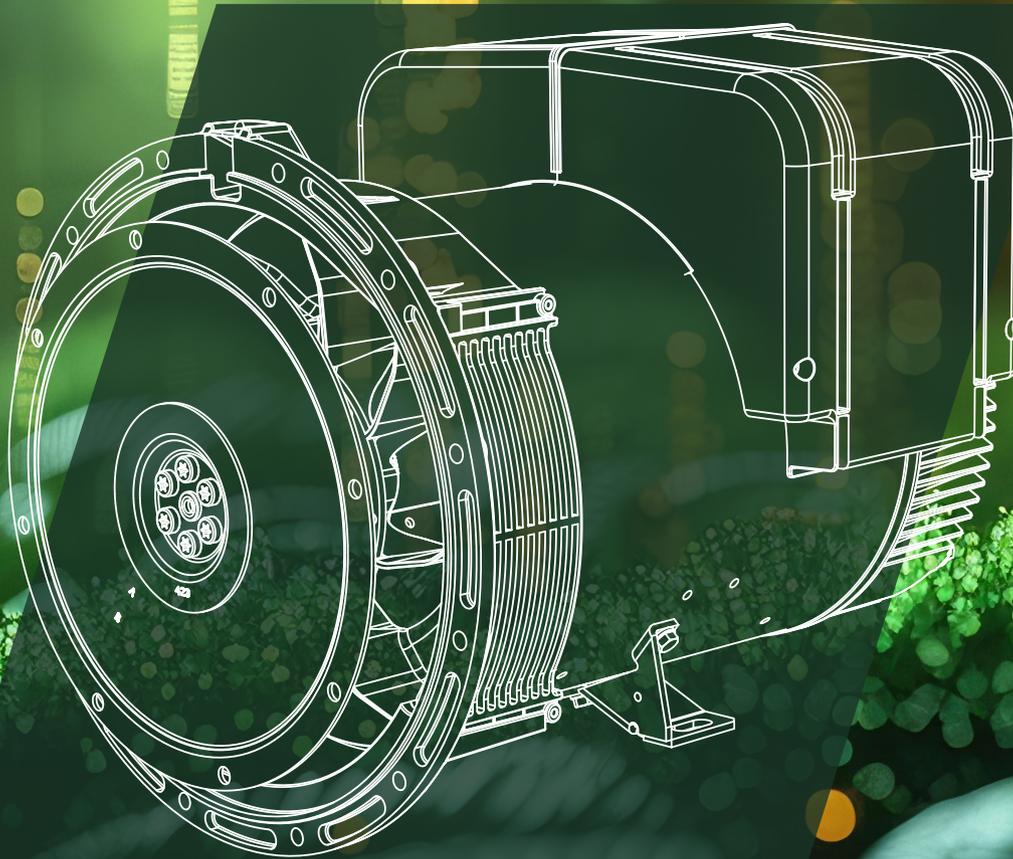


Nidec

Power

Environmental Product Declaration



TAL 042

A **LEROY-SOMER**™ Product



**MADE IN EU
FOR EMEA**

Auditor's name: **Abderezak Guiz**

Product category rules based on "PCR-ed4"

Publication date: **05-2025**

Validity period: 5 years

Independent verification of declaration and data in accordance with ISO 14025:2010

Internal External

Document complying with ISO 14025:2010 "Environmental labels and declarations. Type III environmental declarations"

NIDEC POWER'S ENVIRONMENTAL COMMITMENTS

Contributing to sustainable development

- Integrating environmental management into all of our activities through our ISO 14001 certification
- Decarbonizing our internal and external activities

Considering the environment in product design and providing information in compliance with ISO 14025

- Reducing the product environmental impact by integrating life cycle analysis from the design stage
- Working with our suppliers on the composition and origin of components

Offering our customers environmentally friendly solutions

- Developing a regionalization strategy to be closer to the user
- Providing efficient products that align with the context of electrification and grid intermittency

DESCRIPTION

Model	042
Reference	042 F – 50 kVA
Family	27.5 to 70 kVA - 50 Hz
Equipment	Low Voltage Alternator - 4 poles
Manufacturing	Czechia



VERIFICATION

Auditor's name: Abderezak Guiz	Product category rules based on "PCR-ed4"
Publication date: 05-2025	Validity period: 5 years
Independent verification of declaration and data in accordance with ISO 14025:2010	
Internal <input type="checkbox"/> External <input checked="" type="checkbox"/>	
Document complying with ISO 14025:2010 "Environmental labels and declarations. Type III environmental declarations"	

PRODUCT RANGE COVERED BY “EPD”

TAL 042 F is the reference product in the range. Extrapolation coefficients are available in the appendix for assessing the environmental impact of the other models in the range.

Total product weight: 217 kg (including packaging)

FUNCTIONAL UNIT AND REFERENCE FLOW

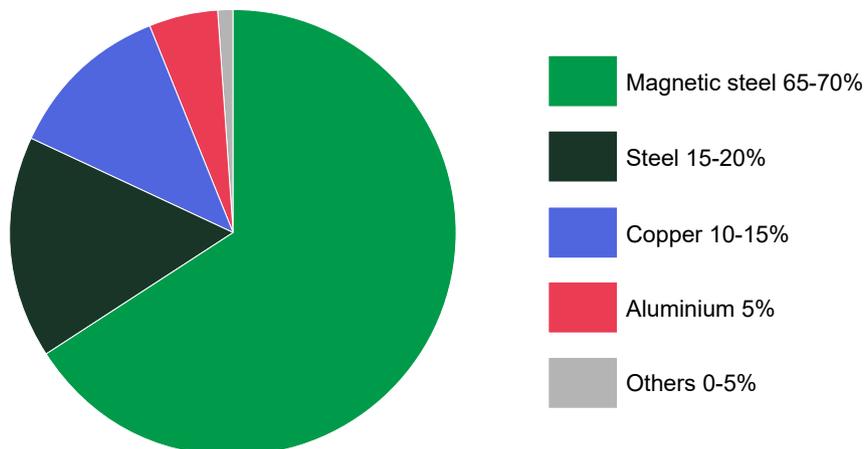
Ensure the production of 1 kVA using an auxiliary energy source 200 hours per year for a reference lifetime of 40 years.

Reference flows

Ratings 50Hz – 1 500 rpm		
	On the scale of the product over its reference lifetime (40 years)	At the level of the functional unit over its reference lifetime (40 years)
Equipment	1p 042 F or 181 kg	1/400 000 of 042 F or 4.52E-04 kg of product
Packaging	1 packaging or 30 kg	1/400 000 packaging or 7.250E-05 kg of packaging
Maintenance	4 bearings or 1.4 kg	1/400 000 bearings or 3.50E-06 kg of bearings

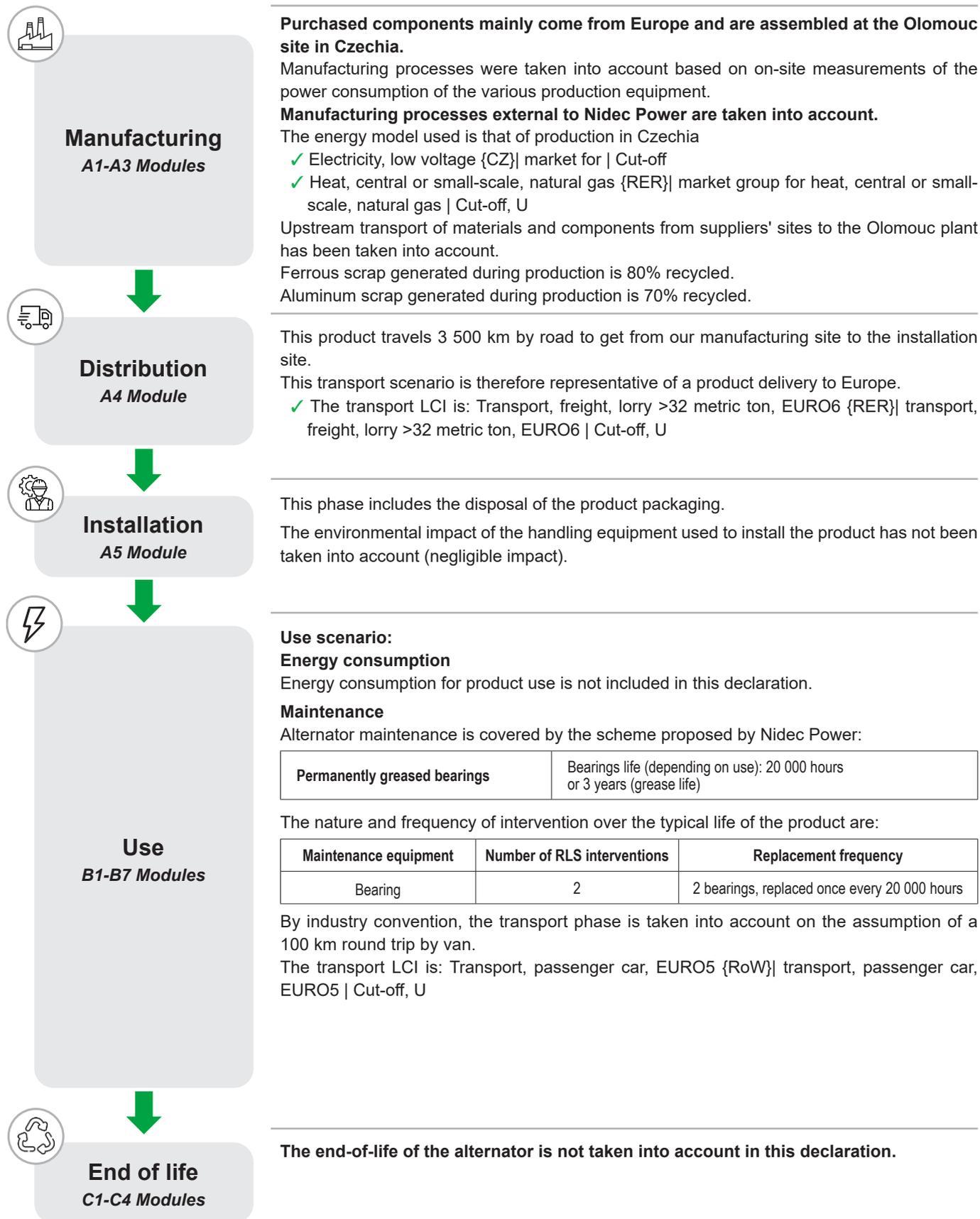
PRODUCT (WITHOUT PACKAGING) MASS BALANCE

METALS	Quantity	Others	Quantity
Magnetic steel	65-70%	Insulation	0-5%
Steel	15-20%		
Copper	10-15%		
Aluminium	5%		
Total	95-100%	Total	0-5%



LIFE CYCLE ANALYSIS

This statement is representative of the A1-A5+B2 breakdown (cradle to delivery + maintenance).



ENVIRONMENTAL IMPACT ASSESSMENT

The Life Cycle Assessment on which this Environmental Product Declaration (EPD) is based complies with the criteria of PCR-ed4-FR-2021_09_14 of the PEP Ecopassport® Program.

The results were obtained using SimaPro 10.1 software and the ecoinvent 3.9 database. The characterisation method is EF3.1.

IMPACT INDICATORS PER kVA CORRESPONDING TO THE FUNCTIONAL UNIT

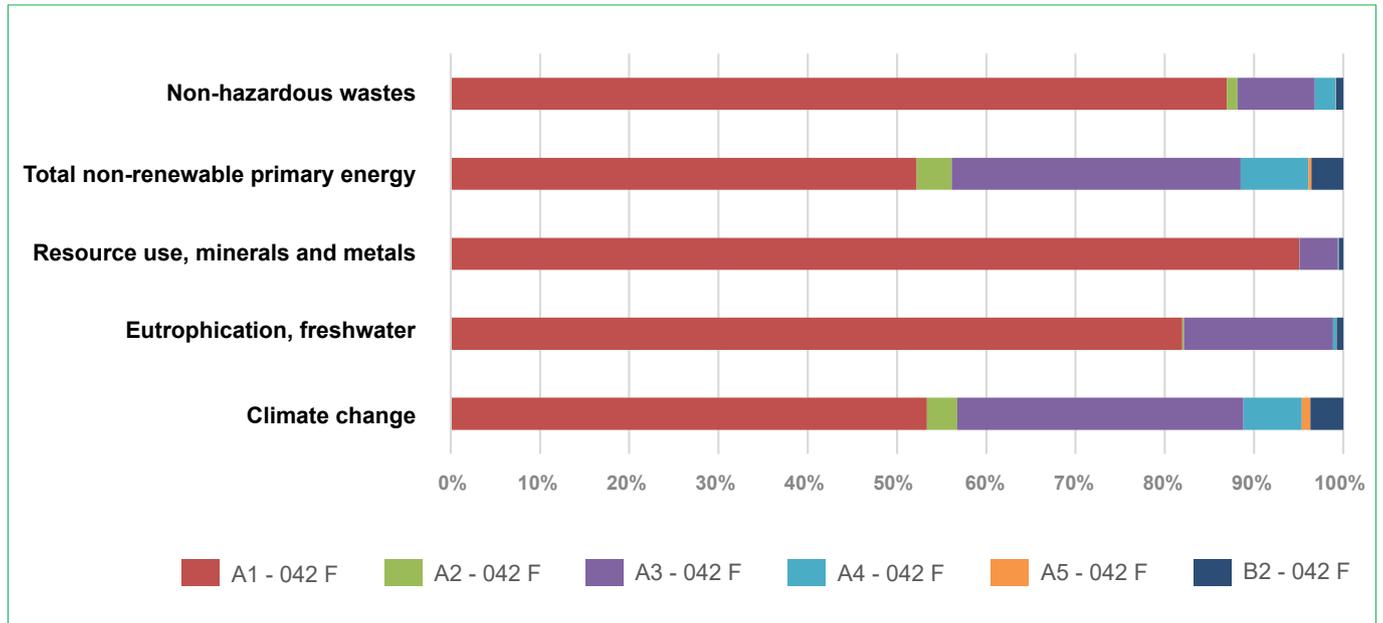
The “PEP” is based on the **production of 1 kVA per hour of operation**. The real impact of the life cycle stages of the product installed in a real situation must be calculated by the user of the “PEP” by multiplying the impact considered by the rated power according to the configuration chosen.

1500 rpm

Impact category	Unit	Total	A1	A2	A3	A4	A5	B2	Module D
PCR ed4 categories indicators									
Climate change	kg CO ₂ eq	2.82E-03	1.50E-03	9.62E-05	9.03E-04	1.85E-04	2.64E-05	1.04E-04	-2.58E-06
Climate change - Biogenic	kg CO ₂ eq	2.31E-05	4.44E-06	2.92E-08	1.64E-05	5.61E-08	5.23E-07	1.70E-06	-2.75E-09
Climate change - Fossil	kg CO ₂ eq	2.79E-03	1.49E-03	9.61E-05	8.84E-04	1.85E-04	2.58E-05	1.03E-04	-2.58E-06
Climate change - Land use and LU change	kg CO ₂ eq	7.42E-06	5.33E-06	4.69E-08	1.90E-06	9.02E-08	1.02E-09	5.61E-08	-2.00E-09
Ozone depletion	kg CFC-11 eq	5.57E-11	2.85E-11	2.18E-12	1.84E-11	4.20E-12	2.05E-13	2.21E-12	-2.22E-14
Acidification	mol H+ eq	3.91E-05	3.32E-05	2.38E-07	4.70E-06	4.58E-07	5.38E-08	4.45E-07	-1.78E-08
Eutrophication, freshwater	kg P eq	3.39E-06	2.78E-06	7.10E-09	5.66E-07	1.36E-08	2.29E-10	2.49E-08	-1.30E-09
Eutrophication, marine	kg N eq	3.72E-06	2.51E-06	6.48E-08	8.86E-07	1.25E-07	2.95E-08	1.00E-07	-4.46E-09
Eutrophication, terrestrial	mol N eq	4.19E-05	3.03E-05	6.66E-07	8.38E-06	1.28E-06	2.76E-07	1.01E-06	-5.07E-08
Photochemical ozone formation	kg NMVOC eq	1.55E-05	1.01E-05	3.89E-07	3.68E-06	7.47E-07	1.18E-07	4.32E-07	-1.80E-08
Resource use, minerals and metals	kg Sb eq	3.99E-07	3.79E-07	2.69E-10	1.71E-08	5.17E-10	6.58E-12	1.98E-09	-6.30E-12
Resource use, fossils	MJ	3.72E-02	1.94E-02	1.46E-03	1.20E-02	2.81E-03	1.32E-04	1.33E-03	-1.76E-05
Water use	m ³ depriv.	9.60E-04	7.41E-04	6.97E-06	1.87E-04	1.34E-05	1.88E-07	1.09E-05	-1.47E-06
Renewable primary energy w/t RM	MJ, net CV	6.12E-03	3.55E-03	2.13E-05	2.45E-03	4.11E-05	8.30E-07	5.59E-05	-2.19E-06
Renewable primary energy as RM	MJ, net CV	8.38E-05	0.00E+00	0.00E+00	8.38E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total renewable primary energy	MJ, net CV	6.20E-03	3.55E-03	2.13E-05	2.53E-03	4.11E-05	8.30E-07	5.59E-05	-2.19E-06
Non-renewable primary energy w/t RM	MJ, net CV	3.72E-02	1.94E-02	1.46E-03	1.20E-02	2.81E-03	1.32E-04	1.33E-03	-1.76E-05
Non-renewable primary energy as RM	MJ, net CV	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 non-renewable primary energy	MJ, net CV	3.71E-02	1.94E-02	1.46E-03	1.20E-02	2.81E-03	1.32E-04	1.33E-03	-1.76E-05
Secondary materials	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
Renewable secondary fuels	MJ, net CV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels	MJ, net CV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of freshwater*	m ³	-8.91E-05	-5.05E-05	-4.57E-07	-3.58E-05	-8.78E-07	-5.02E-09	-1.49E-06	3.46E-08
Hazardous wastes	kg	5.58E-04	3.93E-04	1.41E-06	1.53E-04	2.71E-06	2.64E-07	8.36E-06	-9.83E-07
Non-hazardous wastes	kg	1.15E-02	9.97E-03	1.39E-04	9.94E-04	2.68E-04	6.81E-06	8.99E-05	-8.65E-07
Radioactives wastes	kg	8.47E-08	5.27E-08	4.45E-10	2.97E-08	8.55E-10	1.50E-11	1.05E-09	-5.96E-11
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	1.57E-04	0.00E+00	0.00E+00	1.57E-04	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
Total primary energy use	MJ, net CV	4.33E-02	2.29E-02	1.48E-03	1.46E-02	2.85E-03	1.33E-04	1.39E-03	-1.98E-05
PCR ed3 categories indicators									
PCR ed3-Global Warming	kg CO ₂ eq	2.75E-03	1.48E-03	9.47E-05	8.73E-04	1.82E-04	2.55E-05	1.01E-04	-2.56E-06
PCR ed3-Acidification soil & water	kg SO ₂ eq	3.37E-05	2.88E-05	1.89E-07	3.91E-06	3.64E-07	3.77E-08	3.62E-07	-1.41E-08
PCR ed3-Eutrophication	kg PO ₄ --- eq	1.21E-05	9.57E-06	4.76E-08	2.19E-06	9.16E-08	4.00E-08	1.29E-07	-5.66E-09
PCR ed3-Photochemical ozone creation	kg C ₂ H ₄ eq	3.65E-06	2.35E-06	9.87E-08	8.88E-07	1.90E-07	2.30E-08	9.47E-08	-3.96E-09
PCR ed3-Ozone Depletion	kg CFC-11 eq	5.87E-11	3.04E-11	1.79E-12	2.10E-11	3.43E-12	1.65E-13	1.94E-12	-1.77E-14
PCR ed3-Resource use, fossils	MJ	3.72E-02	1.94E-02	1.46E-03	1.20E-02	2.81E-03	1.32E-04	1.33E-03	-1.76E-05
PCR ed3-Resource use, min. and met.	kg Sb eq	3.99E-07	3.79E-07	2.69E-10	1.71E-08	5.17E-10	6.58E-12	1.98E-09	-6.30E-12
Optional categories indicators									
Optional-Particulate matter	disease inc.	2.25E-10	1.39E-10	9.52E-12	5.22E-11	1.83E-11	1.34E-12	5.10E-12	-3.38E-13
Optional-Ionising radiation	kBq U-235 eq	3.38E-04	2.08E-04	1.84E-06	1.20E-04	3.54E-06	6.73E-08	4.18E-06	-2.35E-07
Optional-Ecotoxicity, freshwater	CTUe	3.18E-02	2.40E-02	7.64E-04	4.72E-03	1.47E-03	6.39E-05	8.65E-04	-7.48E-06
Optional-Human toxicity, cancer	CTUh	1.76E-11	1.22E-11	4.28E-14	4.99E-12	8.23E-14	3.30E-15	2.23E-13	-1.39E-14
Optional-Human toxicity, non-cancer	CTUh	4.09E-10	3.80E-10	1.04E-12	2.34E-11	2.01E-12	5.22E-14	2.23E-12	-2.98E-14
Optional-Land use	Pt	2.94E-02	1.27E-02	1.48E-03	1.18E-02	2.85E-03	1.73E-05	5.20E-04	-7.62E-06
Product biogenic carbon content	0.00E+00	kg of C/UF							
Packaging biogenic carbon content	2.60E-05	kg of C/UF							

*Negative value linked to calculation methodology and data from database

DISTRIBUTION OF ENVIRONMENTAL IMPACTS



Breakdown of environmental impacts on the "cradle to delivery + maintenance" perimeter.

ENVIRONMENTAL IMPACT OF EQUIPMENT (additional information)

In the context of "LCA" at product level, the environmental impacts to be considered are those of the equipment expressed at product level over its reference lifetime.

Impact category	Unit	Total	A1	A2	A3	A4	A5	B2	Module D
PCR ed4 categories indicators									
Climate change	kg CO ₂ eq	1.13E+03	6.01E+02	3.85E+01	3.61E+02	7.40E+01	1.05E+01	4.17E+01	-1.03E+00
Climate change - Biogenic	kg CO ₂ eq	9.25E+00	1.77E+00	1.17E-02	6.55E+00	2.24E-02	2.09E-01	6.81E-01	-1.10E-03
Climate change - Fossil	kg CO ₂ eq	1.11E+03	5.97E+02	3.85E+01	3.54E+02	7.40E+01	1.03E+01	4.10E+01	-1.03E+00
Climate change - Land use and LU change	kg CO ₂ eq	2.97E+00	2.13E+00	1.88E-02	7.60E-01	3.61E-02	4.09E-04	2.24E-02	-8.00E-04
Ozone depletion	kg CFC-11 eq	2.23E-05	1.14E-05	8.73E-07	7.35E-06	1.68E-06	8.19E-08	8.85E-07	-8.86E-09
Acidification	mol H+ eq	1.56E+01	1.33E+01	9.52E-02	1.88E+00	1.83E-01	2.15E-02	1.78E-01	-7.14E-03
Eutrophication, freshwater	kg P eq	1.36E+00	1.11E+00	2.84E-03	2.26E-01	5.46E-03	9.15E-05	9.94E-03	-5.22E-04
Eutrophication, marine	kg N eq	1.49E+00	1.00E+00	2.59E-02	3.54E-01	4.99E-02	1.18E-02	4.01E-02	-1.79E-03
Eutrophication, terrestrial	mol N eq	1.67E+01	1.21E+01	2.66E-01	3.35E+00	5.12E-01	1.11E-01	4.03E-01	-2.03E-02
Photochemical ozone formation	kg NMVOC eq	6.18E+00	4.05E+00	1.55E-01	1.47E+00	2.99E-01	4.74E-02	1.73E-01	-7.19E-03
Resource use, minerals and metals	kg Sb eq	1.60E-01	1.52E-01	1.08E-04	6.84E-03	2.07E-04	2.63E-06	7.92E-04	-2.52E-06
Resource use, fossils	MJ	1.49E+04	7.76E+03	5.84E+02	4.81E+03	1.12E+03	5.28E+01	5.32E+02	-7.04E+00
Water use	m ³ depriv.	3.83E+02	2.97E+02	2.79E+00	7.49E+01	5.36E+00	7.51E-02	4.37E+00	-5.87E-01
Renewable primary energy w/t RM	MJ, net CV	2.45E+03	1.42E+03	8.54E+00	9.79E+02	1.64E+01	3.32E-01	2.24E+01	-8.77E-01
Renewable primary energy as RM	MJ, net CV	3.35E+01	0.00E+00	0.00E+00	3.35E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total renewable primary energy	MJ, net CV	2.48E+03	1.42E+03	8.54E+00	1.01E+03	1.64E+01	3.32E-01	2.24E+01	-8.77E-01
Non-renewable primary energy w/t RM	MJ, net CV	1.49E+04	7.76E+03	5.84E+02	4.81E+03	1.12E+03	5.28E+01	5.32E+02	-7.04E+00
Non-renewable primary energy as RM	MJ, net CV	0.00E+00							
Total non-renewable primary energy	MJ, net CV	1.49E+04	7.76E+03	5.84E+02	4.81E+03	1.12E+03	5.28E+01	5.32E+02	-7.04E+00
Secondary materials	kg	0.00E+00							
Renewable secondary fuels	MJ, net CV	0.00E+00							
Non-renewable secondary fuels	MJ, net CV	0.00E+00							
Net use of freshwater*	m ³	-3.56E+01	-2.02E+01	-1.83E-01	-1.43E+01	-3.51E-01	-2.01E-03	-5.97E-01	1.39E-02
Hazardous wastes	kg	2.23E+02	1.57E+02	5.64E-01	6.10E+01	1.09E+00	1.06E-01	3.34E+00	-3.93E-01
Non-hazardous wastes	kg	4.59E+03	3.99E+03	5.56E+01	3.97E+02	1.07E+02	2.72E+00	3.60E+01	-3.46E-01
Radioactives wastes	kg	3.39E-02	2.11E-02	1.78E-04	1.19E-02	3.42E-04	6.00E-06	4.19E-04	-2.38E-05
Components for reuse	kg	0.00E+00							
Materials for recycling	kg	6.28E+01	0.00E+00	0.00E+00	6.28E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00							
Exported energy	MJ	0.00E+00							
Total primary energy use	MJ, net CV	1.73E+04	9.17E+03	5.92E+02	5.82E+03	1.14E+03	5.32E+01	5.54E+02	-7.92E+00
PCR ed3 categories indicators									
PCR ed3-Global Warming	kg CO ₂ eq	1.10E+03	5.91E+02	3.79E+01	3.49E+02	7.28E+01	1.02E+01	4.05E+01	-1.03E+00
PCR ed3-Acidification soil & water	kg SO ₂ eq	1.35E+01	1.15E+01	7.57E-02	1.56E+00	1.46E-01	1.51E-02	1.45E-01	-5.63E-03
PCR ed3-Eutrophication	kg PO ₄ --- eq	4.82E+00	3.83E+00	1.91E-02	8.77E-01	3.67E-02	1.60E-02	5.15E-02	-2.27E-03
PCR ed3-Photochemical ozone creation	kg C ₂ H ₄ eq	1.46E+00	9.41E-01	3.95E-02	3.55E-01	7.60E-02	9.19E-03	3.79E-02	-1.58E-03
PCR ed3-Ozone Depletion	kg CFC-11 eq	2.35E-05	1.22E-05	7.14E-07	8.39E-06	1.37E-06	6.60E-08	7.77E-07	-7.08E-09
PCR ed3-Resource use, fossils	MJ	1.49E+04	7.76E+03	5.84E+02	4.81E+03	1.12E+03	5.28E+01	5.32E+02	-7.04E+00
PCR ed3-Resource use, min. and met.	kg Sb eq	1.60E-01	1.52E-01	1.08E-04	6.84E-03	2.07E-04	2.63E-06	7.92E-04	-2.52E-06
Optional categories indicators									
Optional-Particulate matter	disease inc.	8.99E-05	5.55E-05	3.81E-06	2.09E-05	7.32E-06	5.37E-07	2.04E-06	-1.35E-07
Optional-Ionising radiation	kBq U-235 eq	1.35E+02	8.34E+01	7.36E-01	4.81E+01	1.42E+00	2.69E-02	1.67E+00	-9.39E-02
Optional-Ecotoxicity, freshwater	CTUe	1.27E+04	9.58E+03	3.05E+02	1.89E+03	5.87E+02	2.56E+01	3.46E+02	-2.99E+00
Optional-Human toxicity, cancer	CTUh	7.02E-06	4.89E-06	1.71E-08	2.00E-06	3.29E-08	1.32E-09	8.92E-08	-5.56E-09
Optional-Human toxicity, non-cancer	CTUh	1.63E-04	1.52E-04	4.17E-07	9.38E-06	8.02E-07	2.09E-08	8.91E-07	-1.19E-08
Optional-Land use	Pt	1.17E+04	5.07E+03	5.92E+02	4.73E+03	1.14E+03	6.93E+00	2.08E+02	-3.05E+00
Product biogenic carbon content	0.00E+00	kg of C							
Packaging biogenic carbon content	1.04E+01	kg of C							

*Negative value linked to calculation methodology and data from database

APPENDIX: extrapolation coefficients

The extrapolation coefficients can be applied to a homogeneous product family in accordance with the requirements of PCR-ed4-FR-2021_09_06.

The environmental impact of a product in the 042 range can be obtained using the following formula:

$$\text{Considered_product_impact} = \text{Reference_product_impact} \times \text{extrapolation_coefficient.}$$

For the manufacturing, distribution, installation and maintenance stages, the extrapolation coefficients are applied according to the following rule:

Coefficient on the scale of the declared product (additional information)	$\left(\frac{\text{total mass of the product considered with packaging (kg)}}{\text{total mass of the reference product of the range with packaging (kg)}} \right)$
--	--

For the declared product					
Model	Weight (kg)	Nominal power (kW) (for stand-by application at 50Hz)	Extrapolation coefficient		
			Manufacturing	Installation	Maintenance
A	117	27.50	0.65	0.65	0.65
B	122	30.00	0.67	0.67	0.67
C	133	35.00	0.73	0.73	0.73
D	165	38.50	0.91	0.91	0.91
E	165	45.00	0.91	0.91	0.91
F	181	50.00	1.00	1.00	1.00
G	186	55.00	1.03	1.03	1.03
H	187	66.00	1.03	1.03	1.03
J	195	70.00	1.08	1.08	1.08

GLOSSARY

Life cycle approach

Methodology for taking into account all the stages in the life of a product (manufacturing, installation, use and end of life) in order to determine the consequences for the environment.

Environmental aspect

Element of an organization's activities, products or services that may interact with the environment [ISO 14050].

Typical life cycle (TLC)

Theoretical life of the product retained for the functional unit.

Note: Typical life is a theoretical life used for calculation purposes. It can in no way be equated with the minimum, average or real life of products.

Homogeneous environmental family

Group of products corresponding to the same functional unit (identical function of use, product standard, identical technology (type of materials and manufacturing process) whose environmental impacts are identical to the reference product or can be extrapolated by applying a defined calculation rule.

Environmental impact

Any change to the environment, whether negative or beneficial, resulting in whole or in part from the activities, products or services of an organization [ISO 14050].

PCR (Product Category Rules)

A set of specific rules, requirements and guidelines for the development of Type III environmental declarations for one or more product categories [ISO 14025].

Reference product

Product or system of products modelled in the LCA and representative of a homogeneous environmental family.

Functional unit

Quantified performance of a product system intended to be used as a reference unit in a life cycle assessment [ISO 14040].



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