PEP ecopassport® PROGRAM

PSR

SPECIFIC RULES FOR HOT WATER RADIATORS OR TOWEL RADIATORS

PSR-0011-ed2.0-EN-2023-06-06
According to PSR-modele-ed2-EN-2021 11 18

Contents

List of the modifications of the present document

Online version 06/04/2023 :

Modified section Ed 1.0 to Ed 2.0	Modification
§ 3.1.2	Addition of the declared units definition
§ 3.5	Addition of rules for the justification of default without scenario values
§ 3.5.1	Addition of one paragraph about recycled content of raw materials, and one paragraph about components and raw material packaging
§ 3.5.2	The breakdown of use phase in sub-paragraphs related to modules B1, B2, B3, B4, B5, B6 and B7
§ 3.6.5	Addition of extrapolation rules for submodules B1 to B7 (if applicable)
§ 3.6.7	Addition of an extrapolation rule for module D
§ 5	Addition of a chapter about PEP update rules
§ 6.3.	Addition of application examples for the extrapolation rules

1. Introduction

This reference document complements and explains the Product Environmental Profile Drafting Rules defined by the PEP ecopassport® program (PEP-PCR ed.3-EN-2015 04 02), available at www.pep-ecopassport.org.

It defines the additional requirements applicable to hot water radiators or towel radiators. Compliance with these requirements is necessary to:

- Qualify the environmental performance of these products on an objective and consistent basis.
- Publish PEPs compliant with the PEP ecopassport® program and international reference standards.[1]

This reference document was drawn up in compliance with the open, transparent rules of the PEP ecopassport® program with the support of stakeholders and professionals in the hot water radiators or towel radiators market and the interested parties.

PEP ecopassport®	www.pep-ecopassport.org
PSR reference	PSR-0011-ed2.0-EN-2023-06-06
Critical review	The third-party Critical review was carried out by CODDE Department of LCIE Bureau Veritas. The declaration of conformity published on 06/04/2023 can be found in the Appendices.
Availability	The Critical review report is available on request from the P.E.P. Association contact@pep-ecopassport.org
Scope of validity	The critical review report and the declaration of conformity remain valid within 5 years or until the PEP Drafting Rules, or the normative reference texts to which they refer, are modified.

[1] ISO 14025, ISO 14040 and ISO 14044 standards

2. Scope

In accordance with the general instructions of the PEP ecopassport® program (PEP-General instructions-ed4.1-EN-2017 10 17) and additional to the PCR, "Product Category Rules", (PEP-PCR ed.4-EN-2021 09 06) of the PEP ecopassport® eco-declaration program, this document sets out the specific rules for hot water radiators or towel radiators and defines the product specifications to be adopted by manufacturers in the development of their product environmental profiles (PEPs) particularly with regard to:

- the technology and its type of application,
- the reference lifetime taken into account for the products' Life Cycle Assessment (LCA),
- the conventional use scenarios to be adopted during the product use stage.

The main purpose of these specific rules is to provide manufacturers of hot water radiators or towel radiators with a common basis for the development of their product life cycle assessments. The different available technologies are therefore presented:

- Static hot water radiators
- Fan-assisted hot water radiators
- Towel radiators
- Mixed or fan-assisted mixed radiators

These specific rules cover static and fan-assisted hot water radiators whose main heating element is characterised by the harmonised EN 442[2] standards and holders of the CE Marking under the provisions of regulation (EU) 305/2011[3]. Hot water trench convectors are also covered and characterised using the rules described in the EN 442 standard.

The rules concerning fan-assisted and/or mixed hot water radiators come from the EN 16430[4] standard.

These specific rules do not apply to other hot water central heating devices integrated in the structure, such as heated floors or ceilings, whose installation, use, and end-of-life stages and lifetimes are different.

[2] See the sources used in Section 6.2 of the present document.

[3] See the sources used in Section 6.2 of the present document.

[4] See the sources used in Section 6.2 of the present document.

2.1. Definition of the product families concerned

2.1.1. Passive devices (Family 1)

2.1.1.1. Static hot water radiator

Can be called a static hot water radiator according to the EN 442-1 standard:

"Hot water central heating radiator made of a given material (steel, aluminium, cast iron, etc.) and of different types, with an output capacity defined according to EN 442, for space heating via natural convection and radiation, and not equipped with a control system."

It comes in different types:

- horizontal steel panel radiators
- vertical steel panel radiators
- cast iron radiators
- aluminium radiators
- hot water convectors
- horizontal flat tube decorative radiators
- vertical flat tube decorative radiators
- horizontal round tube decorative radiators
- vertical round tube decorative radiators
- towel radiators
- multi-column radiators
- fin radiators or trench convectors.

2.1.1.1.1. Case of hot water towel radiators

Can be called a “hot water towel radiator”, a product comprising at least:

- A main heating element in the form of a central heating radiator whose energy comes from a hot water source,
- A bleed valve, drain plug, and plugs,
- Mounts.

2.1.2. Active devices (Family 2)

2.1.2.1. Fan-assisted hot water radiator(s)

Can be called a “fan-assisted hot water radiator”, a product comprising at least:

- A main heating element in the form of a central heating radiator whose energy comes from a hot water source as defined according to European standard EN442-2 equipped with a forced convection system as defined in European standard 442-2.
- A control system built into the device or remote in the surroundings, controlling the forced convection system at least.

- A manual disconnection device for the fan(s).
- A bleed valve, drain plug, and plugs,
- Mounts.

2.1.2.2. Mixed or fan-assisted mixed hot water radiator(s)

Can be called a “mixed hot water radiator”, a product on which the following components are factory-mounted and comprise at least:

- A main heating element in the form of a central heating radiator whose energy comes from a hot water source as defined according to European Standard EN 442-2,
- and/or an electrical back-up system built into the heating element in the water flow, and/or affixed to the heating element, and/or a standalone blower system with electrical heating element in the air flow,
- A control system built into the device or remote in the surroundings, controlling the back-up system at least,
- And/or a manual disconnection device for the blower,
- A bleed valve, drain plug, and plugs,
- Mounts.

Can be called a “fan-assisted mixed hot water radiator”, a product on which the following components are factory-mounted and comprise at least:

- A main heating element in the form of a central heating radiator whose energy comes from a hot water source as defined according to European standard EN442-2 equipped with a forced convection system as defined in European standard 442-2.
- and/or an electrical back-up system built into the heating element in the water flow, and/or affixed to the heating element, and/or in the air flow,
- A control system built into the device or remote in the surroundings, controlling the back-up system at least,
- A manual disconnection device for the fan(s),
- A bleed valve, drain plug, and plugs,
- Mounts.

2.1.2.2.1. Mixed or blower hot water towels radiators

Can be called a « blower hot water towels radiators », a product comprising at least :

- A main heating element in the form of a central heating radiator whose energy comes from a hot water source
- An standalone blower system included into the device with electrical heating element in the air flow,
- A control system build into the device or remote in the surroundings, controlling at least the blower system,
- A bleed valve, drain plug, and plugs,
- Mounts.

2.1.2.2.2. Mixed hot water towels radiators

Can be called a « mixed hot water towel radiators » a product comprising at least :

- A main heating element in the form of a central heating radiator whose energy comes from a hot water source
- an electrical back-up system built into the heating element in the water flow, and/or affixed to the heating element,
- A control system built into the device or remote in the surroundings, controlling the back-up system at least
- A bleed valve, drain plug, and plugs,
- Mounts.

3. Product life cycle assessment

3.1. Functional unit and reference flow description

These specific rules are additional to section 2.1. "Functional unit and reference flow description" of the current PCR (PEP-PCR-ed4-EN-2021 09 06).

3.1.1. Functional unit

The functional unit associated with radiators, as defined in Section 2.1, "Definition of the product families concerned" is as follows:

"To produce 1 kW of heating as defined by the manufacturer, according to the reference usage scenario and during the XX-year reference lifetime of the product."

The measurement of this power is defined as follows for:

- static or mixed hot water radiators, or hot water towel radiators, at ΔT 50 according to the EN 442 standard[5],
- fan-assisted hot water radiators or fan-assisted mixed radiators according to the EN 16430[6] standard at ΔT 30 at average speed.

For all the stages of the life cycle, the environmental impacts are calculated over a reference lifetime of:

- 50 years for static hot water radiators,
- 17 years for fan-assisted hot water radiators, or mixed and mixed fan-assisted radiators, or for hot water towel radiators.

The reference lifetime of the equipment (XX years) must be specified in the description of the functional unit as indicated above.

3.1.2. Declared unit

[5] See the sources used in Section 6.2 of the present document.

[6] See the sources used in Section 6.2 of the present document.

Declared unit can be used as complementary information in order to help future PEP users.

For France scope, declared unit must be applied if no functional unit can be defined.

It's used especially for building LCA (see appendix C of current PCR)

Declared unit is defined as follows:
« **To produce heating with a xx W radiator for a reference lifetime of xx-year of the product. »**

The power (xx W) has to be adjusted according to the reference product.
The reference lifetime product must be specified in the declared unit description as explained in the 3.1.1. paragraph « functional unit ».

3.1.3. Reference product and reference flow description

These specific rules are additional to section "Functional unit and reference flow description" of the current PCR (PEP-PCR-ed4-EN-2021 09 06).

For each of equipment categories defined, the analysis carried out includes the following reference flows:

- A radiator or a hot water towel radiator with a specific reference lifetime and whose energy consumption in use is expressed in kWh according to the use scenario described in section 3.5.4.2
- Its packaging,
- Any products or components required for installation and use.

The declared energy consumptions in the use stage in the reference flow must be estimated for the supply of 1 kW of heating and based on Section 3.5.3. "Use stage" of the present specific rules.

For a hot water radiator whose expression for energy consumption in use is specified in kWh of final energy according to a use scenario, the energy consumptions relating to the following active components are taken into account:

- fan(s) in the case of fan-assisted radiators,
- electrical back-up system whose power, compatible with the heating element, is the highest,
- blower back-up system whose power, compatible with the heating element, is the highest,
- consumption of electronic components in standby mode.

In the context of a PEP for a range of products, extrapolation rules will apply to all the reference products, as described in section 3.6 "Rules for extrapolation to a homogeneous environmental family". In this case, the analysis will be carried out on the reference product, which is defined as follows:

- power output equivalent to 1000 W for each type if several types are covered by the PEP or, for a towel radiator, on a radiator of power output equivalent to 600 W.

If the range of this product type does not contain any 1000 W or 600 W devices, the analysis is applied to the device with the nearest power rating. This should be justified in the LCA report and mentioned in the PEP.

3.2. System boundaries

These specific rules are additional to section "System boundaries" of the current PCR (PEP-PCR-ed4-EN-2021 09 06).

3.2.1. Manufacturing stage

The accessories for regulation (e.g. manual or thermostatic taps) and connection to the network such as balancing T-pieces are not included and are subject to a specific declaration unless supplied with the hot water radiator supplied by the manufacturer.

3.2.2. Distribution stage

For this stage, the rules defined in the current PCR (PEP-PCR-ed4-EN-2021 09 06) apply.

3.2.3. Installation stage

Conventionally, the installation of a radiator or towel radiator can involve:

- Modifications to the structure (e.g. masonry work, connection to the electrical network, addition of cladding for better aesthetic integration of the device in the building). Any modification to the structure and/or addition of elements not anticipated by the manufacturer is excluded from the scope of the study. The real impact of these operations must be calculated by the user of the declaration if desired according to the installation elements used during the worksite phase.
- The sanitary installation (e.g. sink, taps, etc.) and the associated structure modifications. These parameters are excluded from the scope of the study and are subject to a specific declaration.
- The water consumption related to the commissioning of devices is excluded from the scope of the analysis and must be taken into consideration on the scale of the building.
- The treatment of packaging waste is, however, included. The packaging waste produced during the installation phase should be disposed of by the installer once the equipment has been installed.

3.2.4. Use stage

According to the breakdown of module B, as defined in section 2.2.6. of the current PCR PCR (PEP-PCR-ed4-EN-2021 09 06)., the environmental impacts of the use stage must be split in the following way for all product families concerned by the PSR

B1 : Use Phase	Not applicable. Module equal to 0.
B2 : Maintenance	Not applicable. Module equal to 0 (unless it’s a new product brought to market which needs maintenance actions or components replacement)
B3 : Repair	Not applicable. Module equal to 0.
B4 : Replacement	Not applicable. Module equal to 0.

B5 : Rehabilitation	Not applicable. Module equal to 0.
B6 : Energy consumption during use phase	Energy consumption for active equipment
B7 : Water consumption during use phase	Not applicable. Module equal to 0.

For information, the breakdown of module B is mandatory in France.

3.2.5. End-of-life stage

For this stage, the rules defined in the current PCR (PEP-PCR-ed4-EN-2021 09 06) apply.

3.2.6. Benefits and loads beyond the system boundaries

For this stage, the rules defined in the current PCR (PEP-PCR-ed4-EN-2021 09 06) apply.

It’s important to remember that module D declaration is mandatory for products placed on the French market and planned to be used on a building LCA.

3.3. Cut-off criteria

The specific rules specified in section 2.3. "Cut-off criteria" of the current PCR (PEP-PCR-ed4-EN-2021 09 06) apply.

3.4. Specific allocation rule

These specific rules are additional to section 2.4. "Rules for allocation between co-products" of the current PCR (PEP-PCR-ed4-EN-2021 09 06).

3.5. Development of scenarios (default scenarios)

These specific rules are additional to the section 2.5. “Development of scenarios (default scenarios)” of the current PCR (PEP-PCR-ed4-EN-2021 09 06).

Every default scenario (defined below) modification must be justified in the LCA report and mentioned in the PEP.

Accepted evidences in order to modify default scenarios

The current PSR has hypothesis and default scenarios. If the declarant wants to use specific data, this data must be justified in the LCA report. This data, given by industrials, doesn't have to be certified but based on evidence. This evidence is engaging the declarant, supplier, or third-party responsibility. This evidence will have to be available if claimed.

Recycled content of raw materials (see paragraph 3.5.1. "Manufacturing stage") can be justified with suppliers' data but can't be justified with common data (professional associations, ADEME, industries). If there is no justified and specific recycled content, the default data given in section 3.5.1.1. has to be taken.

Raw materials loss rate (see paragraph 3.5.1. "Manufacturing stage") can be justified with an internal document from the production plant. If there is no specific justified rate, the default data given in section 3.5.1.3. has to be taken.

End of life waste treatment (see paragraphs "3.5.1. Manufacturing stage", "3.5.3. Installation stage", "3.5.6. End of life stage") can be justified with an attestation of the waste treatment company. If there is no specific data or default data for installation stage et end-of-life stage, table 7 of appendix D (PEP-PCR-ed4-EN-2021 09 06) applies.

3.5.1. Manufacturing stage

A RADIATOR or TOWEL RADIATOR consists of components that are:

- components directly made by the manufacturer
- or components ready to be fitted together.

3.5.1.1. Recycled content of raw materials

If there is no justified specific data on recycled content, 0% recycled content must be applied.

3.5.1.2. Components and raw materials packagings

Raw materials packaging, their components and their transports to manufacturing sites must be taken into account. Suppliers' data must be used.
If no justification is given, an average packaging rate of 5% of the reference equipment mass (equipment + packaging) as defined below, must be taken as follows :

- Wood 50%
- Cardboard 40%
- Low-density polyethylene 10%

Loss material are taken into account in this 5% average rate. Reused packagings on site are not taken into account.
Packaging end of life treatment is modeling as defined in paragraph 3.5.3.1. of the current PSR.

3.5.1.3. Waste generated during the manufacturing stage

Waste generation and treatment are included in the manufacturing stage.

Manufacturers can dispose of manufacturing waste themselves or arrange for it to be disposed of. The LCA report shall specify how the manufacturer, or any person working for him or on his behalf fulfils the requirements of these stages, by distinguishing between hazardous manufacturing waste and non-hazardous manufacturing waste and providing evidence of such claims.
Where known, the treatment processes (reuse, recycling, energy recovery, landfill, incineration without recovery) must be presented and justified in the LCA report, and the associated environmental impacts must be taken into account as indicated in section 2.5.6 on "Product end-of-life treatment scenarios" of the PCR (PEP-PCR-ed4-EN-2021 09 06) in force.

For product recovery (recycling, re-use or incineration as fuel for energy production), environmental impacts must be considered in the life cycle analysis for radiators or hot water towel radiators, as shown in section 2.5.6 “Product end of life treatment scenarios” from the current PCR (PEP-PCR-ed4-EN-2021 09 06).

The justification for the treatment processes must then be accompanied in the LCA report by the justification for the treatment systems and the recovery rate for each type of waste (e.g. via an annual report on the end-of-life processing of equipment by an eco-organisation).

When the manufacturer does not provide evidence of the processes used to treat the waste generated during the manufacturing stage of the device in question, the treatment process shall be calculated by default as follows:

- For non-hazardous waste generated by raw material and components:
  The amount of waste is calculated by multiplying the material quantity of the total product (finished product and associated packagings) by 0,05 for plastic injection processes and elastomer, and 0,3 for other manufacture processes. Non-hazardous waste treatment is modelling as follows: 100% of incinerated waste (without waste-to-energy recovery)
- For hazardous waste generated by raw material and components:
  The amount of waste is calculated by multiplying the material quantity of the total product (finished product and associated packaging) by 0,05 for plastic injection processes and elastomer, and 0,3 for other manufacture processes. Hazardous waste treatment is modelling as follows: 100% of incinerated waste (without waste-to-energy recovery)

When the worst performer value is used by default, no waste-to-energy recovery will be taken into account. The production of this lost material must be taken into account.

The table below sums up default loss rate for each constituent material of the total product (finished product and associated packaging(s))

Process	Default loss rate	Material mass after manufacture	Material mass to take into account (including loss)
Plastic injection and elastomer	5%	1kg	1,05kg
Other processes	30%	1kg	1,30kg

Table 1 : Default loss rate for each constituent material of the total product (finished product and associated packaging(s))

Example :
If 1 kg of a bare product (final mass of the part excluding packaging) is composed of 0.8kg of steel and 0.2kg of electronic card :

- For non-hazardous waste:

Waste mass = steel mass x 0.3 = 0.8 kg x 0.3 = 0.24 kg of incinerated waste (without waste-to-energy recovery)

- For hazardous waste (0.2 kg of electronic card) :

Waste mass = electronic card mass x 0.3 = 0.2 kg x 0.3 = 0.06 kg of incinerated waste (without waste-to-energy recovery)

Any other waste treatment during manufacture stage which is taken into account for calculation has to be justified on the LCA report and mentioned in the PEP.

By sector-based agreement, the transport stage for this waste shall be taken into account, assuming that it is trucked over a distance of 100 km.

3.5.2. Distribution stage

The distribution stage must be analysed in accordance with the PCR (PEP-PCR-ed4-EN-2021 09 06) section 2.2.4. "Distribution stage" of the PCR.

3.5.3. Installation stage

The installation phase includes any process, component, energy or consumption and/or emission required to install a radiator or towel radiator, excepted those described in the section 3.2.3. of this PSR.

If a wall mount is already counted in the LCA in the manufacturing stage, this element should not be considered in the installation stage.

In the absence of a wall mount, the LCA report specifies all the elements required to install the radiators or hot water towel radiators. These elements must be described and inventoried in the LCA report in the installation stage.

3.5.3.1. Waste generated during the installation phase

The end of life of packaging, whose production is taken into account during the manufacturing stage, is taken into account during the installation stage.

The packaging waste from produced during the installation stage is classed as non-hazardous waste and, in principle, shall be disposed of by the installer once the equipment has been installed.

If there is no specific end of life evidence, treatment scenarios showed in the table below are applied by default. Tables below are representative of 2019. It's possible to use Eurostat recent consolidated data if they are available:
https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPAC__custom_3801295/default/bar?lang=fr.
The reference year or used data shall be mentioned in the PEP.

For France scope, the default values below shall be used:

	Recycling rate	Incineration with energy production	Incineration without energy production	Burial rate
Metal	83%	1%	0%	16%
Steel	88%	0%	0%	12%
Aluminium	60%	7%	0%	33%
Paper-Cardboard	91%	5%	0%	4%
Wood	7%	31%	0%	62%
Plastic	27%	43%	0%	30%

Table 1. End of life packaging treatment default scenarios for France scope

For Europe scope, the default values below shall be used:

	Recycling rate	Incineration with energy production	Incineration without energy production	Burial rate
Metal	77%	2%	0%	21%
Paper-Cardboard	82%	9%	0%	9%
Wood	31%	31%	0%	38%
Plastic	41%	37%	0%	22%

Table 2. End of life packaging treatment default scenarios for Europe scope

For other scopes, waste must be treated according to waste treatment default scenario (see paragraph 2.5.6. of the current PCR (PEP-PCR-ed4-EN-2021 09 06)).

By sector-based agreement, the transport stage for this waste shall be taken into account, assuming that it is trucked over a distance of 100 km.

Plastic film, straps, packing notes, labels or any other paper on or inside the package are considered to be insignificant and will not be included in the life cycle assessment for packaging waste if these items represent in total less than 10% of the total mass of the packaging.

3.5.4. Use stage

3.5.4.1. Maintenance stage (module B2)

Radiators or towel hot water radiators don't require servicing or maintenance during use phase.

If a new product brought to market requires servicing (operator intervention and consumables), these elements have to be added to the study and justified in the LCA report.
By default, transport equals to 100 km round trip for one person (assumed weight of 80kg) alone in his vehicle, with the specification of the ICV module "car passenger" used.

3.5.4.2. Passive devices (Family 2) (module B6)

The use stage of static hot water radiators or towel radiators involves no energy consumption after the installation of the product.

3.5.4.3. Active devices (Family 2) (module B6)

The use stage of fan-assisted hot water radiators, or mixed and mixed fan-assisted radiators, involves the following once the product is installed:

- An energy consumption,
- Consumption by electronic components in standby mode.

Energy consumption of fan-assisted hot water radiators, or mixed and mixed fan-assisted radiators, is expressed in kWh of final energy, as specified for the reference product study, described in section 3.1 "Functional unit and reference flow description" of these specific rules, using the component families identified below.

The calculation of energy consumption in the use stage is based on assumptions that are defined and justified in Section 6 "Appendices" of these specific rules.

3.5.4.3.1. Energy consumption of fan-assisted hot water radiators

The total electricity consumption of a fan-assisted hot water radiator during the reference lifetime is as follows:

$$C_{tot} \text{ (in kWh)} = [(C_{standby} + C_{fan})] * RLT$$

Where:
C_{tot} = total electricity consumption of a hot water radiator over its reference lifetime expressed in kWh
$C_{standby}$ = annual standby electricity consumption of a hot water radiator expressed in kWh/year
C_{fan} = annual electricity consumption in heating mode of a hot water radiator expressed in kWh/year
RLT = reference lifetime of the product expressed in years

3.5.4.3.1.1. Default consumption in standby mode

The energy consumption in standby mode of a fan-assisted hot water radiator corresponds to the consumption of the fan control device.

The minimum standby mode duration to be taken into account for the energy consumption calculation is defined in Section 6 “Appendices” of these specific rules.

By default, this consumption outside the heating period is:

$C_{standby}$ (kWh/yr) = (2 x (8760- 4368))/1000 = 8.78 kWh/yr

The power considered outside the heating period is 2 W.

3.5.4.3.1.2. Consumption by the ventilation system

The energy consumption in heating mode is determined according to:

- The power absorbed by the electrical components (expressed in watts) of the reference product, including the fan(s) at medium speed
- The number of hours of operation per year (i.e. 4368 hours)

C_{fan} (kWh/yr) = (P_e x 4368) / 1000

Where:
P_e = Electrical power absorbed by the fan(s) at medium speed, in watts

3.5.4.3.2. Energy consumption by the mixed hot water radiators and mixed hot water towel radiators (module B6)

The total electricity consumption of a hot water radiator or mixed towel radiator during the reference lifetime is as follows:

$$C_{tot} \text{ (in kWh)} = [(C_{standby} + C_{back\text{-}up})] * RLT$$

Where:
C_{tot} = total electricity consumption of a hot water radiator or towel radiator over its reference lifetime expressed in kWh
$C_{standby}$ = annual standby electricity consumption of a hot water radiator or towel radiator expressed in kWh/year
$C_{back\text{-}up}$ = annual electricity consumption of electrical back-up equipment, expressed in kWh
RLT = reference lifetime of the product expressed in years

3.5.4.3.2.1. Default consumption in standby mode

The energy consumption in standby mode of a mixed hot water radiator corresponds to the consumption of the back-up equipment control device.

The minimum standby mode duration to be taken into account for the energy consumption calculation is defined in Section 6 “Appendices” of these specific rules.

By default, this consumption is estimated at 2 W per day in periods when the electrical back-up equipment is not in use, i.e.:

$C_{standby}$ (kWh/yr) = (2 x (8760 - 180))/1000 = 17.16 kWh/yr

3.5.4.3.2.2. Consumption of the electrical back-up equipment

The heating consumption in operation is determined according to:

- The power absorbed by the electrical components, including the electrical backup system
- The number of hours of operation per year (i.e. 180 hours)

The electrical back-up equipment is used in mid-season only (outside heating periods and summertime), two hours per day.

$C_{back-up}$ (kWh/yr) = (P_e x 180) / 1000

Where:
P_e = power absorbed (in watts) of the electrical back-up system of the reference product

3.5.4.3.3. Energy consumption of the fan-assisted mixed hot water radiators (module B6)

The total electricity consumption of a mixed or fan-assisted hot water radiator during the reference lifetime is as follows :

$$C_{tot} \text{ (in kWh)} = [(C_{standby} + C_{blower} + C_{back-up})] * DVR$$

Where
C_{tot} = total electricity consumption of a hot water radiator or towel radiator over its reference lifetime expressed in kWh
$C_{standby}$ = annual standby electricity consumption of a hot water radiator or towel radiator expressed in kWh/year
C_{blower} = annual electricity consumption of back-up equipment per blower system, expressed in kWh cf. (see paragraph 3.5.4.3.1.2 of the current specific rules)
$C_{back-up}$ = annual electricity consumption of back-up equipment per blower system, expressed in kWh (see paragraph 3.5.4.3.2.2 of the current specific rules)
RLT = reference lifetime of the product expressed in years

In this case, the default standby energy consumption is estimated at 2 w per day:

$C_{standby}$ = (2 x (2232+2160-180))/1000 = 8,42 kWh/year

3.5.4.4. Energy consumption of static hot water radiators or hot water towel radiators equipped with a blower system

The total electricity consumption of a hot water radiator or towel radiator with blower system during the reference lifetime is as follows:

$$C_{tot} \text{ (in kWh)} = [(C_{standby} + C_{blower})] * RLT$$

Where:

C_{tot} = total electricity consumption of a hot water radiator or towel radiator over its reference lifetime expressed in kWh

$C_{standby}$ = annual standby electricity consumption of a hot water radiator or towel radiator expressed in kWh/year

C_{blower} = annual electricity consumption of back-up equipment per blower system, expressed in kWh

RLT = reference lifetime of the product expressed in years

3.5.4.4.1. Default consumption in standby mode

The energy consumption in standby mode of a hot water radiator or towel radiator with blower system corresponds to the consumption of the blower system control device.

The minimum standby mode duration to be taken into account for the energy consumption calculation is defined in Section 6 “Appendices” of these specific rules.

By default, this consumption is estimated at 2 W per day in heating periods and in summer, i.e.:

$C_{standby}$ = (2 x (8760-180))/1000 = 17.16 kWh/yr

3.5.4.4.2. Consumption by the blower system

The heating consumption in operation is determined according to:

- The power absorbed by the blower system
- The number of hours of operation per year (i.e. 180 hours)

C_{blower} (kWh/yr) = (P_e x 180) / 1000

Where:

P_e = power absorbed (in watts) by the blower system of the reference product

3.5.4.5. Energy consumption of mixed hot water radiators or mixed hot water towel radiators equipped with a blower system

The total electricity consumption of a mixed hot water radiator or mixed towel radiator equipped with blower system during the reference lifetime is as follows:

$$C_{tot} \text{ (in kWh)} = [(C_{standby} + C_{blower} + C_{backup})] * RLT$$

Where:

C_{tot} = total electricity consumption of a hot water radiator or towel radiator over its reference lifetime expressed in kWh
$C_{standby}$ = annual standby electricity consumption of a hot water radiator expressed in kWh/year
C_{blower} = annual electricity consumption of back-up equipment per blower system, expressed in kWh/year (see Section 3.5.4.3.2 of these specific rules)
C_{backup} = annual electricity consumption of electrical back-up equipment, expressed in kWh/year (see Section 3.5.4.2.2 of these specific rules)
RLT = reference lifetime of the product expressed in years

In this case, the default standby energy consumption is estimated at 2 W per day, i.e.:

$C_{standby}$ = (2 x (8760-180-180)) / 1000 = 16.8 kWh/year

3.5.5. End-of-life stage

Within the European Union, waste generated by mixed and/or fan-assisted hot water radiators or towel radiators are classed as WEEE (Waste from Electrical and Electronic Equipment).

The LCA report will explain the organisation of known disposal and/or recovery systems, the associated environmental impacts and how the manufacturer meets these requirements, if applicable. These items will determine the applicable end-of-life treatment and collection rate.

The use of ICV Ecosystem modules is valid for France and Europe.

For the equipment which is not concerned by the WEEE Directive and/or the absence of justification on their end of life treatment, the default scenario of the current PCR (PEP-PCR-ed4-EN-2021 09 06) must be used.

By sector-based agreement, the transportation to collect the end-of-life product and convey it from the location of use to its final treatment site is calculated according to an assumption that it is carried by truck over a distance of 100 km.

3.5.6. Benefits and loads beyond the system boundaries

For this step, rules defined in in the current PCR (PEP-PCR-ed4-EN-2021 09 06) apply.

3.6. Rule(s) for extrapolation to a homogeneous environmental family

These rules are additional to section 2.6 "Rules for extrapolation to a homogeneous environmental family" of the PCR.

The following paragraphs detail the conditions of belonging to a homogeneous environmental family and the extrapolation rules applicable to each stage of the life cycle.

To use these extrapolation rules, the manufacturer must justify in the LCA report that the range of products covered by the PEP fulfill all the conditions presented in the paragraph 3.6.1. The use of any other extrapolation rule and/or definition of environmental homogeneous family shall be justified in the LCA report.

3.6.1. Definition of a homogeneous environmental family

A homogeneous environmental family means devices from the same range satisfying the following characteristics:

- Identical function
- Same product standard
- Similar manufacturing technology: identical type of materials and identical manufacturing processes

To develop a valid PEP for a range of hot water radiators or towel radiators, environmental impact weighting factors are applied to all the products in the same product range, as specified in section 3.1.3. “Reference product and reference flow description” of these specific rules.

The extrapolation rule or the tables indicating the extrapolation coefficients applicable to the various stages of the life cycle and to each product in the range covered must be stated in the PEP.

When the product range contains none of the reference devices defined in section 3.1.3 “Reference product and reference flow description” of these specific rules, the calculation is performed on the device with the most similar characteristics.

3.6.2. Extrapolation rule during the manufacturing stage

The environmental impacts produced during the manufacturing stage are directly correlated to the total mass of the product.
As the mass of so-called “EEE” components does not change in the same ratio as the other components of the product, it is accepted that they are excluded from the extrapolation coefficient calculation.

For the manufacturing stage, the mass extrapolation coefficient to be applied to the PEP results for any other power from the same range is as follows:

Coefficient on the FU scale	$\left(\frac{total\ mass\ of\ the\ product\ considered\ including\ its\ packatging, excluding\ EEE\ components\ (kg)}{total\ mass\ of\ the\ reference\ product\ of\ the\ range, including\ its\ packaging, excluding\ EEE\ components\ (kg)}\right) \times \left(\frac{Power\ of\ the\ reference\ product\ (kW)}{Power\ of\ the\ product\ considered\ (kW)}\right)$

Coefficient on the scale of the declared product (additional information)	$\left(\frac{total\ mass\ of\ the\ product\ considered\ including\ its\ packaging\ excluding\ EEE\ components\ (kg)}{total\ mass\ of\ the\ reference\ product\ of\ the\ range,including\ its\ pacakging,excluding\ EEE\ components\ (kg)}\right)$

Note: The extrapolation coefficient takes into account the power of the products in order to guarantee consistent environmental impact results between the functional unit, the reference product, and the product under consideration.

3.6.3. Extrapolation rule in distribution stage

The environmental impacts produced during the distribution stage are directly correlated to the total mass of the product (including any EEE components and the packaging).

For the distribution stage, the mass extrapolation coefficient to be applied to the PEP results for any other power from the same range is as follows:

Coefficient on the FU scale	$\left(\frac{mass\ of\ the\ product\ considered\ (kg)}{total\ mass\ of\ the\ reference\ product\ (kg)}\right) \times \left(\frac{Power\ of\ the\ reference\ product\ (kW)}{Power\ of\ the\ product\ considered\ (kW)}\right)$
Coefficient on the scale of the declared product (additional information)	$\left(\frac{total\ mass\ of\ the\ product\ considered\ (kg)}{total\ mass\ of\ the\ reference\ product\ (kg)}\right)$

3.6.4. Extrapolation rule in installation stage

The environmental impacts produced in the installation stage are directly correlated to the mass of the packaging of the product concerned or the reference product.

For the installation stage, the mass extrapolation coefficient to be applied to the PEP results for any other power from the same range is as follows:

Coefficient on the FU scale	$\left(\frac{mass\ of\ the\ packaging\ of\ the\ product\ considered\ (kg)}{mass\ of\ the\ packaging\ of\ the\ reference\ product\ (kg)}\right) \times \left(\frac{Power\ of\ the\ reference\ product\ (kW)}{Power\ of\ the\ product\ considered\ (kW)}\right)$
Coefficient on the scale of the declared product (additional information)	$\left(\frac{mass\ of\ the\ packaging\ of\ the\ product\ considered\ (kg)}{mass\ of\ the\ packaging\ of\ the\ reference\ product\ (kg)}\right)$

3.6.5. Extrapolation rule in use stage

For the use stage, the extrapolation rules have to be applied either:

- under each module (from B1 to B7). The use stage is equal to the sum of extrapolated indicators of sub-modules B.
- or to the whole phase, according to the extrapolation rule defined in section 3.6.6.6. for module B6.

3.6.5.1. Module B1

Not applicable.

3.6.5.2. Module B2

Hot water radiators and towel radiators do not require maintenance or servicing during the use stage.

However, if a new product brought to market requires servicing (operator intervention and consumables), an extrapolation rule must be stated in the PEP and justified in the LCA report.

3.6.5.3. Module B3

Not applicable.

3.6.5.4. Module B4

Not applicable.

3.6.5.5. Module B5

Not applicable.

3.6.5.6. Module B6

This paragraph applies only to active equipment (family 2).

Environmental impacts generated during module B6 are correlated to their energy consumption.

For the environmental impact calculation related to use phase, the PEP has to specify the absorbed total electric power of the fans or electrical back-up systems for each hot water radiator covered by the PEP for the range of products.

Coefficient at the functional unit level	$\left(\frac{Total\ energy\ consumption\ of\ the\ product\ considered\ (kWh)}{Total\ energy\ consumption\ of\ the\ reference\ product\ (kWh)}\right) \times \left(\frac{Power\ of\ the\ reference\ product}{Power\ of\ the\ product\ considered}\right)$
Coefficient at the declared product level (or declared unit level)	$\left(\frac{Total\ energy\ consumption\ of\ the\ product\ considered\ (kWh)}{Total\ energy\ consumption\ of\ the\ reference\ product\ (kWh)}\right)$

With Total energy consumption = Ctot as defined in paragraph 3.5.4.3. of the current PSR

3.6.5.7. Module B7

Not applicable.

3.6.6. Extrapolation rule applied during the end-of-life stage

The environmental impacts produced during the end-of-life stage are directly correlated to the total mass of the product (excluding packaging).

For the end-of-life stage, the mass extrapolation coefficient to be applied to the PEP results for any other power from the same range is as follows:

Coefficient on the FU scale	$\left(\frac{Mass\ of\ the\ product\ considered, excluding\ packaging\ (kg)}{Mass\ of\ the\ reference\ product\ of\ the\ range, excluding\ packaging\ (kg)}\right) \times \left(\frac{Power\ of\ the\ reference\ product\ (kW)}{Power\ of\ the\ product\ considered\ (kW)}\right)$
Coefficient on the scale of the declared product (additional information)	$\left(\frac{Mass\ of\ the\ product\ considered, excluding\ packaging\ (kg)}{Mass\ of\ the\ reference\ product\ of\ the\ range, excluding\ packaging\ (kg)}\right)$

3.6.7. Extrapolation rules for benefits and loads beyond the system boundaries stage

Following a documented sensitivity study, it has been proved that environmental impacts of these systems from phase A1 to phase C4 are proportional to their mass. An extrapolation process applying to all the Life Cycle Assessment phases has been made and appears in the table below.

Factors that change module D are :

- Recycled content of raw materials quantities used for manufacturing phase
- Loss quantities and waste generated during the Life Cycle Assessment, and their treatment.

These factors are directly related to the mass of the product and should not vary within a homogeneous environmental family (paragraph 2.6. of the current PCR (PEP-PCR-ed4-EN-2021 09 06)): “similar manufacturing technology: same type of materials and manufacturing processes”).

Then, extrapolation rules based on the mass of the product can be applied to module D.
The environmental impacts generated during the benefits and loads beyond the system boundaries stage are directly correlated to the total mass of the product and its packaging (including EEE components).

For the benefits and loads beyond the system boundaries stage, the mass extrapolation factor to use for every power of the same range is as follows:

Coefficient on the FU scale	$\left(\frac{Mass\ of\ the\ product\ considered\ (kg)}{Mass\ of\ the\ reference\ product\ of\ the\ range\ (kg)}\right) \times \left(\frac{Power\ of\ the\ reference\ product\ (kW)}{Power\ of\ the\ product\ considered\ (kW)}\right)$
Coefficient on the scale of the declared product (additional information)	$\left(\frac{Mass\ of\ the\ product\ considered}{Mass\ of\ the\ reference\ product\ of\ the\ range\ (kg)}\right)$

3.7. Rules applying to joint environmental declarations

These rules are complementary to the current PCR (PEP-PCR-ed4-EN-2021 09 06) in section 2.7. "Rules applying to joint environmental declarations".

For a joint environmental declaration, the analysis must cover a "typical product" compliant with the rules defined in Section 3.1.3. "Reference product and reference flow description" of these specific rules. Moreover, it’s mandatory to mention in the PEP the validity framework of the extrapolation rules application, based on technical criteria so that it’s possible to check that products belong to the same environmental family as the typical product.

3.8. Requirements concerning environmental data

3.8.1. Requirements concerning the collection of primary and secondary data

These rules are additional to the sections 2.9.1. "Requirements for the collection of primary data" and 2.9.2. "Requirements for secondary data" of the current PCR (PEP-PCR-ed4-EN-2021 09 06).

As far as possible, the primary data for each component of the hot water radiator under consideration (i.e. all the data associated with the manufacturing phase of the reference product, specific to an organisation) is to be preferred and shall be justified in the LCA report, specifying:

1) primary data in case of a single supplier,
2) in case of procurement from several suppliers, the real or standard primary data to be taken into account is the data provided by major suppliers representing at least 50% of the procurement by volume (with respect to the total quantity bought). For example, for ten suppliers each providing 10% of the procurement volume, at least five suppliers shall be considered in order to obtain an overall view of the primary information provided. Any other distribution rule should be mentioned in the LCA report and in the PEP.

If primary data are shared with other products than those referred to these specific rules, the calculation of impacts will be done in proportion to the mass of the devices manufactured.

This information is not always available to manufacturers. If primary data are not available, secondary standard data, taken from the database for the life cycle analysis software application, should be used. The current PCR (PEP-PCR-ed4-EN-2021 09 06) explains how to select the LCI modules. If the transportation information is not available, the data defined in the section 2.5.3. "Transport scenarios" of the current PCR will be used.

The ICV module used to model the raw material or the component can include a default loss rate

- If the default loss rate included in the ICV module can be changed:

Default values defined in the paragraph 3.5.1.3. have to be applied.

- If the default loss rate included in the ICV can not be changed:
    - The loss rate is below the default values defined in the paragraph 3.5.1.3.: this loss rate has to be mentioned in the LCA report and the modelling has to be adapted as much as possible in order to take into account the difference between generated waste (hazardous or non-hazardous)
    - The loss rate is higher to the default values defined in the paragraph 3.5.1.3.: the loss rate has to be mentioned in the LCA

3.8.2. Data quality evaluation

The specific rules specified in the section "Data quality evaluation" in the current PCR (PEP-PCR-ed4-EN-2021 09 06) apply.

3.9. Calculation of environmental impact

To ensure consistency of the results of environmental impacts between the functional unit and the reference product, the PEP shall show the environmental impacts of the manufacturing, distribution, installation, use (module B1 to B7), end-of-life and benefits and loads beyond the system boundaries stages as follows:

Environmental impacts from the PEP (for 1 kW) =
Environmental impacts of the reference product /Power of the reference product (kW)

The reference power is defined in Section 3.1 “Functional unit and description of the reference flow”.

For the biogenic carbon storage, two assessment methodologies 0/0 or -1/+1 are accepted until the environmental database update. The methodology used has to be mentioned in the PEP and the LCA report.

The environmental database version has to be mentioned in the PEP and the LCA report (included the Environmental Footprint version number).

4. Drafting of the Product Environmental Profile

4.1. General information

The specific rules specified in section "General information" of the current PCR (PEP-PCR-ed4-EN-2021 09 06) apply.

The PEP must specify:

- The description (device family (active or passive) and characteristics of the product(s) concerned, in accordance with Section 2.1.
- Any scenario or assumption other than those defined in the present specific rules.

4.2. Constituent materials

The rules specified in the section "Constituent materials" of the current PCR (PEP-PCR-ed4-EN-2021 09 06) apply.

4.3. Additional environmental information

These specific rules are additional to section 4.3 "Additional environmental information" of the PCR (PEP-PCR-ed4-EN-2021 09 06).

4.4. Environmental impacts

In the context of performing Life Cycle Analyses on the scale of a building, the environmental impacts of the equipment must be considered on the scale of the product and the impacts related to energy consumption in the use stage must be treated separately.

To facilitate the use of the PEP file in conducting a building LCA, the PEP may include:

- The table of environmental impacts of the reference product expressed on the product scale (or declared product) in addition to the table on the functional unit scale. The values must then be indicated in numerical values, expressed in the appropriate units to three significant figures (and, optionally, as a percentage) for each stage of the life cycle, and the total for each indicator of the complete life cycle analysis.
- The following details must be included in the PEP file, to ensure clarity and transparency for the user:
    - For environmental impacts expressed per functional unit, the following wording must be included: "per kW corresponding to the functional unit"
    - For environmental impacts expressed per declared product, the following wording must be included: “per device corresponding to the reference product"
- The results of the environmental impacts in the use stage according to a breakdown of Module B (B1 to B7) in compliance with standards EN 15978 and EN 15804.

The table of environmental impacts represents the environmental impact of the functional unit, i.e. the emission of 1 kW heating power.

Thus, the total impact of the installed product must be calculated by the user of the PEP according to the power of the equipment by multiplying the impact concerned by the total number of kW of the device.

The following details must be completed and included in the PEP, to ensure clarity and transparency for the user:
The PEP was drawn up on the basis of 1 kW of heating power being supplied. The impact of the stages of the life cycle of an installed product is calculated by the user of the declaration by multiplying the impact concerned by the total heating capacity.

When extrapolation rules are used, the following statement must be included:
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.

5. PEP Update Rules

Every PEP registered by PEP association shall be updated and subjected to a new registration if the concerned product increase of more than 5% :

- In mass
- In new sub-components

- In environmental indicators considered as significant
- Any other element considered as significant
- In used material

6. Appendices

6.1. Glossary

$C_{back-up}$	Annual electricity consumption of the electrical back-up equipment
C_{blower}	Annual electricity consumption of the blower back-up equipment
C_{fan}	Annual electricity consumption of fan(s) in heating mode of a hot water radiator
$C_{standby}$	Annual standby electricity consumption of a hot water radiator or towel radiator
C_{tot}	Total electricity consumption of a hot water radiator or towel radiator over its reference lifetime
EEE	Electrical and Electronic Equipment
EN	European Union
Kg	Kilogram
kWh	Kilowatt hour
LCA	Life cycle analysis
LCI	Life cycle inventory
PCR	Product category rules
PEP	Product environmental profile
Primary data	Actual data measured by the manufacturer or supplier
PSR	Product specific rules
RLT	Reference lifetime
Secondary data	Generic data from a database or according to sector-based agreement
Wh	Watt hour

6.2. References

Chapter	Subject	Source
2. Scope 3.1.1 Functional unit	EN 442	Radiators and convectors - Part 1: Technical specifications and requirements (2014)
2. Scope 3.1.1 Functional unit	EN 16430	Fan assisted radiators, convectors and trench convectors - Part 1: Technical specifications and requirements (2014)
2. Scope	Regulation 305/2011	REGULATION (EU) No. 305/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC
3.5.3.1. Installation stage waste	End of life packaging treatment default scenarios for France and Europe scopes	Eurostat website giving statistics about packagings end of life treatments : https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPAC__custom_3801295/default/bar?lang=fr.
6.4. Assumption and definition of calculation parameters for the use stage	"Energy Related Product" Directive 2009/125/EC	DIRECTIVE 2009/125/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (revision)

6.3. Application examples of extrapolation rules

For the example below, product A is the reference product corresponding toa fan-assisted hot water radiator.

As follows, the product characteristics:

Cstandby (electric consumption in standby mode in kWh/yr)	8,78
(VRF (years)	50,00

As follows, the elements corresponding to 3 products belonging to the same homogeneous environmental family. Product A is the reference product:

	Product A (reference)	Product B	Product C
Total mass of the product (including packaging and EEE components) (kg)	20,00	25,00	30,00
Product mass – EEE mass* (kg)	19,50	24,50	29,5000
Packaging mass (kg)	1,00	1,25	1,5000
Power (kW)	1,00	1,50	2,00
P Reference product / considered product pwoer	1,00	0,67	0,50
Pelec average speed (kW)	1,00	1,50	2,00
Cfan (kWh/yr)	4,37	6,55	8,74
Final energy consumption C (kWh)	657,40	766,60	875,80

*mass of the EEE components (Electronic and Electric Equipment taken into account in another PSR)

According to parameters above, we can determine extrapolation coefficients for each product and each life cycle stage:

	Stages	Product A	Product B	Product C
Functional Unit scale	A1-A3 : Manufacturing	1,00	0,84	0,76
	A4 : Distribution	1,00	0,83	0,75
	A5 : Installation	1,00	0,83	0,75
	B1 : Use	-	-	-
	B2 : Maintenance	-	-	-
	B3 : Repair	-	-	-
	B4 : Replacement	-	-	-
	B5 : Rehabilitation	-	-	-
	B6 : Energy consumption	1,00	0,78	0,67
	B7 : Water consumption	-	-	-
	C1-C4 : End of life	1,00	0,83	0,75
	D : Benefits and loads beyond the system boundaries	1,00	0,83	0,75
Declared product scale	A1-A3 : Manufacturing	1,00	1,26	1,51
	A4 : Distribution	1,00	1,25	1,50
	A5 : Installation	1,00	1,25	1,50
	B1 : Use	-	-	-
	B2 : Maintenance	-	1,00	1,00
	B3 : Repair	-	1,00	1,00
	B4 : Replacement	-	1,00	1,00
	B5 : Rehabilitation	-	1,00	1,00
	B6 : Energy consumption	1,00	1,17	1,33
	B7 : Water consumption	-	-	-
	C1-C4 : End of life	1,00	1,25	1,50
	D : Benefits and loads beyond the system boundaries	1,00	1,25	1,50

6.4. Assumption and definition of calculation parameters for the use stage

Operating time assumptions for the calculation of energy consumption in the use stage:

Year = 365 days = 8760 hours
Heating period from 15 October to 15 April = 182 days = 4368 hours
Mid-season period = 15 April to 20 June and from 22 September to 14 October = 90 days = 2160 hours
Summer period = 21 June to 21 September = 93 days = 2232 hours

Operating period of back-up system or blower system = 2 hours/day in mid-season period, i.e.: 90*2 = 180 hours

Standby consumption of electrical devices during use stage:

The standby consumption is taken as 2 W by default according to the "Energy Related Product" directive 2009/125/EC[7].

By default, the standby consumption is determined according to the following principles:

- For fan-assisted hot water radiators: 2 W * number of hours outside heating period
- For mixed radiators: 2 W * (number of heating hours + number of summer hours)
- For mixed and fan-assisted radiators: 2 W * (number of summer hours)

[7] See the sources used in Section 5.2 of the present document.

6.5. Declaration of conformity

Attestation de revue critique des « Règles spécifiques aux radiateurs ou sèche serviettes eau chaude »

Chargée de revue critique	Marlène DEMICHELI et Olivia DJIRIGUIAN
Document revu	PSR - Règles spécifiques aux radiateurs ou sèche serviettes eau chaude
Etabli par	CSTB
Version et date	PSR-0011-ed2.0-FR-2023-04-06
Période de revue	Janvier 2023 – Avril 2023
Référentiels de revue	L'objectif de la revue critique est de vérifier la conformité du document avec les référentiels suivants : - Le programme PEP ecopassport, : PCR-ed4-FR-2021 09 06 - Les normes NF EN ISO 14020-2002 et NF EN ISO 14025-2010 ; - Les normes NF EN ISO 14040 et 14044-2006
Conclusion	Le document revu ne comporte pas de non-conformité par rapports aux référentiels. Ainsi, le PSR relatifs aux radiateurs ou sèche serviettes eau chaude est conforme aux exigences des référentiels.
	Marlène DEMICHELI Consultante ACV et éco-conception Le 06/06/2023
	Olivia DJIRIGUIAN Consultante ACV et éco-conception Le 06/06/2023 LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES

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