00	2.3025E-02	4.4556E-05	6.4529E-07	6.0109E+00	8.2074E-05	
23	2.1723E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	2.1723E-01	
24	8.7866E+00	2.5277E-01	0.0000E+00	1.4564E-01	0.0000E+00	8.3882E+00	
25	5.0470E-01	4.7384E-01	0.0000E+00	1.7004E-02	0.0000E+00	1.3861E-02	
26	2.0972E-03	0.0000E+00	0.0000E+00	2.0972E-03	0.0000E+00	0.0000E+00	
27	4.1155E+04	1.1815E+03	2.5306E+01	1.4505E-01	3.9938E+04	1.0540E+01	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	1.8658E-01	4.4204E-02	0.0000E+00	7.2536E-03	0.0000E+00	1.9713E+03	0.0000E+00
2	5.5942E-09	8.9085E-11	0.0000E+00	1.2765E-11	0.0000E+00	4.7888E-04	0.0000E+00
3	2.5627E-04	2.0235E-04	0.0000E+00	1.7996E-04	0.0000E+00	1.4907E+01	0.0000E+00
4	1.8963E-05	4.6830E-05	0.0000E+00	1.8457E-05	0.0000E+00	5.5880E-01	0.0000E+00
5	2.0000E-05	1.4763E-05	0.0000E+00	9.0473E-06	0.0000E+00	7.0459E-01	0.0000E+00
6	4.0939E-09	1.7599E-09	0.0000E+00	2.6662E-10	0.0000E+00	8.9800E-05	0.0000E+00
7	2.8033E-01	6.1783E-01	0.0000E+00	9.3592E-02	0.0000E+00	2.0307E+04	0.0000E+00
8	1.9173E+00	7.2318E+00	0.0000E+00	1.0957E+00	0.0000E+00	8.2717E+04	0.0000E+00
9	1.3239E+01	2.1204E+00	0.0000E+00	8.9981E-01	0.0000E+00	8.4542E+04	0.0000E+00
10	3.3722E-02	8.2865E-04	0.0000E+00	1.2111E-04	0.0000E+00	2.8576E+03	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	3.3722E-02	8.2865E-04	0.0000E+00	1.2111E-04	0.0000E+00	2.8576E+03	0.0000E+00
13	4.7888E-01	6.2097E-01	0.0000E+00	9.4041E-02	0.0000E+00	3.7079E+04	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	4.7888E-01	6.2097E-01	0.0000E+00	9.4041E-02	0.0000E+00	3.7079E+04	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

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17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
s18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	6.7413E-05	3.9357E-06	0.0000E+00	5.7359E-07	0.0000E+00	5.1417E+00	0.0000E+00
20	3.9756E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	8.7243E-02	1.5625E-03	0.0000E+00	2.2847E-04	0.0000E+00	7.3737E+03	0.0000E+00
22	7.0186E-05	1.1128E-06	0.0000E+00	1.5941E-07	0.0000E+00	6.0108E+00	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	5.1260E-01	6.2179E-01	0.0000E+00	9.4162E-02	0.0000E+00	3.9937E+04	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact.

To obtain the results that correspond to your product, please contact your Carrier representative.

Environmental impacts for a piece of equipment corresponding to the product reference (Actual product)

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	1.3797E+06	5.1143E+04	1.2364E+03	1.5775E+01	1.3268E+06	5.0170E+02	
2	3.4683E-01	2.4439E-02	2.4006E-06	3.6822E-08	3.2229E-01	9.7851E-05	
3	1.0679E+04	6.3184E+02	1.3522E+01	3.1845E-02	1.0033E+04	8.7699E-01	
4	4.5038E+02	7.2151E+01	1.8647E+00	8.4459E-03	3.7613E+02	2.2199E-01	
5	5.1094E+02	3.5832E+01	7.5742E-01	2.7431E-03	4.7422E+02	1.3246E-01	
6	2.2337E+00	2.1732E+00	4.8208E-05	1.7722E-07	6.0440E-02	9.9645E-06	
7	1.4184E+07	4.9425E+05	1.6924E+04	9.5864E+01	1.3667E+07	5.2883E+03	
8	6.0545E+07	4.6259E+06	1.9811E+05	1.1160E+03	5.5675E+07	4.4997E+04	
9	6.5753E+07	8.7038E+06	8.2759E+04	3.7142E+02	5.6908E+07	5.8377E+04	
10	1.9732E+06	4.9946E+04	2.2459E+01	2.9972E-01	1.9232E+06	6.1939E+00	
11	1.8227E+03	1.8227E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	1.9750E+06	5.1769E+04	2.2459E+01	2.9972E-01	1.9232E+06	6.1939E+00	
13	2.5711E+07	7.3214E+05	1.7008E+04	9.7317E+01	2.4955E+07	7.0875E+03	
14	1.1259E+04	1.1259E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	2.5723E+07	7.4339E+05	1.7008E+04	9.7317E+01	2.4955E+07	7.0875E+03	
16	8.5509E+02	8.5509E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	5.0980E+03	1.6365E+03	1.0658E-01	1.6591E-01	3.4604E+03	8.5693E-01	
20	1.2058E+05	1.1349E+05	0.0000E+00	5.3169E-03	2.6756E-03	7.0870E+03	
21	4.9853E+06	2.2647E+04	4.2354E+01	8.3096E+00	4.9626E+06	2.1718E+01	
22	4.0609E+03	1.5496E+01	2.9986E-02	4.3428E-04	4.0453E+03	5.5236E-02	
23	1.4619E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	1.4619E+02	
24	5.9134E+03	1.7012E+02	0.0000E+00	9.8017E+01	0.0000E+00	5.6453E+03	
25	3.3967E+02	3.1890E+02	0.0000E+00	1.1444E+01	0.0000E+00	9.3282E+00	
26	1.4114E+00	0.0000E+00	0.0000E+00	1.4114E+00	0.0000E+00	0.0000E+00	
27	2.7697E+07	7.9516E+05	1.7031E+04	9.7617E+01	2.6878E+07	7.0937E+03	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	1.2557E+02	2.9750E+01	0.0000E+00	4.8817E+00	0.0000E+00	1.3267E+06	0.0000E+00
2	3.7649E-06	5.9954E-08	0.0000E+00	8.5909E-09	0.0000E+00	3.2228E-01	0.0000E+00
3	1.7247E-01	1.3618E-01	0.0000E+00	1.2112E-01	0.0000E+00	1.0033E+04	0.0000E+00
4	1.2762E-02	3.1517E-02	0.0000E+00	1.2422E-02	0.0000E+00	3.7607E+02	0.0000E+00
5	1.3460E-02	9.9353E-03	0.0000E+00	6.0888E-03	0.0000E+00	4.7419E+02	0.0000E+00
6	2.7552E-06	1.1844E-06	0.0000E+00	1.7943E-07	0.0000E+00	6.0436E-02	0.0000E+00

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7	1.8866E+02	4.1580E+02	0.0000E+00	6.2987E+01	0.0000E+00	1.3666E+07	0.0000E+00
8	1.2904E+03	4.8670E+03	0.0000E+00	7.3743E+02	0.0000E+00	5.5668E+07	0.0000E+00
9	8.9101E+03	1.4270E+03	0.0000E+00	6.0557E+02	0.0000E+00	5.6897E+07	0.0000E+00
10	2.2695E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	1.9232E+06	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	2.2695E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	1.9232E+06	0.0000E+00
13	3.2229E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	2.4954E+07	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	3.2229E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	2.4954E+07	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	4.5369E-02	2.6487E-03	0.0000E+00	3.8603E-04	0.0000E+00	3.4604E+03	0.0000E+00
20	2.6756E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	5.8715E+01	1.0515E+00	0.0000E+00	1.5376E-01	0.0000E+00	4.9625E+06	0.0000E+00
22	4.7235E-02	7.4894E-04	0.0000E+00	1.0729E-04	0.0000E+00	4.0453E+03	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	3.4498E+02	4.1847E+02	0.0000E+00	6.3371E+01	0.0000E+00	2.6878E+07	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact.

To obtain the results that correspond to your product, please contact your Carrier representative.

10. 30KAV-ZE750

10.1 - Product description

In accordance with the documents that provide the framework for the life cycle analysis, the reference service life (RSL) was set on the basis of the target customers.

The environmental indicators are normalised to the functional unit by dividing by the machine capacity.

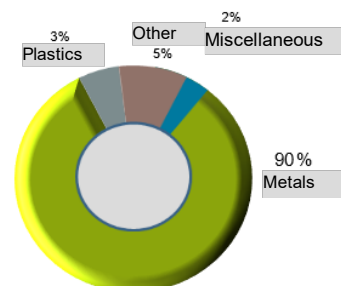
Capacity in heating mode: - SCOP:- Reference Service Life: 22 years
 Capacity in cooling mode: 751 kW SEER: 5.16 Customer type: Residential sector
 Fluid emission level: 2.00% of the total load/year collective housing/service sector
 Fluid type: R1234-ZE (GWP = 7 tCO₂eq)

10.2 - Component materials

Actual mass of the unit: 6998.00 kg
 Total modelled mass: 6652.14 kg, i.e. a total of 95.08% of the total mass including the product, its packaging and the additional components supplied with the reference product

PEP material category	Material	Mass (kg)	Percentage
Metals	steel	2335.39	35.1%
Metals	cast iron	1968.60	29.6%
Metals	aluminium	591.02	8.9%
Metals	copper	574.42	8.6%
Metals	35% recycled steel	410.46	6.2%
Metals	ferrite magnet	109.75	1.7%
Miscellaneous	Miscellaneous	93.66	1.4%
Other	Refrigerant	175.00	2.6%
Other	solid wood, for pallets	95.92	1.4%
Other	lubricating oil	45.41	0.7%
Other	fibreglass	28.08	0.4%
Plastics	polyamide resin 6.6 (PA6.6)	108.02	1.6%
Plastics	polypropylene (PP)	42.52	0.6%
Plastics	ethylene propylene diene copolymer (EPDM)	27.07	0.4%
Plastics	polybutylene terephthalate (PBT)	23.80	0.4%
Plastics	flexible polyurethane foam	19.02	0.3%
Total		6648.14	100.0%

- Metals** : Steel - Cast iron - Aluminium - Copper - 35% recycled steel - Ferrite magnet
- Other** : Raw materials - Solid wood for pallets - Lubricating oil - Fibreglass - Refrigerant
- Plastics** : Polyamide 6.6 resin (PA6.6) - Ethylene propylene diene copolymer (EPDM) - polypropylene (PP) - polybutylene terephthalate (PBT) polyurethane glue
- Miscellaneous** : Miscellaneous



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10.3 - Sales scenario

Sales of the 30KAV-ZE 750 product are distributed as follows:

Country name	%
Europe	100.00%

This distribution affects the distance travelled during the distribution phase and the electric mix used during the usage phase.

10.4 - Recyclability rate

% Recyclable materials	87.90%	
% Energy recovery	0.30%	
% Residual waste	11.70%	
87.90%	0.30%	11.70%

The products' recyclability potential was evaluated using the "Eco'DEEE method for calculating recyclability and recovery".
(Version V1, 20 Sep. 2008 presented to ADEME [French environment and energy management agency]).

■ % Recyclable materials ■ % Energy recovery ■ % Residual waste

10. 30KAV-ZE750

10.5 - Environmental impacts

A life cycle analysis identifies a product's potential environmental impacts. CARRIER decided to conduct an in-depth analysis of each of its products to obtain accurate results.

Environmental impacts per kW corresponding to the functional unit

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	2.0532E+03	7.8119E+01	1.7592E+00	2.1814E-02	1.9725E+03	7.1162E-01	
2	5.1394E-04	3.4666E-05	3.4159E-09	5.1342E-11	4.7914E-04	1.3830E-07	
3	1.5978E+01	1.0420E+00	1.9240E-02	4.2597E-05	1.4916E+01	1.2468E-03	
4	6.7887E-01	1.1671E-01	2.6533E-03	1.1390E-05	5.5917E-01	3.1600E-04	
5	7.6446E-01	5.8188E-02	1.0777E-03	3.7094E-06	7.0500E-01	1.8821E-04	
6	3.2884E-03	3.1985E-03	6.8594E-08	2.2848E-10	8.9853E-05	1.4164E-08	
7	2.1122E+04	7.7169E+02	2.4081E+01	1.2795E-01	2.0318E+04	7.5023E+00	
8	9.0513E+04	7.3965E+03	2.8189E+02	1.4891E+00	8.2769E+04	6.3777E+01	
9	9.8028E+04	1.3225E+04	1.1776E+02	5.0396E-01	8.4602E+04	8.2929E+01	
10	2.9302E+03	7.0917E+01	3.1956E-02	4.1450E-04	2.8592E+03	8.8176E-03	
11	2.4271E+00	2.4271E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	2.9326E+03	7.3344E+01	3.1956E-02	4.1450E-04	2.8592E+03	8.8176E-03	
13	3.8236E+04	1.1021E+03	2.4201E+01	1.3000E-01	3.7100E+04	1.0059E+01	
14	1.5778E+01	1.5778E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	3.8252E+04	1.1179E+03	2.4201E+01	1.3000E-01	3.7100E+04	1.0059E+01	
16	1.2583E+00	1.2583E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	7.5683E+00	2.4222E+00	1.5165E-04	2.5076E-04	5.1445E+00	1.2009E-03	
20	1.7524E+02	1.6517E+02	0.0000E+00	7.9015E-06	3.7559E-06	1.0065E+01	
21	7.4092E+03	3.1397E+01	6.0265E-02	1.1776E-02	7.3777E+03	3.0992E-02	
22	6.0356E+00	2.1429E-02	4.2667E-05	6.0208E-07	6.0140E+00	7.8321E-05	
23	2.0490E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	2.0490E-01	
24	8.4239E+00	2.4143E-01	0.0000E+00	1.3910E-01	0.0000E+00	8.0434E+00	
25	4.8207E-01	4.5258E-01	0.0000E+00	1.6241E-02	0.0000E+00	1.3251E-02	
26	2.0031E-03	0.0000E+00	0.0000E+00	2.0031E-03	0.0000E+00	0.0000E+00	
27	4.1185E+04	1.1912E+03	2.4233E+01	1.3041E-01	3.9959E+04	1.0068E+01	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	1.7623E-01	3.9613E-02	0.0000E+00	6.5002E-03	0.0000E+00	1.9723E+03	0.0000E+00
2	5.2849E-09	7.9832E-11	0.0000E+00	1.1439E-11	0.0000E+00	4.7913E-04	0.0000E+00
3	2.4193E-04	1.8133E-04	0.0000E+00	1.6127E-04	0.0000E+00	1.4915E+01	0.0000E+00
4	1.7874E-05	4.1966E-05	0.0000E+00	1.6540E-05	0.0000E+00	5.5910E-01	0.0000E+00
5	1.8882E-05	1.3229E-05	0.0000E+00	8.1076E-06	0.0000E+00	7.0496E-01	0.0000E+00
6	3.8661E-09	1.5771E-09	0.0000E+00	2.3893E-10	0.0000E+00	8.9848E-05	0.0000E+00
7	2.4009E+00	2.6649E-01	0.0000E+00	0.0000E+00	0.0000E+00	2.2013E+04	0.0000E+00
8	1.8051E+00	6.4807E+00	0.0000E+00	9.8194E-01	0.0000E+00	8.2760E+04	0.0000E+00
9	1.2506E+01	1.9002E+00	0.0000E+00	8.0635E-01	0.0000E+00	8.4587E+04	0.0000E+00
10	3.1858E-02	7.4258E-04	0.0000E+00	1.0853E-04	0.0000E+00	2.8591E+03	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	3.1858E-02	7.4258E-04	0.0000E+00	1.0853E-04	0.0000E+00	2.8591E+03	0.0000E+00
13	4.5187E-01	5.5647E-01	0.0000E+00	8.4274E-02	0.0000E+00	3.7099E+04	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	4.5187E-01	5.5647E-01	0.0000E+00	8.4274E-02	0.0000E+00	3.7099E+04	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

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17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	6.3683E-05	3.5269E-06	0.0000E+00	5.1402E-07	0.0000E+00	5.1444E+00	0.0000E+00
20	3.7559E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	8.2419E-02	1.4002E-03	0.0000E+00	2.0474E-04	0.0000E+00	7.3776E+03	0.0000E+00
22	6.6306E-05	9.9726E-07	0.0000E+00	1.4286E-07	0.0000E+00	6.0139E+00	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	4.8372E-01	5.5721E-01	0.0000E+00	8.4382E-02	0.0000E+00	3.9958E+04	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact.

To obtain the results that correspond to your product, please contact your Carrier representative.

Environmental impacts for a piece of equipment corresponding to the product reference (Actual product)

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	1.5419E+06	5.8667E+04	1.3212E+03	1.6383E+01	1.4814E+06	5.3443E+02	
2	3.8597E-01	2.6035E-02	2.5653E-06	3.8558E-08	3.5983E-01	1.0386E-04	
3	1.2000E+04	7.8252E+02	1.4449E+01	3.1990E-02	1.1202E+04	9.3635E-01	
4	5.0983E+02	8.7650E+01	1.9926E+00	8.5537E-03	4.1994E+02	2.3731E-01	
5	5.7411E+02	4.3699E+01	8.0938E-01	2.7858E-03	5.2945E+02	1.4134E-01	
6	2.4696E+00	2.4020E+00	5.1514E-05	1.7159E-07	6.7480E-02	1.0637E-05	
7	1.5862E+07	5.7954E+05	1.8085E+04	9.6093E+01	1.5259E+07	5.6342E+03	
8	6.7975E+07	5.5548E+06	2.1170E+05	1.1183E+03	6.2160E+07	4.7896E+04	
9	7.3619E+07	9.9317E+06	8.8436E+04	3.7848E+02	6.3536E+07	6.2280E+04	
10	2.2005E+06	5.3259E+04	2.3999E+01	3.1129E-01	2.1472E+06	6.6220E+00	
11	1.8227E+03	1.8227E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	2.2023E+06	5.5082E+04	2.3999E+01	3.1129E-01	2.1472E+06	6.6220E+00	
13	2.8716E+07	8.2768E+05	1.8175E+04	9.7630E+01	2.7862E+07	7.5546E+03	
14	1.1849E+04	1.1849E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	2.8727E+07	8.3953E+05	1.8175E+04	9.7630E+01	2.7862E+07	7.5546E+03	
16	9.4497E+02	9.4497E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	5.6838E+03	1.8191E+03	1.1389E-01	1.8832E-01	3.8635E+03	9.0186E-01	
20	1.3161E+05	1.2405E+05	0.0000E+00	5.9341E-03	2.8207E-03	7.5587E+03	
21	5.5644E+06	2.3579E+04	4.5259E+01	8.8436E+00	5.5407E+06	2.3275E+01	
22	4.5327E+03	1.6093E+01	3.2043E-02	4.5216E-04	4.5165E+03	5.8819E-02	
23	1.5388E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	1.5388E+02	
24	6.3264E+03	1.8131E+02	0.0000E+00	1.0447E+02	0.0000E+00	6.0406E+03	
25	3.6203E+02	3.3988E+02	0.0000E+00	1.2197E+01	0.0000E+00	9.9516E+00	
26	1.5043E+00	0.0000E+00	0.0000E+00	1.5043E+00	0.0000E+00	0.0000E+00	
27	3.0929E+07	8.9461E+05	1.8199E+04	9.7941E+01	3.0009E+07	7.5612E+03	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	1.3235E+02	2.9750E+01	0.0000E+00	4.8817E+00	0.0000E+00	1.4812E+06	0.0000E+00
2	3.9690E-06	5.9954E-08	0.0000E+00	8.5909E-09	0.0000E+00	3.5983E-01	0.0000E+00
3	1.8169E-01	1.3618E-01	0.0000E+00	1.2112E-01	0.0000E+00	1.1201E+04	0.0000E+00
4	1.3424E-02	3.1517E-02	0.0000E+00	1.2422E-02	0.0000E+00	4.1988E+02	0.0000E+00
5	1.4180E-02	9.9353E-03	0.0000E+00	6.0888E-03	0.0000E+00	5.2942E+02	0.0000E+00
6	2.9034E-06	1.1844E-06	0.0000E+00	1.7943E-07	0.0000E+00	6.7476E-02	0.0000E+00

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7	1.9848E+02	4.1580E+02	0.0000E+00	6.2987E+01	0.0000E+00	1.5258E+07	0.0000E+00
8	1.3556E+03	4.8670E+03	0.0000E+00	7.3743E+02	0.0000E+00	6.2153E+07	0.0000E+00
9	9.3918E+03	1.4270E+03	0.0000E+00	6.0557E+02	0.0000E+00	6.3525E+07	0.0000E+00
10	2.3925E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	2.1472E+06	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	2.3925E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	2.1472E+06	0.0000E+00
13	3.3935E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	2.7861E+07	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	3.3935E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	2.7861E+07	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	4.7826E-02	2.6487E-03	0.0000E+00	3.8603E-04	0.0000E+00	3.8635E+03	0.0000E+00
20	2.8207E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	6.1897E+01	1.0515E+00	0.0000E+00	1.5376E-01	0.0000E+00	5.5406E+06	0.0000E+00
22	4.9796E-02	7.4894E-04	0.0000E+00	1.0729E-04	0.0000E+00	4.5165E+03	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	3.6328E+02	4.1847E+02	0.0000E+00	6.3371E+01	0.0000E+00	3.0008E+07	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.
With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact.
To obtain the results that correspond to your product, please contact your Carrier representative.

11. 30KAV-ZE 800

11.1 - Product description

In accordance with the documents that provide the framework for the life cycle analysis, the reference service life (RSL) was set on the basis of the target customers.

The environmental indicators are normalised to the functional unit by dividing by the machine capacity.

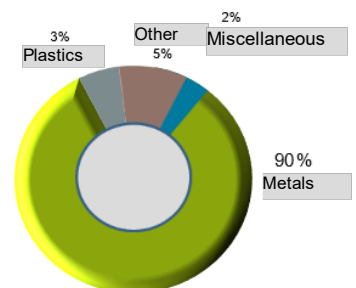
Capacity in heating mode: -	SCOP: -	Reference Service Life: 22 years
Capacity in cooling mode: 823 kW	SEER: 5.30	Customer type: Residential sector
Fluid emission level: 2.00% of the total load/year		collective housing/service sector
Fluid type: R1234-ZE (GWP = 7 tCO ₂ eq)		

11.2 - Component materials

Actual mass of the unit: 7549.00 kg
 Total modelled mass: 7407.00 kg, i.e. a total of 98.12% of the total mass including the product, its packaging and the additional components supplied with the reference product.

PEP material category	Material	Mass (kg)	Percentage
Metals	steel	2462.45	32.6%
Metals	cast iron	1976.70	26.1%
Metals	copper	1165.00	15.4%
Metals	aluminium	678.16	9.0%
Metals	35% recycled steel	442.82	5.9%
Metals	ferrite magnet	126.99	1.7%
Miscellaneous	Miscellaneous	94.51	1.3%
Other	Refrigerant	199.06	2.6%
Other	solid wood, for pallets	104.15	1.4%
Other	lubricating oil	42.47	0.6%
Other	fibreglass	31.59	0.4%
Plastics	polyamide resin 6.6 (PA6.6)	112.09	1.5%
Plastics	polypropylene (PP)	47.89	0.6%
Plastics	ethylene propylene diene copolymer (EPDM)	28.85	0.4%
Plastics	polybutylene terephthalate (PBT)	27.00	0.4%
Plastics	flexible polyurethane foam	19.98	0.3%
Total		7559.71	100.0%

- Metals** : Steel - Cast iron - Aluminium - Copper - 35% recycled steel - Ferrite magnet
- Other** : Raw materials - Solid wood for pallets - Lubricating oil - Fibreglass - Refrigerant
- Plastics** : Polyamide 6.6 resin (PA6.6) - Ethylene propylene diene copolymer (EPDM) - polypropylene (PP) - polybutylene terephthalate (PBT) polyurethane glue
- Miscellaneous** : Miscellaneous



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11.3 - Sales scenario

Sales of the 30KAV-ZE 800 product are distributed as follows:

Country name	%
Europe	100.00%

This distribution affects the distance travelled during the distribution phase and the electric mix used during the usage phase.

11.4 - Recyclability rate

% Recyclable materials	87.90%
% Energy recovery	0.30%
% Residual waste	11.80%

87.90%	0.30%	11.80%
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The products' recyclability potential was evaluated using the "Eco'DEEE method for calculating recyclability and recovery".
(Version V1, 20 Sep. 2008 presented to ADEME [French environment and energy management agency]).

■ % Recyclable materials ■ % Energy recovery ■ % Residual waste

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11.5 - Environmental impacts

A life cycle analysis identifies a product's potential environmental impacts. CARRIER decided to conduct an in-depth analysis of each of its products to obtain accurate results.

Environmental impacts per kW corresponding to the functional unit

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	2.0258E+03	8.4340E+01	1.7025E+00	2.1252E-02	1.9391E+03	6.9664E-01	
2	5.0509E-04	3.3948E-05	3.3056E-09	5.0126E-11	4.7100E-04	1.3664E-07	
3	1.5896E+01	1.2139E+00	1.8619E-02	4.1892E-05	1.4662E+01	1.2154E-03	
4	6.8676E-01	1.3420E-01	2.5677E-03	1.1175E-05	5.4968E-01	3.0840E-04	
5	7.6085E-01	6.6594E-02	1.0430E-03	3.6374E-06	6.9303E-01	1.8279E-04	
6	3.8629E-03	3.7745E-03	6.6381E-08	2.2726E-10	8.8328E-05	1.3765E-08	
7	2.0857E+04	8.5316E+02	2.3304E+01	1.2594E-01	1.9973E+04	7.3275E+00	
8	9.0057E+04	8.3563E+03	2.7279E+02	1.4659E+00	8.1364E+04	6.2542E+01	
9	1.0002E+05	1.6662E+04	1.1396E+02	4.9407E-01	8.3166E+04	8.0352E+01	
10	2.8823E+03	7.1616E+01	3.0925E-02	4.0378E-04	2.8106E+03	8.5626E-03	
11	2.4048E+00	2.4048E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	2.8847E+03	7.4021E+01	3.0925E-02	4.0378E-04	2.8106E+03	8.5626E-03	
13	3.7687E+04	1.1833E+03	2.3420E+01	1.2795E-01	3.6470E+04	9.7994E+00	
14	1.4960E+01	1.4960E+01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	3.7702E+04	1.1983E+03	2.3420E+01	1.2795E-01	3.6470E+04	9.7994E+00	
16	1.2749E+00	1.2749E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	7.4298E+00	2.3711E+00	1.4676E-04	2.5240E-04	5.0571E+00	1.1664E-03	
20	2.3763E+02	2.2791E+02	0.0000E+00	7.8702E-06	3.7015E-06	9.7242E+00	
21	7.2848E+03	3.2254E+01	5.8320E-02	1.1394E-02	7.2524E+03	3.0105E-02	
22	5.9343E+00	2.2292E-02	4.1290E-05	5.8638E-07	5.9119E+00	7.6601E-05	
23	2.0792E-01	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	2.0792E-01	
24	8.1446E+00	2.3344E-01	0.0000E+00	1.3450E-01	0.0000E+00	7.7767E+00	
25	4.6612E-01	4.3761E-01	0.0000E+00	1.5704E-02	0.0000E+00	1.2806E-02	
26	1.9369E-03	0.0000E+00	0.0000E+00	1.9369E-03	0.0000E+00	0.0000E+00	
27	4.0587E+04	1.2723E+03	2.3451E+01	1.2835E-01	3.9281E+04	9.8080E+00	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	1.7362E-01	3.6148E-02	0.0000E+00	5.9315E-03	0.0000E+00	1.9388E+03	0.0000E+00
2	5.2083E-09	7.2848E-11	0.0000E+00	1.0439E-11	0.0000E+00	4.7100E-04	0.0000E+00
3	2.3819E-04	1.6547E-04	0.0000E+00	1.4716E-04	0.0000E+00	1.4662E+01	0.0000E+00
4	1.7560E-05	3.8295E-05	0.0000E+00	1.5093E-05	0.0000E+00	5.4961E-01	0.0000E+00
5	1.8591E-05	1.2072E-05	0.0000E+00	7.3983E-06	0.0000E+00	6.9299E-01	0.0000E+00
6	3.8080E-09	1.4391E-09	0.0000E+00	2.1802E-10	0.0000E+00	8.8322E-05	0.0000E+00
7	2.5974E-01	5.0523E-01	0.0000E+00	7.6534E-02	0.0000E+00	1.9972E+04	0.0000E+00
8	1.7704E+00	5.9137E+00	0.0000E+00	8.9603E-01	0.0000E+00	8.1355E+04	0.0000E+00
9	1.2322E+01	1.7339E+00	0.0000E+00	7.3581E-01	0.0000E+00	8.3151E+04	0.0000E+00
10	3.1395E-02	6.7762E-04	0.0000E+00	9.9033E-05	0.0000E+00	2.8106E+03	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	3.1395E-02	6.7762E-04	0.0000E+00	9.9033E-05	0.0000E+00	2.8106E+03	0.0000E+00
13	4.4459E-01	5.0779E-01	0.0000E+00	7.6901E-02	0.0000E+00	3.6469E+04	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	4.4459E-01	5.0779E-01	0.0000E+00	7.6901E-02	0.0000E+00	3.6469E+04	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

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17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	6.2756E-05	3.2184E-06	0.0000E+00	4.6905E-07	0.0000E+00	5.0571E+00	0.0000E+00
20	3.7015E-06	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	8.1224E-02	1.2777E-03	0.0000E+00	1.8683E-04	0.0000E+00	7.2524E+03	0.0000E+00
22	6.5344E-05	9.1002E-07	0.0000E+00	1.3036E-07	0.0000E+00	5.9118E+00	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	4.7599E-01	5.0847E-01	0.0000E+00	7.7000E-02	0.0000E+00	3.9280E+04	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact.

To obtain the results that correspond to your product, please contact your Carrier representative.

Environmental impacts for a piece of equipment corresponding to the product reference (Actual product)

List of references in paragraph: 12.1 Environmental references and indicators

Reference	Total	Production	Distribution	Installation	Use*	End of life	
1	1.6672E+06	6.9412E+04	1.4011E+03	1.7491E+01	1.5958E+06	5.7333E+02	
2	4.1569E-01	2.7940E-02	2.7205E-06	4.1254E-08	3.8763E-01	1.1245E-04	
3	1.3083E+04	9.9907E+02	1.5324E+01	3.4477E-02	1.2067E+04	1.0003E+00	
4	5.6521E+02	1.1045E+02	2.1132E+00	9.1970E-03	4.5238E+02	2.5382E-01	
5	6.2618E+02	5.4807E+01	8.5835E-01	2.9936E-03	5.7036E+02	1.5044E-01	
6	3.1792E+00	3.1064E+00	5.4631E-05	1.8703E-07	7.2694E-02	1.1329E-05	
7	1.7165E+07	7.0215E+05	1.9179E+04	1.0365E+02	1.6438E+07	6.0306E+03	
8	7.4117E+07	6.8772E+06	2.2451E+05	1.2064E+03	6.6962E+07	5.1472E+04	
9	8.2318E+07	1.3713E+07	9.3787E+04	4.0662E+02	6.8445E+07	6.6130E+04	
10	2.3721E+06	5.8940E+04	2.5451E+01	3.3231E-01	2.3131E+06	7.0470E+00	
11	1.9791E+03	1.9791E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
12	2.3741E+06	6.0919E+04	2.5451E+01	3.3231E-01	2.3131E+06	7.0470E+00	
13	3.1016E+07	9.7387E+05	1.9275E+04	1.0530E+02	3.0015E+07	8.0649E+03	
14	1.2312E+04	1.2312E+04	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
15	3.1029E+07	9.8618E+05	1.9275E+04	1.0530E+02	3.0015E+07	8.0649E+03	
16	1.0493E+03	1.0493E+03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	
19	6.1147E+03	1.9514E+03	1.2078E-01	2.0773E-01	4.1620E+03	9.5996E-01	
20	1.9557E+05	1.8757E+05	0.0000E+00	6.4771E-03	3.0463E-03	8.0030E+03	
21	5.9954E+06	2.6545E+04	4.7997E+01	9.3774E+00	5.9688E+06	2.4776E+01	
22	4.8839E+03	1.8346E+01	3.3982E-02	4.8259E-04	4.8655E+03	6.3043E-02	
23	1.7112E+02	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	1.7112E+02	
24	6.7030E+03	1.9212E+02	0.0000E+00	1.1070E+02	0.0000E+00	6.4002E+03	
25	3.8361E+02	3.6015E+02	0.0000E+00	1.2924E+01	0.0000E+00	1.0540E+01	
26	1.5940E+00	0.0000E+00	0.0000E+00	1.5940E+00	0.0000E+00	0.0000E+00	
27	3.3403E+07	1.0471E+06	1.9300E+04	1.0563E+02	3.2328E+07	8.0720E+03	
Reference	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	Refurbishment (B5)	Energy use during the usage stage (B6)*	Water use during the usage stage (B7)
1	1.4289E+02	2.9750E+01	0.0000E+00	4.8817E+00	0.0000E+00	1.5957E+06	0.0000E+00
2	4.2864E-06	5.9954E-08	0.0000E+00	8.5909E-09	0.0000E+00	3.8763E-01	0.0000E+00
3	1.9603E-01	1.3618E-01	0.0000E+00	1.2112E-01	0.0000E+00	1.2067E+04	0.0000E+00
4	1.4452E-02	3.1517E-02	0.0000E+00	1.2422E-02	0.0000E+00	4.5233E+02	0.0000E+00
5	1.5300E-02	9.9353E-03	0.0000E+00	6.0888E-03	0.0000E+00	5.7033E+02	0.0000E+00
6	3.1340E-06	1.1844E-06	0.0000E+00	1.7943E-07	0.0000E+00	7.2689E-02	0.0000E+00

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7	2.1377E+02	4.1580E+02	0.0000E+00	6.2987E+01	0.0000E+00	1.6437E+07	0.0000E+00
8	1.4571E+03	4.8670E+03	0.0000E+00	7.3743E+02	0.0000E+00	6.6955E+07	0.0000E+00
9	1.0141E+04	1.4270E+03	0.0000E+00	6.0557E+02	0.0000E+00	6.8433E+07	0.0000E+00
10	2.5838E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	2.3131E+06	0.0000E+00
11	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	2.5838E+01	5.5768E-01	0.0000E+00	8.1505E-02	0.0000E+00	2.3131E+06	0.0000E+00
13	3.6590E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	3.0014E+07	0.0000E+00
14	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	3.6590E+02	4.1791E+02	0.0000E+00	6.3290E+01	0.0000E+00	3.0014E+07	0.0000E+00
16	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
17	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	5.1648E-02	2.6487E-03	0.0000E+00	3.8603E-04	0.0000E+00	4.1620E+03	0.0000E+00
20	3.0463E-03	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	6.6847E+01	1.0515E+00	0.0000E+00	1.5376E-01	0.0000E+00	5.9687E+06	0.0000E+00
22	5.3778E-02	7.4894E-04	0.0000E+00	1.0729E-04	0.0000E+00	4.8655E+03	0.0000E+00
23	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	3.9174E+02	4.1847E+02	0.0000E+00	6.3371E+01	0.0000E+00	3.2327E+07	0.0000E+00

The Life Cycle Analysis was conducted using EIME© v5.8.0 software.

With its database version: CODDE-2018-03

* The results of this PEP represent the use of the product in countries with energy mixes of varying pollution levels, which significantly affects the product's environmental impact.

To obtain the results that correspond to your product, please contact your Carrier representative.

12. Glossary

This study used the Indicators for PEP ecopassport® - PCR 3 - 2015.

12.1 - Environmental references and indicators

Reference	Indicator	Unit
1	Global warming *	kg.equivalent.CO ₂
2	Depletion of the ozone layer *	kg.equivalent.CFC-11
3	Acidification of soil and water *	kg.equivalent.SO ₂
4	Eutrophication of water *	kg.equivalent.P04 3-
5	Photochemical ozone creation *	kg.equivalent.C2H4
6	Depletion of abiotic resources *	kg.equivalent.Sb
7	Depletion of abiotic resources - fossil fuels	MJ
8	Water pollution	m ³
9	Air pollution	m ³
10	Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ
11	Use of renewable primary energy resources as raw materials	MJ
12	Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ
13	Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ
14	Use of non-renewable primary energy resources as raw materials	MJ
15	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ
16	Use of secondary materials	kg
17	Use of renewable secondary fuels	MJ
18	Use of non-renewable secondary fuels	MJ
19	Net use of fresh water *	m ³
20	Hazardous waste disposed	kg
21	Non-hazardous waste disposed	kg
22	Radioactive waste disposed	kg
23	Components for reuse	kg
24	Materials for recycling	kg
25	Materials for energy recovery	kg
26	Exported energy	MJ per energy carrier
27	Life cycle total use of primary energy *	MJ

* Mandatory indicators

12. Glossary

12.2 - Mandatory indicators

- **GWP (Global Warming Potential):** this indicator is used to calculate the global warming potential caused by emissions in the air contributing to the greenhouse effect. It is expressed in kg CO₂ eq. In accordance with F-Gas regulation. (Regulation 517/2014).
- **ODP (Ozone Depletion):** this indicator is used to calculate the contribution to depletion of the stratospheric ozone layer by atmospheric emissions. It is expressed in kg CFC-11 eq. The calculation methodology comes from the WMO (World Meteorological Organization, CML 2012).
- **A (Acidification of soil and water):** this indicator is used to calculate the acidification of the soil and water. It is expressed in kg SO₂ eq. The calculation methodology was developed by Huijbregts (CML, 2012).
- **EP (Eutrophication):** this indicator is used to calculate the eutrophication (enrichment with nutrients) of oceans and lakes by effluent. It is expressed in PO₄₃. eq. Eutrophication of water courses results from excessive enrichment with nutrient molecules (organic molecules) in the environment. Phosphorus, nitrogen, carbon and potassium allow the development of algae and aquatic species that can lead to a reduction in the oxygen level and an unbalanced biocoenosis. The calculation methodology was developed by Heijungs et al. 1992 (CML, 2012).
- **POCP (Photochemical Oxidation):** this indicator, expressed in kg C₂H₄ eq., is used to calculate the amount of ozone produced in the troposphere due to the action of solar radiation on oxidising gas emissions (known as summer smog; see summer peak ozone levels). The calculation methodology was developed by Jenkin & Hayman - Derwent et al. (CML, 2012).
- **ADPe (Depletion of Abiotic Resources - Elements):** this indicator is used to calculate the depletion of non-renewable mineral resources by taking into account the extent of natural reserves. It is expressed in equivalents of kilograms of antimony (kg eq Sb). The calculation methodology was developed by Oers et al. (CML, 2012).
- **EP (Total use of primary energy):** total use of primary energy during the life cycle (in MJ).
- **NUFW (Net use of fresh water):** This indicator represents the net consumption of fresh water used for the system (in m³). In EIME, fresh water is broken down into river, lake, underground and surface water, as well as water of unspecified origin. Water extracted and discharged into these environments with the same quality level is not covered by this indicator.

12. Glossary

12.3 - Optional indicators


- **ADPF (Depletion of Abiotic Resources - Fossil Fuels):** This indicator is used to calculate the consumption of non-renewable fossil fuel resources. It is expressed in equivalents of kilograms of antimony (kg eq Sb). The calculation methodology was developed by Oers et al. (CML, 2012).
- **WP (Water Pollution):** this indicator, expressed as a critical volume (m³), is used to calculate water pollution by taking into account the authorised effluent concentration limits. The methodology comes from the DHUP (French directorate of housing, urbanism and landscape) based on the recommendations of the AIMCC (French construction industry trade association)
- **AP (Air Pollution):** this indicator, expressed as a critical volume (m³), is used to calculate ambient air pollution (troposphere) by taking into account the authorised concentration limits for atmospheric emissions. The methodology comes from the DHUP (French directorate of housing, urbanism and landscape) based on the recommendations of the AIMCC (French construction industry trade association).
- **REP (Use of renewable primary energy excluding renewable primary energy resources used as raw materials)** in MJ.
- **REM (Use of renewable primary energy used as raw materials):** in MJ.
- **RE (Total use of renewable primary energy resources):** primary energy and primary energy resources used as raw materials (in MJ).
- **NREP (Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials)** in MJ.
- **NREM (Use of non-renewable primary energy used as raw materials):** in MJ.
- **NRE (Total use of non-renewable primary energy resources):** (primary energy and primary energy resources used as raw materials) (in MJ).
- **USM (Use of Secondary Materials):** This indicator represents the amount of secondary material used for the system (in kg). This indicator increases if a material has a recycled content other than zero. For example, the use of 1 kg of 80% recycled plastic will add 0.8 kg to this indicator.
- **URSF (Use of renewable secondary fuels):** in MJ.
- **URSF (Use of non-renewable secondary fuels):** in MJ.
- **HWD (Hazardous Waste Disposed):** The results of this indicator correspond to the weight of hazardous waste expressed in kilograms. This indicator, which is a flow indicator, does not introduce the concept of relativity between the various contributors. For example, at equal weight, toxic waste from the chemical industry has the same impact as red sludge. The objective of this indicator is to identify the amount of waste generated and understand the issues affecting its treatment.
- **NHWD (Non-Hazardous Waste Disposed):** The results of this indicator correspond to the weight of non-hazardous waste expressed in kilograms. This indicator, which is a flow indicator, does not introduce the concept of relativity between the various contributors. For example, at equal weight, untreated sludge has the same impact as concrete. The objective of this indicator is to identify the amount of waste generated and understand the issues affecting its treatment
- **RWD (Radioactive Waste Disposed):** The results of this indicator correspond to the weight of radioactive waste expressed in kilograms. This indicator, which is a flow indicator, does not introduce the concept of relativity between the various contributors. For example, at equal weight, uranium has the same impact as plutonium. The objective of this indicator is to identify the amount of waste generated and understand the issues affecting its treatment.
- **CRU (Components For Reuse):** This indicator represents the amount of components intended for reuse (in kg). In EIME, this indicator increases if a component is used and the "Reuse" box is checked.
- **MRE (Materials For Recycling):** This indicator represents the amount of materials sent for recycling at end of life, where the "end-of-waste" status is reached. This indicator, expressed in kilograms, only takes into account the amount intended for recycling and not the associated impacts, in accordance with the stocks method.
- **MER (Materials for Energy Recovery):** These materials are identified by an energy recovery efficiency of over 60%, in line with existing regulations. This indicator, expressed in kilograms, only takes into account the amount intended for energy recovery and not the associated impacts, in accordance with the stocks method.
- **EE (Exported Energy):** Exported energy is the energy generated from burning waste and from landfill (in MJ).

12. Glossary

12.4 - Glossary:

- **LCI (Life Cycle Inventory):** This document references all the life stages of a product (production, distribution, installation, use and end of life). This inventory contains the product composition (materials, weights, processes, provenances, recycled proportion of materials, energy consumption for the assembly, etc.), the predicted sales destinations, the installation processes, the usage scenario and the end of life scenario.
- **LCA (Life Cycle Analysis):** Process used to compile the LCI. It results in the creation of an environmental report.
- **PCR (Product Category Rules):** Documents providing the rules for the LCA for a specific product category. These rules are general and supported by PSRs.
- **PSR (Product Specific Rules):** Documents containing the specific rules for creating an LCA. This document supports the PCR.

The EIME methodology applies a weighting of 1 for each indicator, with all indicators considered together and equally critical. An eco-design process involves reducing them all to a minimum and avoiding the transfer of pollution.

Registration no.: CARR-00005-V01.01-EN	Drafting rule: "PCR-ed3-FR-2015 04 02" supplemented by "PSR-0013-ed1-FR-2018 04 06"
Auditor authorisation no.: VH18	Information and references: www.pep-ecopassport.org
Created: 01/2020	Valid for: 5 years
Audit independent of the declaration and data in accordance with ISO 14025:2010	
Internal <input type="checkbox"/>	External <input checked="" type="checkbox"/>
In accordance with ISO 14025: 2006 type III environmental declarations	
Critical review of the PCR conducted by a panel of experts led by Philippe Osset (SOLINNEN)	
The PEPs comply with standard XP C08-100-1:2016-12 The elements of the PEP cannot be compared with elements from another programme	
Document compliant with standard ISO 14025:2010 "Environmental labels and declarations. Type III declarations"	
	



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Montluel, FRANCE

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