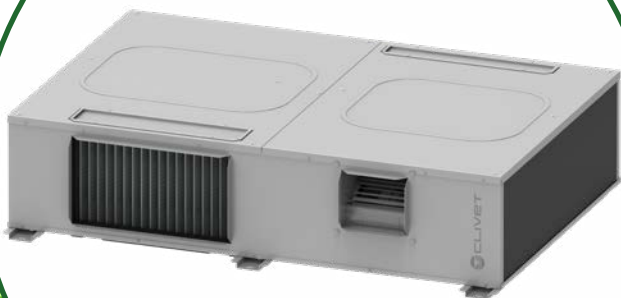


# PRODUCT ENVIRONMENTAL PROFILE

## PRODUCT FAMILY DECLARATION

CLIV-00003-V01.01-EN | PEP ECOPASSPORT®



**Fresh Large EVO<sup>i</sup>**  
**Reference product: CiSDN-Y EF 1 S Size 2**  
Air renewal and purification unit with active  
thermodynamic recovery for indoor installation



# General information

## Product information

- Product name: CiSDN-Y EF 1 S
- Product Type: thermodynamic generators with electric compression
- Product sub-category: Heat pump
- Product identification:
  - Technology: air/air
  - Reversible
  - Without production of domestic hot water
  - Heating and cooling capacity: see table 2
  - SCOP and SEER: see table 2
  - Refrigerant used: R32
  - Refill threshold: 90%
  - Indoor installation

## Standard LCA

The LCA study complies with recognized EU and international standards, including:

- ISO 14040:2006+AMD1:2020 Environmental management - Life cycle assessment - Principles and reference framework;
- ISO 14044:2006+AMD1:2017+AMD2:2020 Environmental management - Life cycle assessment - Requirements and guidelines;
- EN 50639:2019 Product category rules for life cycle assessments of electronic and electrical products and systems
- Product category rule from “PEP ecopassport program”:
  - General rule for electrical products, electronical and HVAC-R: PCR-ed4-EN-2021 09 06
  - Specific rule for product category on the scope of the study: PSR-0013-ed3.0-EN-2023-06-06

## Functional unit

To produce 1 kW of heating or 1 kW of cooling according to the appropriate usage scenario defined in the EN 14825 standard and during the 22 years reference lifetime of the product.

## Declared unit

To produce heating or cooling thanks to a heat pump of 7.8 kW (heating capacity) and 8.3 kW (cooling capacity) according to the appropriate usage scenario and during the 22-year reference lifetime of the product.

## System boundaries

Cradle to Grave approach.

According to these stages:

- Manufacturing stage: from the extraction of natural resources to product and packaging manufacturing and their delivery to the manufacturer's last logistics platform;
- Distribution stage: transportation from the last manufacturer's logistics platform to the arrival of the product at the place of use and production of reconditioning packaging;
- Installation stage: installation of the product at the place of use;
- Use stage: use of the product and maintenance necessary to ensure the ability for use;
- End-of-life stage: removal, dismantling and transportation of the end-of-life product to a treatment centre or landfill site, and the end-of-life treatment;
- Net benefits and loads beyond the system boundaries stage: potential for reuse, recovery and/or recycling, expressed as net benefits and impacts. This stage is optional and not considered into this LCA study.

## Technical data

| Reference product                       | -                 | CiSDN-Y EF 1 S Size 2 |
|-----------------------------------------|-------------------|-----------------------|
| Nominal Airflow                         | m <sup>3</sup> /h | 1000                  |
| Prated,h                                | kW                | 7.8                   |
| SCOP                                    | -                 | 3.50                  |
| Equivalent active mode hours in heating | h                 | 1400                  |
| Prated,c                                | kW                | 8.3                   |
| SEER                                    | -                 | 3.42                  |
| Equivalent active mode hours in cooling | h                 | 350                   |
| EN 14825:2022 + regulation 2016/2281    |                   |                       |
| Refrigerant charge                      | kg                | 0.8                   |
| Total weight (with packaging)           | kg                | 153                   |

# Life cycle inventory

## Data collection

- Software: SimaPro 9.6.0.1
- Database for secondary data: Ecoinvent 3.10 (allocation, cut-off by classification – unit)
- Electricity energy mix for manufacturing and use phase: Electricity, medium voltage {IT} market for I Cut-off, U – year of the dataset 2018
- Geographical representativeness: Global, with product manufacturing and use phase as Italy
- Time representativeness: 2023 for primary data
- Technological representativeness: Clivet specific technological process for product manufacturing; industrial average technologies for raw material production

## Manufacturing stage

- Production and assembly site: Via Camp Lonc 25, Z.I. Villapaiera 32032 - Feltre (BL) - Italy
- Primary data: bill of material, factory energy consumption, factory processing
- Secondary data: raw material and semi-finished product dataset, transport, waste

## Distribution stage

- Distribution scenario: transport from factory to installation site
- Primary data: distribution scenario based on sales of similar units to the one under analysis since no units are sold at the moment of redaction of this study
- Secondary data: transport vehicle consumptions

## Installation stage

- Installation activity: transport for people and accessories for average installation process, use of a crane to move the unit in the installation place
- No additional refrigerant charge has been taken into account during installation phase
- Installation scenario: both ground with concrete slab or on roof
- Waste scenario for the end of life for the packaging is based on 2019 Eurostat data
- Primary data: -
- Secondary data: transport vehicle consumptions, waste scenario

## Use stage

- Use scenario: EN 14825:2022 + regulation 2016/2281
- Cooling mode: Ventilation Load neutralisation and contribution to room air conditioning
- Heating mode: Ventilation Load neutralisation and contribution to room air conditioning
- Primary data: unit efficiency
- Secondary data: electricity energy mix

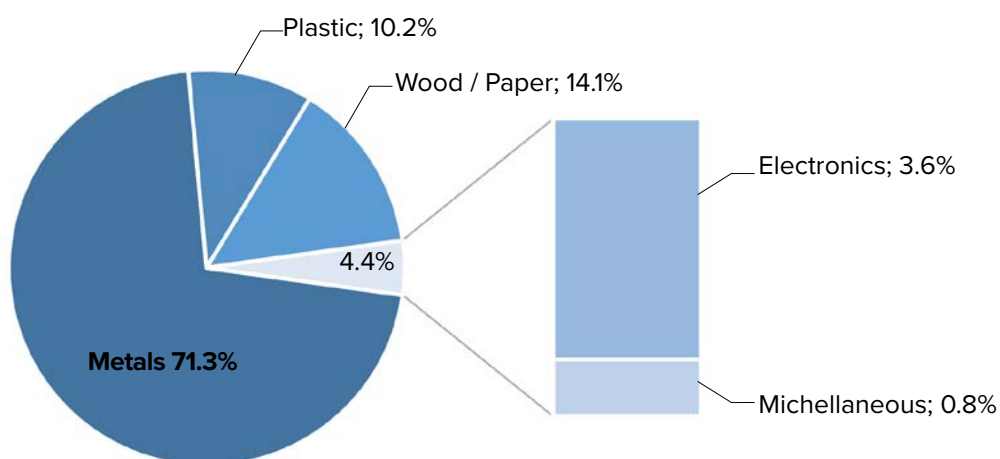
## End of life stage

- Waste scenario: standard EN 50639:2020 scenario is used.
- Primary data: unit constituent materials
- Secondary data: waste treatment and transport

# Constituent materials

| Categories    | Materials         | Weight      | Mass [kg]         |
|---------------|-------------------|-------------|-------------------|
| Metals        | Steel             | 58.0%       | 88.8              |
| Wood / Paper  | Wood              | 13.0%       | (19.9)            |
| Plastics      | Other             | 9.4%        | 14.4              |
| Metals        | Electric motor    | 6.9%        | 10.6              |
| Metals        | Aluminium         | 3.3%        | 5.0               |
| Metals        | Copper            | 3.0%        | 4.7               |
| Electronics   | Electronic Board  | 2.4%        | 3.6               |
| Electronics   | Others            | 1.2%        | 1.8               |
| Wood / Paper  | Paper / Cardboard | 1.1%        | (1.7)             |
| Miscellaneous | -                 | 0.8%        | 1.3               |
| Plastics      | ABS               | 0.6%        | 0.9               |
| Plastics      | Polyester         | 0.2%        | 0.2               |
| Metals        | Other             | 0.1%        | 0.1               |
| <b>Total</b>  |                   | <b>100%</b> | <b>153 (21.5)</b> |

Total weight of the unit (within bracket the portion weight of packaging)



# Environmental impacts

Total impacts per kW corresponding to the functional unit

| Impact category                                   | Unit                  | Module   | Manufac. | Distrib. | Instal.  | Use                     | End of life |
|---------------------------------------------------|-----------------------|----------|----------|----------|----------|-------------------------|-------------|
|                                                   |                       | Total    | A1-A3    | A4       | A5       | B1 B2 B3 B4<br>B5 B6 B7 | C1 C2 C3 C4 |
| Environmental impact indicators                   |                       |          |          |          |          |                         |             |
| Climate change                                    | kg CO <sub>2</sub> eq | 4,56E+03 | 3,35E+02 | 1,24E+00 | 4,46E+00 | 4,21E+03                | 1,47E+01    |
| Climate change - Biogenic                         | kg CO <sub>2</sub> eq | 3,39E+02 | 2,35E+00 | 3,04E-04 | 1,28E+00 | 3,35E+02                | 9,21E-02    |
| Climate change - Fossil                           | kg CO <sub>2</sub> eq | 4,22E+03 | 3,32E+02 | 1,24E+00 | 3,18E+00 | 3,87E+03                | 1,46E+01    |
| Climate change - Land use and LU change           | kg CO <sub>2</sub> eq | 1,11E+00 | 3,93E-01 | 3,75E-04 | 1,60E-03 | 7,06E-01                | 8,05E-03    |
| Ozone depletion                                   | kg CFC11 eq           | 1,10E-04 | 2,19E-05 | 1,82E-08 | 6,20E-08 | 8,83E-05                | 1,30E-07    |
| Acidification                                     | mol H+ eq             | 1,90E+01 | 2,75E+00 | 4,17E-03 | 1,46E-02 | 1,62E+01                | 3,21E-02    |
| Eutrophication. freshwater                        | kg P eq               | 1,25E+00 | 3,94E-01 | 8,25E-05 | 4,16E-04 | 8,51E-01                | 4,48E-03    |
| Eutrophication. marine                            | kg N eq               | 2,88E+00 | 4,42E-01 | 1,40E-03 | 5,20E-03 | 2,42E+00                | 9,64E-03    |
| Eutrophication. terrestrial                       | mol N eq              | 3,13E+01 | 4,77E+00 | 1,53E-02 | 5,34E-02 | 2,64E+01                | 7,69E-02    |
| Photochemical ozone formation                     | kg NMVOC eq           | 1,28E+01 | 1,43E+00 | 6,27E-03 | 2,14E-02 | 1,13E+01                | 2,66E-02    |
| Resource use. minerals and metals                 | kg Sb eq              | 1,42E-01 | 9,56E-02 | 2,03E-06 | 2,58E-05 | 4,67E-02                | 3,79E-05    |
| Resource use. fossils                             | MJ                    | 6,65E+04 | 4,17E+03 | 1,79E+01 | 4,48E+01 | 6,21E+04                | 1,08E+02    |
| Water use                                         | m³ depriv.            | 2,88E+03 | 8,20E+01 | 7,97E-02 | 2,24E-01 | 2,80E+03                | 2,95E+00    |
| Total use of primary energy during the life cycle | MJ                    | 9,27E+04 | 4,72E+03 | 1,81E+01 | 4,63E+01 | 8,78E+04                | 1,21E+02    |
| Particulate matter                                | disease inc.          | 1,02E-04 | 2,12E-05 | 1,32E-07 | 3,21E-07 | 7,95E-05                | 6,36E-07    |
| Ionizing radiation                                | kBq U-235 eq          | 4,95E+02 | 3,18E+01 | 1,43E-02 | 1,27E-01 | 4,62E+02                | 1,42E+00    |
| Ecotoxicity. freshwater - part 1                  | CTUe                  | 8,09E+03 | 2,54E+03 | 2,47E+00 | 7,46E+00 | 5,42E+03                | 1,25E+02    |
| Ecotoxicity. freshwater - part 2                  | CTUe                  | 1,28E+04 | 6,43E+03 | 1,11E+00 | 3,44E+00 | 6,39E+03                | 1,35E+01    |
| Ecotoxicity. freshwater - inorganics              | CTUe                  | 1,64E+04 | 7,86E+03 | 2,46E+00 | 6,95E+00 | 8,36E+03                | 1,25E+02    |
| Ecotoxicity. freshwater - organics - p.1          | CTUe                  | 3,36E+03 | 1,02E+03 | 1,03E+00 | 3,66E+00 | 2,33E+03                | 1,16E+01    |
| Ecotoxicity. freshwater - organics - p.2          | CTUe                  | 1,21E+03 | 9,08E+01 | 9,40E-02 | 2,84E-01 | 1,12E+03                | 2,73E+00    |
| Human toxicity. cancer                            | CTUh                  | 1,45E-05 | 4,62E-06 | 4,26E-09 | 1,89E-08 | 9,81E-06                | 7,96E-08    |
| Human toxicity. cancer - inorganics               | CTUh                  | 7,20E-07 | 2,00E-07 | 7,31E-11 | 3,43E-10 | 4,94E-07                | 2,55E-08    |
| Human toxicity. cancer - organics                 | CTUh                  | 1,38E-05 | 4,42E-06 | 4,18E-09 | 1,86E-08 | 9,31E-06                | 5,40E-08    |
| Human toxicity. non-cancer                        | CTUh                  | 6,36E-05 | 1,66E-05 | 1,13E-08 | 2,77E-08 | 4,70E-05                | 8,40E-08    |
| Human toxicity. non-cancer - inorganics           | CTUh                  | 6,00E-05 | 1,58E-05 | 1,06E-08 | 2,55E-08 | 4,41E-05                | 8,02E-08    |
| Human toxicity. non-cancer - organics             | CTUh                  | 3,65E-06 | 7,64E-07 | 6,84E-10 | 2,24E-09 | 2,88E-06                | 3,81E-09    |
| Land use                                          | Pt                    | 2,32E+04 | 2,36E+03 | 1,86E+01 | 1,88E+01 | 2,08E+04                | 3,66E+01    |

| Impact category                                                                                             | Unit | Module   | Manufac. | Distrib. | Instal.  | Use                     | End of life |
|-------------------------------------------------------------------------------------------------------------|------|----------|----------|----------|----------|-------------------------|-------------|
|                                                                                                             |      | Total    | A1-A3    | A4       | A5       | B1 B2 B3 B4<br>B5 B6 B7 | C1 C2 C3 C4 |
| Inventory flows indicator                                                                                   |      |          |          |          |          |                         |             |
| Use of renewable primary energy, excluding renewable primary energy resources used as raw materials         | MJ   | 2,61E+04 | 3,89E+02 | 2,00E-01 | 1,44E+00 | 2,57E+04                | 1,36E+01    |
| Use of renewable primary energy resources used as raw materials                                             | MJ   | 1,63E+02 | 1,63E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Total use of renewable primary energy resources                                                             | MJ   | 2,62E+04 | 5,52E+02 | 2,00E-01 | 1,44E+00 | 2,57E+04                | 1,36E+01    |
| Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials | MJ   | 6,63E+04 | 3,99E+03 | 1,79E+01 | 4,48E+01 | 6,21E+04                | 1,08E+02    |
| Use of non-renewable primary energy resources used as raw materials                                         | MJ   | 1,73E+02 | 1,73E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Total use of non-renewable primary energy resources                                                         | MJ   | 6,65E+04 | 4,17E+03 | 1,79E+01 | 4,48E+01 | 6,21E+04                | 1,08E+02    |
| Use of secondary material                                                                                   | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Use of renewable secondary fuels                                                                            | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Use of non-renewable secondary fuels                                                                        | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Net use of fresh water                                                                                      | m³   | 7,76E+01 | 2,85E+00 | 2,34E-03 | 8,58E-03 | 7,46E+01                | 9,97E-02    |
| Hazardous waste                                                                                             | kg   | 3,42E-01 | 4,10E-02 | 1,17E-04 | 1,01E-03 | 2,99E-01                | 1,11E-03    |
| Bulk waste                                                                                                  | kg   | 2,74E+02 | 2,10E+01 | 1,58E+00 | 2,28E+00 | 2,45E+02                | 4,31E+00    |
| Radioactive waste                                                                                           | kg   | 1,30E-01 | 7,90E-03 | 3,50E-06 | 3,22E-05 | 1,22E-01                | 3,65E-04    |
| Components for reuse                                                                                        | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Materials for recycling                                                                                     | kg   | 6,38E+01 | 0,00E+00 | 0,00E+00 | 2,90E+00 | 0,00E+00                | 6,09E+01    |
| Materials for energy recovery                                                                               | kg   | 3,61E+00 | 0,00E+00 | 0,00E+00 | 1,82E+00 | 0,00E+00                | 1,79E+00    |
| Exported energy                                                                                             | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Biogenic carbon content of the product                                                                      | kg C | 4,59E-02 | 4,59E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Biogenic carbon content of the associated packaging                                                         | kg C | 2,58E+00 | 2,58E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |

# Use stage impacts per kW corresponding to the functional unit

| Impact category                                   | Unit                   | Module   | Use      | Maint.   | Repair   | Replac.  | Rehabil. | Energy   | Water    |
|---------------------------------------------------|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                                   |                        | Total    | B1       | B2       | B3       | B4       | B5       | B6       | B7       |
| Environmental impact indicators                   |                        |          |          |          |          |          |          |          |          |
| Climate change                                    | kg CO <sub>2</sub> eq  | 4,21E+03 | 0,00E+00 | 5,20E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,20E+03 | 0,00E+00 |
| Climate change - Biogenic                         | kg CO <sub>2</sub> eq  | 3,35E+02 | 0,00E+00 | 9,13E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,35E+02 | 0,00E+00 |
| Climate change - Fossil                           | kg CO <sub>2</sub> eq  | 3,87E+03 | 0,00E+00 | 5,19E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,86E+03 | 0,00E+00 |
| Climate change - Land use and LU change           | kg CO <sub>2</sub> eq  | 7,06E-01 | 0,00E+00 | 2,59E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 7,03E-01 | 0,00E+00 |
| Ozone depletion                                   | kg CFC11 eq            | 8,83E-05 | 0,00E+00 | 1,01E-07 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 8,81E-05 | 0,00E+00 |
| Acidification                                     | mol H+ eq              | 1,62E+01 | 0,00E+00 | 2,37E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,61E+01 | 0,00E+00 |
| Eutrophication. freshwater                        | kg P eq                | 8,51E-01 | 0,00E+00 | 6,63E-04 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 8,50E-01 | 0,00E+00 |
| Eutrophication. marine                            | kg N eq                | 2,42E+00 | 0,00E+00 | 7,84E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,41E+00 | 0,00E+00 |
| Eutrophication. terrestrial                       | mol N eq               | 2,64E+01 | 0,00E+00 | 8,61E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,63E+01 | 0,00E+00 |
| Photochemical ozone formation                     | kg NMVOC eq            | 1,13E+01 | 0,00E+00 | 3,47E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,13E+01 | 0,00E+00 |
| Resource use. minerals and metals                 | kg Sb eq               | 4,67E-02 | 0,00E+00 | 4,23E-05 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,67E-02 | 0,00E+00 |
| Resource use. fossils                             | MJ                     | 6,21E+04 | 0,00E+00 | 7,29E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,21E+04 | 0,00E+00 |
| Water use                                         | m <sup>3</sup> depriv. | 2,80E+03 | 0,00E+00 | 3,77E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,80E+03 | 0,00E+00 |
| Total use of primary energy during the life cycle | MJ                     | 8,78E+04 | 0,00E+00 | 7,52E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 8,77E+04 | 0,00E+00 |
| Particulate matter                                | disease inc.           | 7,95E-05 | 0,00E+00 | 5,22E-07 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 7,90E-05 | 0,00E+00 |
| Ionizing radiation                                | kBq U-235 eq           | 4,62E+02 | 0,00E+00 | 2,00E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,61E+02 | 0,00E+00 |
| Ecotoxicity. freshwater - part 1                  | CTUe                   | 5,42E+03 | 0,00E+00 | 1,18E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,40E+03 | 0,00E+00 |
| Ecotoxicity. freshwater - part 2                  | CTUe                   | 6,39E+03 | 0,00E+00 | 5,60E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,39E+03 | 0,00E+00 |
| Ecotoxicity. freshwater - inorganics              | CTUe                   | 8,36E+03 | 0,00E+00 | 1,11E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 8,35E+03 | 0,00E+00 |
| Ecotoxicity. freshwater - organics - p.1          | CTUe                   | 2,33E+03 | 0,00E+00 | 5,91E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,33E+03 | 0,00E+00 |
| Ecotoxicity. freshwater - organics - p.2          | CTUe                   | 1,12E+03 | 0,00E+00 | 4,59E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,12E+03 | 0,00E+00 |
| Human toxicity. cancer                            | CTUh                   | 9,81E-06 | 0,00E+00 | 3,06E-08 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 9,78E-06 | 0,00E+00 |
| Human toxicity. cancer - inorganics               | CTUh                   | 4,94E-07 | 0,00E+00 | 5,59E-10 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,94E-07 | 0,00E+00 |
| Human toxicity. cancer - organics                 | CTUh                   | 9,31E-06 | 0,00E+00 | 3,01E-08 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 9,28E-06 | 0,00E+00 |
| Human toxicity. non-cancer                        | CTUh                   | 4,70E-05 | 0,00E+00 | 4,52E-08 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,69E-05 | 0,00E+00 |
| Human toxicity. non-cancer - inorganics           | CTUh                   | 4,41E-05 | 0,00E+00 | 4,17E-08 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,40E-05 | 0,00E+00 |
| Human toxicity. non-cancer - organics             | CTUh                   | 2,88E-06 | 0,00E+00 | 3,49E-09 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,88E-06 | 0,00E+00 |
| Land use                                          | Pt                     | 2,08E+04 | 0,00E+00 | 2,99E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,08E+04 | 0,00E+00 |

| Impact category                                                                                             | Unit                      | Module   | Use      | Maint.   | Repair   | Replac.  | Rehabil. | Energy   | Water    |
|-------------------------------------------------------------------------------------------------------------|---------------------------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                                                                                             |                           | Total    | B1       | B2       | B3       | B4       | B5       | B6       | B7       |
|                                                                                                             | Inventory flows indicator |          |          |          |          |          |          |          |          |
| Use of renewable primary energy, excluding renewable primary energy resources used as raw materials         | MJ                        | 2,57E+04 | 0,00E+00 | 2,28E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,57E+04 | 0,00E+00 |
| Use of renewable primary energy resources used as raw materials                                             | MJ                        | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Total use of renewable primary energy resources                                                             | MJ                        | 2,57E+04 | 0,00E+00 | 2,28E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,57E+04 | 0,00E+00 |
| Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials | MJ                        | 6,21E+04 | 0,00E+00 | 7,29E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,21E+04 | 0,00E+00 |
| Use of non-renewable primary energy resources used as raw materials                                         | MJ                        | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Total use of non-renewable primary energy resources                                                         | MJ                        | 6,21E+04 | 0,00E+00 | 7,29E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,21E+04 | 0,00E+00 |
| Use of secondary material                                                                                   | kg                        | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of renewable secondary fuels                                                                            | MJ                        | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of non-renewable secondary fuels                                                                        | MJ                        | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Net use of fresh water                                                                                      | m³                        | 7,46E+01 | 0,00E+00 | 1,37E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 7,46E+01 | 0,00E+00 |
| Hazardous waste                                                                                             | kg                        | 2,99E-01 | 0,00E+00 | 1,65E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,97E-01 | 0,00E+00 |
| Bulk waste                                                                                                  | kg                        | 2,45E+02 | 0,00E+00 | 2,14E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,43E+02 | 0,00E+00 |
| Radioactive waste                                                                                           | kg                        | 1,22E-01 | 0,00E+00 | 5,09E-05 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,22E-01 | 0,00E+00 |
| Components for reuse                                                                                        | kg                        | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for recycling                                                                                     | kg                        | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy recovery                                                                               | kg                        | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy                                                                                             | MJ                        | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Biogenic carbon content of the product                                                                      | kg C                      | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Biogenic carbon content of the associated packaging                                                         | kg C                      | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Total impacts per declared unit

| Impact category                                   | Unit                  | Module   | Manufac. | Distrib. | Instal.  | Use                     | End of life |
|---------------------------------------------------|-----------------------|----------|----------|----------|----------|-------------------------|-------------|
|                                                   |                       | Total    | A1-A3    | A4       | A5       | B1 B2 B3 B4<br>B5 B6 B7 | C1 C2 C3 C4 |
| Environmental impact indicators                   |                       |          |          |          |          |                         |             |
| Climate change                                    | kg CO <sub>2</sub> eq | 3,60E+04 | 2,65E+03 | 9,81E+00 | 3,52E+01 | 3,32E+04                | 1,16E+02    |
| Climate change - Biogenic                         | kg CO <sub>2</sub> eq | 2,68E+03 | 1,86E+01 | 2,40E-03 | 1,01E+01 | 2,65E+03                | 7,27E-01    |
| Climate change - Fossil                           | kg CO <sub>2</sub> eq | 3,33E+04 | 2,62E+03 | 9,80E+00 | 2,52E+01 | 3,06E+04                | 1,15E+02    |
| Climate change - Land use and LU change           | kg CO <sub>2</sub> eq | 8,76E+00 | 3,11E+00 | 2,96E-03 | 1,26E-02 | 5,58E+00                | 6,36E-02    |
| Ozone depletion                                   | kg CFC11 eq           | 8,72E-04 | 1,73E-04 | 1,44E-07 | 4,90E-07 | 6,97E-04                | 1,02E-06    |
| Acidification                                     | mol H+ eq             | 1,50E+02 | 2,17E+01 | 3,29E-02 | 1,16E-01 | 1,28E+02                | 2,53E-01    |
| Eutrophication. freshwater                        | kg P eq               | 9,87E+00 | 3,11E+00 | 6,52E-04 | 3,28E-03 | 6,72E+00                | 3,54E-02    |
| Eutrophication. marine                            | kg N eq               | 2,28E+01 | 3,49E+00 | 1,11E-02 | 4,11E-02 | 1,91E+01                | 7,62E-02    |
| Eutrophication. terrestrial                       | mol N eq              | 2,47E+02 | 3,77E+01 | 1,21E-01 | 4,22E-01 | 2,09E+02                | 6,08E-01    |
| Photochemical ozone formation                     | kg NMVOC eq           | 1,01E+02 | 1,13E+01 | 4,95E-02 | 1,69E-01 | 8,96E+01                | 2,10E-01    |
| Resource use. minerals and metals                 | kg Sb eq              | 1,13E+00 | 7,56E-01 | 1,60E-05 | 2,04E-04 | 3,69E-01                | 2,99E-04    |
| Resource use. fossils                             | MJ                    | 5,25E+05 | 3,29E+04 | 1,42E+02 | 3,54E+02 | 4,91E+05                | 8,49E+02    |
| Water use                                         | m³ depriv.            | 2,28E+04 | 6,48E+02 | 6,29E-01 | 1,77E+00 | 2,21E+04                | 2,33E+01    |
| Total use of primary energy during the life cycle | MJ                    | 7,32E+05 | 3,73E+04 | 1,43E+02 | 3,66E+02 | 6,94E+05                | 9,57E+02    |
| Particulate matter                                | disease inc.          | 8,04E-04 | 1,67E-04 | 1,04E-06 | 2,53E-06 | 6,28E-04                | 5,02E-06    |
| Ionizing radiation                                | kBq U-235 eq          | 3,91E+03 | 2,51E+02 | 1,13E-01 | 1,00E+00 | 3,65E+03                | 1,12E+01    |
| Ecotoxicity. freshwater - part 1                  | CTUe                  | 6,39E+04 | 2,00E+04 | 1,95E+01 | 5,90E+01 | 4,28E+04                | 9,90E+02    |
| Ecotoxicity. freshwater - part 2                  | CTUe                  | 1,01E+05 | 5,08E+04 | 8,79E+00 | 2,72E+01 | 5,05E+04                | 1,07E+02    |
| Ecotoxicity. freshwater - inorganics              | CTUe                  | 1,29E+05 | 6,21E+04 | 1,94E+01 | 5,49E+01 | 6,60E+04                | 9,84E+02    |
| Ecotoxicity. freshwater - organics - p.1          | CTUe                  | 2,66E+04 | 8,02E+03 | 8,15E+00 | 2,89E+01 | 1,84E+04                | 9,13E+01    |
| Ecotoxicity. freshwater - organics - p.2          | CTUe                  | 9,58E+03 | 7,17E+02 | 7,43E-01 | 2,24E+00 | 8,84E+03                | 2,16E+01    |
| Human toxicity. cancer                            | CTUh                  | 1,15E-04 | 3,65E-05 | 3,36E-08 | 1,50E-07 | 7,75E-05                | 6,29E-07    |
| Human toxicity. cancer - inorganics               | CTUh                  | 5,69E-06 | 1,58E-06 | 5,77E-10 | 2,71E-09 | 3,90E-06                | 2,02E-07    |
| Human toxicity. cancer - organics                 | CTUh                  | 1,09E-04 | 3,49E-05 | 3,30E-08 | 1,47E-07 | 7,36E-05                | 4,27E-07    |
| Human toxicity. non-cancer                        | CTUh                  | 5,03E-04 | 1,31E-04 | 8,91E-08 | 2,19E-07 | 3,71E-04                | 6,63E-07    |
| Human toxicity. non-cancer - inorganics           | CTUh                  | 4,74E-04 | 1,25E-04 | 8,37E-08 | 2,02E-07 | 3,48E-04                | 6,33E-07    |
| Human toxicity. non-cancer - organics             | CTUh                  | 2,88E-05 | 6,04E-06 | 5,41E-09 | 1,77E-08 | 2,27E-05                | 3,01E-08    |
| Land use                                          | Pt                    | 1,83E+05 | 1,86E+04 | 1,47E+02 | 1,49E+02 | 1,64E+05                | 2,89E+02    |

| Impact category                                                                                             | Unit | Module   | Manufac. | Distrib. | Instal.  | Use                     | End of life |
|-------------------------------------------------------------------------------------------------------------|------|----------|----------|----------|----------|-------------------------|-------------|
|                                                                                                             |      | Total    | A1-A3    | A4       | A5       | B1 B2 B3 B4<br>B5 B6 B7 | C1 C2 C3 C4 |
| Inventory flows indicator                                                                                   |      |          |          |          |          |                         |             |
| Use of renewable primary energy, excluding renewable primary energy resources used as raw materials         | MJ   | 2,06E+05 | 3,07E+03 | 1,58E+00 | 1,13E+01 | 2,03E+05                | 1,07E+02    |
| Use of renewable primary energy resources used as raw materials                                             | MJ   | 1,29E+03 | 1,29E+03 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Total use of renewable primary energy resources                                                             | MJ   | 2,07E+05 | 4,36E+03 | 1,58E+00 | 1,13E+01 | 2,03E+05                | 1,07E+02    |
| Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials | MJ   | 5,24E+05 | 3,15E+04 | 1,42E+02 | 3,54E+02 | 4,91E+05                | 8,49E+02    |
| Use of non-renewable primary energy resources used as raw materials                                         | MJ   | 1,37E+03 | 1,37E+03 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Total use of non-renewable primary energy resources                                                         | MJ   | 5,25E+05 | 3,29E+04 | 1,42E+02 | 3,54E+02 | 4,91E+05                | 8,49E+02    |
| Use of secondary material                                                                                   | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Use of renewable secondary fuels                                                                            | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Use of non-renewable secondary fuels                                                                        | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Net use of fresh water                                                                                      | m³   | 6,13E+02 | 2,25E+01 | 1,85E-02 | 6,78E-02 | 5,90E+02                | 7,88E-01    |
| Hazardous waste                                                                                             | kg   | 2,70E+00 | 3,24E-01 | 9,27E-04 | 7,95E-03 | 2,36E+00                | 8,74E-03    |
| Bulk waste                                                                                                  | kg   | 2,17E+03 | 1,66E+02 | 1,25E+01 | 1,80E+01 | 1,94E+03                | 3,41E+01    |
| Radioactive waste                                                                                           | kg   | 1,03E+00 | 6,24E-02 | 2,76E-05 | 2,54E-04 | 9,65E-01                | 2,89E-03    |
| Components for reuse                                                                                        | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Materials for recycling                                                                                     | kg   | 5,04E+02 | 0,00E+00 | 0,00E+00 | 2,29E+01 | 0,00E+00                | 4,81E+02    |
| Materials for energy recovery                                                                               | kg   | 2,85E+01 | 0,00E+00 | 0,00E+00 | 1,44E+01 | 0,00E+00                | 1,41E+01    |
| Exported energy                                                                                             | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Biogenic carbon content of the product                                                                      | kg C | 3,63E-01 | 3,63E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |
| Biogenic carbon content of the associated packaging                                                         | kg C | 2,04E+01 | 2,04E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00                | 0,00E+00    |

# Use stage impacts per declared unit

| Impact category                                   | Unit                   | Module   | Use      | Maint.   | Repair   | Replac.  | Rehabil. | Energy   | Water    |
|---------------------------------------------------|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                                   |                        | Total    | B1       | B2       | B3       | B4       | B5       | B6       | B7       |
| Environmental impact indicators                   |                        |          |          |          |          |          |          |          |          |
| Climate change                                    | kg CO <sub>2</sub> eq  | 3,32E+04 | 0,00E+00 | 4,11E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,32E+04 | 0,00E+00 |
| Climate change - Biogenic                         | kg CO <sub>2</sub> eq  | 2,65E+03 | 0,00E+00 | 7,21E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,65E+03 | 0,00E+00 |
| Climate change - Fossil                           | kg CO <sub>2</sub> eq  | 3,06E+04 | 0,00E+00 | 4,10E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,05E+04 | 0,00E+00 |
| Climate change - Land use and LU change           | kg CO <sub>2</sub> eq  | 5,58E+00 | 0,00E+00 | 2,04E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,56E+00 | 0,00E+00 |
| Ozone depletion                                   | kg CFC11 eq            | 6,97E-04 | 0,00E+00 | 7,98E-07 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,96E-04 | 0,00E+00 |
| Acidification                                     | mol H+ eq              | 1,28E+02 | 0,00E+00 | 1,87E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,28E+02 | 0,00E+00 |
| Eutrophication. freshwater                        | kg P eq                | 6,72E+00 | 0,00E+00 | 5,24E-03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,71E+00 | 0,00E+00 |
| Eutrophication. marine                            | kg N eq                | 1,91E+01 | 0,00E+00 | 6,19E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,91E+01 | 0,00E+00 |
| Eutrophication. terrestrial                       | mol N eq               | 2,09E+02 | 0,00E+00 | 6,80E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,08E+02 | 0,00E+00 |
| Photochemical ozone formation                     | kg NMVOC eq            | 8,96E+01 | 0,00E+00 | 2,74E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 8,93E+01 | 0,00E+00 |
| Resource use. minerals and metals                 | kg Sb eq               | 3,69E-01 | 0,00E+00 | 3,34E-04 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,69E-01 | 0,00E+00 |
| Resource use. fossils                             | MJ                     | 4,91E+05 | 0,00E+00 | 5,76E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,90E+05 | 0,00E+00 |
| Water use                                         | m <sup>3</sup> depriv. | 2,21E+04 | 0,00E+00 | 2,98E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,21E+04 | 0,00E+00 |
| Total use of primary energy during the life cycle | MJ                     | 6,94E+05 | 0,00E+00 | 5,94E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,93E+05 | 0,00E+00 |
| Particulate matter                                | disease inc.           | 6,28E-04 | 0,00E+00 | 4,12E-06 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,24E-04 | 0,00E+00 |
| Ionizing radiation                                | kBq U-235 eq           | 3,65E+03 | 0,00E+00 | 1,58E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,64E+03 | 0,00E+00 |
| Ecotoxicity. freshwater - part 1                  | CTUe                   | 4,28E+04 | 0,00E+00 | 9,35E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,27E+04 | 0,00E+00 |
| Ecotoxicity. freshwater - part 2                  | CTUe                   | 5,05E+04 | 0,00E+00 | 4,43E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,05E+04 | 0,00E+00 |
| Ecotoxicity. freshwater - inorganics              | CTUe                   | 6,60E+04 | 0,00E+00 | 8,75E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,59E+04 | 0,00E+00 |
| Ecotoxicity. freshwater - organics - p.1          | CTUe                   | 1,84E+04 | 0,00E+00 | 4,67E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,84E+04 | 0,00E+00 |
| Ecotoxicity. freshwater - organics - p.2          | CTUe                   | 8,84E+03 | 0,00E+00 | 3,63E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 8,83E+03 | 0,00E+00 |
| Human toxicity. cancer                            | CTUh                   | 7,75E-05 | 0,00E+00 | 2,42E-07 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 7,72E-05 | 0,00E+00 |
| Human toxicity. cancer - inorganics               | CTUh                   | 3,90E-06 | 0,00E+00 | 4,42E-09 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,90E-06 | 0,00E+00 |
| Human toxicity. cancer - organics                 | CTUh                   | 7,36E-05 | 0,00E+00 | 2,38E-07 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 7,33E-05 | 0,00E+00 |
| Human toxicity. non-cancer                        | CTUh                   | 3,71E-04 | 0,00E+00 | 3,57E-07 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,71E-04 | 0,00E+00 |
| Human toxicity. non-cancer - inorganics           | CTUh                   | 3,48E-04 | 0,00E+00 | 3,30E-07 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,48E-04 | 0,00E+00 |
| Human toxicity. non-cancer - organics             | CTUh                   | 2,27E-05 | 0,00E+00 | 2,75E-08 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,27E-05 | 0,00E+00 |
| Land use                                          | Pt                     | 1,64E+05 | 0,00E+00 | 2,36E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,64E+05 | 0,00E+00 |

| Impact category                                                                                             | Unit | Module   | Use      | Maint.   | Repair   | Replac.  | Rehabil. | Energy   | Water    |
|-------------------------------------------------------------------------------------------------------------|------|----------|----------|----------|----------|----------|----------|----------|----------|
|                                                                                                             |      | Total    | B1       | B2       | B3       | B4       | B5       | B6       | B7       |
| Inventory flows indicator                                                                                   |      |          |          |          |          |          |          |          |          |
| Use of renewable primary energy, excluding renewable primary energy resources used as raw materials         | MJ   | 2,03E+05 | 0,00E+00 | 1,81E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,03E+05 | 0,00E+00 |
| Use of renewable primary energy resources used as raw materials                                             | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Total use of renewable primary energy resources                                                             | MJ   | 2,03E+05 | 0,00E+00 | 1,81E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,03E+05 | 0,00E+00 |
| Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials | MJ   | 4,91E+05 | 0,00E+00 | 5,76E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,90E+05 | 0,00E+00 |
| Use of non-renewable primary energy resources used as raw materials                                         | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Total use of non-renewable primary energy resources                                                         | MJ   | 4,91E+05 | 0,00E+00 | 5,76E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 4,90E+05 | 0,00E+00 |
| Use of secondary material                                                                                   | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of renewable secondary fuels                                                                            | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of non-renewable secondary fuels                                                                        | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Net use of fresh water                                                                                      | m³   | 5,90E+02 | 0,00E+00 | 1,08E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,90E+02 | 0,00E+00 |
| Hazardous waste                                                                                             | kg   | 2,36E+00 | 0,00E+00 | 1,30E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,35E+00 | 0,00E+00 |
| Bulk waste                                                                                                  | kg   | 1,94E+03 | 0,00E+00 | 1,69E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,92E+03 | 0,00E+00 |
| Radioactive waste                                                                                           | kg   | 9,65E-01 | 0,00E+00 | 4,02E-04 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 9,64E-01 | 0,00E+00 |
| Components for reuse                                                                                        | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for recycling                                                                                     | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy recovery                                                                               | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy                                                                                             | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Biogenic carbon content of the product                                                                      | kg C | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Biogenic carbon content of the associated packaging                                                         | kg C | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Extrapolation rules

| NO. | Product Type             | Nominal<br>Airflow  | Power | Manufact.<br>Distrib co-eff. | Install. co-eff. | Use stage coefficient |      | End of life<br>coeff. |
|-----|--------------------------|---------------------|-------|------------------------------|------------------|-----------------------|------|-----------------------|
|     |                          | [m <sup>3</sup> /h] | [kW]  | A1...A4                      | A5               | B2                    | B6   | C1...C4               |
| rev | CiSDN-Y EF 1 S<br>Size 2 | 1000                | 7.9   | 1.00                         | 1.00             | 1.00                  | 1.00 | 1.00                  |
| 1   | CiSDN-Y EF 1 S<br>Size 1 | 500                 | 4.0   | 1.52                         | 1.98             | 1.00                  | 1.14 | 1.45                  |
| 3   | CiSDN-Y EF 1 S<br>Size 3 | 2000                | 15.4  | 0.55                         | 0.51             | 1.00                  | 0.95 | 0.56                  |

Extrapolation coefficients are given for the environmental impact of the functional unit, i.e. the emission of 1 kW heating power\*. For each stage of the life cycle, the environmental impacts of the product concerned are calculated by multiplying the impacts of the declaration corresponding to the reference product by the extrapolation coefficient. The "Total" column should be calculated by adding the environmental impacts of each stage of the life cycle.

## References

1. ISO 14040:2006+AMD1:2020 Environmental management - Life cycle assessment - Principles and reference framework;
2. ISO 14044:2006+AMD1:2017+AMD2:2020 Environmental management - Life cycle assessment – Requirements and guidelines;
3. EN 50639:2019 Product category rules for life cycle assessments of electronic and electrical products and systems
4. Product category rule from “PEP ecopassport program”:
5. General rule for electrical products, electronical and HVAC-R: PCR-ed4-EN-2021 09 06
6. Specific rule for product category on the scope of the study: PSR-0013-ed3.0-EN-2023-06-06
7. EN 14511:2018: Air conditioners, liquid chilling packages and heat pumps for Space heating and cooling and process chillers, with electrically driven compressors
8. EN 14511:2018: Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors for Space heating and cooling – Testing and rating at part load conditions and calculation of seasonal performance.
9. EN 378-2, Refrigerating systems and heat pumps – Safety and environmental requirements – Part 2: Design, construction, testing, marking and documentation.
10. SimaPro 9.6.0.1
11. Ecoinvent 3.10 database
12. “CiSND-Y EF 1S\_Report LCA”, Clivet, 2025

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|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Registration number: <b>CLIV-00003-V01.01-EN</b>                                                                                       | Drafting rules: " <b>PCR-ed4-EN-2021 09 06</b><br><b>Supplemented by "PSR-0013-ed3.0-EN-2023 06 06"</b> |                                                                                     |
| Verifier accreditation number: <b>VH50</b>                                                                                             | Information and reference documents: <b>www.pep-ecopassport.org</b>                                     |                                                                                     |
| Date of issue: 01-2025                                                                                                                 | Validity period: <b>5 years</b>                                                                         |                                                                                     |
| <b>Independent verification of the declaration and data in compliance with ISO 14025: 2006</b>                                         |                                                                                                         |                                                                                     |
| <b>Internal:</b> <input type="checkbox"/>                                                                                              | <b>External:</b> <input checked="" type="checkbox"/>                                                    |  |
| The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)                                                  |                                                                                                         |                                                                                     |
| PEPs are compliant with EN 50693:2019<br>The components of the present PEP may not be compared with components from any other program. |                                                                                                         |                                                                                     |
| Document complies with ISO 14025:2006<br>"Environmental labels and declarations. Type III environmental declarations"                  |                                                                                                         |                                                                                     |



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