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ECO PLATFORM EPD VERIFIED

Owner: NOVENCO Building & Industry A/S
No.: MD-23170-EN
Issued: 23-02-2024
Valid to: 23-02-2029

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**

Building & Industry
NOVENCO
SCHAKO Group

Owner of declaration
NOVENCO Building & Industry A/S
Industrivej 22
4700 Naestved
Denmark
DK16926647

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☒ Product EPD

Declared product(s)
ZerAx AZL 710/350

Number of declared product variations: 1

Production site
Industrivej 22
4700 Naestved
Denmark

Product(s) use
ZerAx AZL are compact, robust, series produced axial flow fans with pre-settable blades for conventional and industrial use and duct installation. Optionally the ZerAx AZL fans are available as smoke fans.

Declared/ functional unit
The declared unit is one fan (one piece of product)

Year of production site data (A3)
2022

EPD version 1

Issued: 23-02-2024
Valid to: 23-02-2029

Basis of calculation
This EPD is developed in accordance with the European standard EN 15804+A2.

Comparability
EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity
This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use
The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type
☐Cradle-to-gate with modules C1-C4 and D
☒Cradle-to-gate with options, modules C1-C4 and D
☐Cradle-to-grave and module D
☐Cradle-to-gate
☐Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025

☐ internal ☒ external

Third party verifier:

Charlotte Merlin, FORCE Technology

Martha Katrine Sørensen
EPD Danmark

Life cycle stages and modules (MND = module not declared)																
Product			Construction process		Use							End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	X	MND	X	X	X	X	X

Product information

Product description

Novenco's axial flow fans are designed for diverse applications within land, marine and offshore ventilation systems. Application areas include comfort ventilation systems, industrial ventilation, air handling units, process ventilation, agricultural ventilation, data centre cooling, car parks, tunnels etc.

ZerAx AZL fans have integrated inlet cones and are designated for building into duct installation. The thickness of the case is 2- or 3-mm. Hub size is 350 mm and rotor diameter is 710 mm.

The main product components are shown in the table below.

Material	Mass share of declared product (kg)	Weight-%
Steel	104,77	69,6%
Aluminium	37,59	25,0%
Copper	4,58	3,0%
Plastics	2,87	1,9%
Ferrous Metals	0,50	0,3%
Brass	0,09	0,1%
Stainless Steel	0,22	0,1%
Total	**150,6**	**100%**

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the table below.

Material	Mass share of packaking (kg)	Weight-%
Plastic wrapping	0,35	100%

Representativity

Time coverage: The data used refers to bill of materials (BOM) for the selected product ZerAx AZL 710/350 fans in their latest version. Data for energy generation and use refer to the year 2022. Data for transportation processes refer to the recent emission standards. All background data sets used are the most recent available in the ecoinvent database.

Technology coverage: The manufacturing processes are state of technique in industrial applications. Also, selected processes for end-of-life treatment processes reflect the recent technology at the time of the preparation of this study. No major changes or innovations are expected to change the overall technical approach of the manufacturing, use or end-of life phases.

Geographical coverage: The manufacturing processes of the ventilation fans are modelled with regards to Danish conditions. For purchased goods country specific data sets were used. For the end of life, care was taken to reflect the conditions in the countries of distribution.

Region	Country	Percentage
Europe	Denmark	15,4%
	Netherlands	8,9%
	Germany	7,6%
	Finland	4,1%
	Sweden	2,6%
	Poland	1,0%
	Austria	1,0%
	Slovakia	0,8%
	Switzerland	0,8%
	Norway	0,7%
	France	0,2%
	Slovenia	0,2%
	Luxembourg	0,1%
	Portugal	0,1%
	Iceland	0,1%
	Estonia	0,1%
	Faroe Islands	0,04%
	Spain	0,04%
	United Kingdom	0,04%
	Cyprus	0,02%
	Czech Republic	0,02%
	Hungary	0,02%
Asia	India	12,6%
	China	5,5%
	Singapore	5,1%
	Thailand	0,4%
	Philippines	0,3%
	Malaysia	0,2%
	Hong Kong	0,04%
North America	USA	32,0%
Total		**100,0%**

Hazardous substances

ZerAx Fan AZL 710/350 does not contain substances listed on the" Candidate List of Substances of Very High Concern for authorisation" (Last accessed 15.12.2023). (http://echa.europa.eu/candidate-list-table)

Essential characteristics

Flange standards:

- Eurovent 1/2 for AZN and AZL
- DIN 24154 R4 for AZW

Technical capacities:

- DS/ISO 21940- 11:2016
- DS/ISO 21940-14:2012
- EN ISO 5801:2017

Environment:

- DS/EN ISO 12944-2:2017, corrosion category C3, optionally C4 or C5

Sound:

- ANSI/AMCA 300-14

Declaration of performance according to EU regulation 305/2011 is available for all declared product variations.

Further technical information can be obtained by contacting the manufacturer or on the manufacturer's website:
https://www.novenco-building.com/

Reference Service Life (RSL)

The reference service life is 20 years. It was determined considering typical environmental conditions, ensuring that the temperature and degree of corrosion comply with the specified standards (corrosion class C3). The service life of 20 years was determined using tests with 300,000 stop-start cycles.
Additionally, a 20-year lifespan is commonly accepted as standard practice in the ventilation industry.

Picture of product(s)

Figure 1 Exemplary image of a ZerAx AZL fan

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to on ZerAx Fan AZL 710/350 including packaging material.

Name	Value	Unit
Declared unit	1	Piece
Conversion factor to 1 kg.	0,00664	-

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804, and "NPCR PART A: Construction products and services" and "NPCR 030 Part B for ventilation components" of EPD Norge.

Guarantee of Origin – certificates

Foreground system: There are no "Guarantees of Origin" certificates used in the production. Consumption of electricity modelled with residual-mix for electricity in Denmark and heat generation by combustion of natural gas.

Background system: Upstream and downstream processes are modelled using ecoinvent version 3.9.1 datasets

Flow diagram

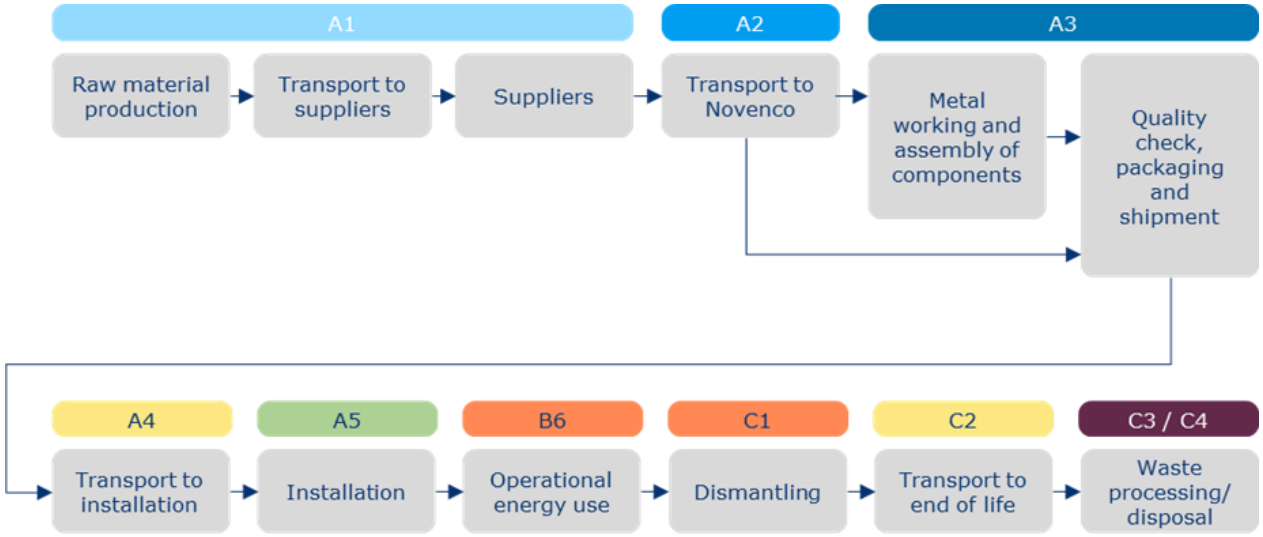


Figure 2 Flow diagram of the production processes

System boundary

This EPD is based on a cradle-to-gate LCA with modules A4, A5, B6 and C1-C4, in which 100% weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

Product stage (A1-A3) includes:
A1 – Extraction and processing of raw materials
A2 – Transport to the production site
A3 – Manufacturing processes

The manufacturing process of ventilation fans involves several stages which are described in the following.

The heart of every axial fan is the so-called impeller, which is an arrangement of fan blades mounted on a hub. The fan blades are made of die-cast aluminium and come into production as

a purchased part. At Novenco, the fan blades are sawn and ground to the precise length. In addition, the impellers are checked for imbalances and vibrations caused by them, and corrections are made accordingly.

The impeller is directly connected to an electric motor, which is supplied as a purchased part.

The entire impeller assembly is installed in a cylindrical casing through which the airflow is guided. This casing is manufactured at Novenco by cutting steel sheets to size with a laser, bending it into shape and welding the edges together.

To ensure that the casing is perfectly round, it is clamped in a press and pressed from the inside out using special moulds. The last step is the folding of the inlet and outlet of the casing.

The casing and impeller are joined together in a separate station. Each unit is then subjected to a quality check including a function test.

Finally, the fans are packed and made ready for shipment.

Construction process stage (A4-A5) includes:
In module A4, the transports to the customer are modelled based on the average distances, taking into account the respective sales volumes and using generic data sets.

Module A5 covers the installation of the product for which no relevant materials or energies are required. This module therefore only considers the transport of the packaging material for treatment/disposal as well as the treatment of packaging waste.

Use stage (B6) includes:
In this EPD, only module B6 is declared. This module covers the operational energy use during the use phase based on a realistic use scenario described below.

End of Life (C1-C4) includes:
In module C1, the fan is removed manually and requires only minimal use of electrically operated tools.

In module C2, the transports to the waste treatment are modelled. It is assumed that the average transport distance to a waste treatment facility is 50 km and is covered by a medium-sized truck. The load factor of the truck is assumed to be 50 %.

Module C3 contains the necessary processes for waste treatment at the end of the product life cycle. The burdens for waste treatment are mapped here until the end of the waste characteristic is reached. Resulting credits, e.g. for secondary materials or energy recovery, are assigned to Module D.

Module C4 includes the disposal of waste. Loads from the landfilling of slag and ash from waste incineration are added to module C3, as these cannot be reported separately for technical reasons. Recycling is the most likely scenario due to the high quality of the materials and the large proportion of metallic components. Nevertheless, not everything can be recovered. Thus, 90% of the metals are recycled and 10% of the metals are sent to landfill in the EoL scenario. Additionally, 67% of the plastic waste is incinerated and 33% of the plastic waste is sent to landfill. After a short treatment process (shredding and sorting), the end-of-waste status is reached. After a short treatment process, the end-of-waste status is reached. Plastics that are separated during the recycling process are sent to waste incineration.

Re-use, recovery and recycling potential (D) includes:
The value streams resulting from waste treatment (C3), which in turn can potentially serve as energy input (waste incineration route) or material input (recycling) for a subsequent product system, are reported here.

According to the current state of the art, waste incineration plants in Europe are primarily used for energy recovery. Therefore, the emissions generated in the waste incineration process are assigned to the respective module (C3) and the useful energy generated is credited in module D.

LCA results

	ENVIRONMENTAL IMPACTS PER PIECE									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	[kg CO_2 eq.]	1,32E+03	3,72E+01	1,97E+00	1,23E+04	7,20E-03	1,77E+00	1,82E+01	2,31E-01	-6,08E+02
GWP-fossil	[kg CO_2 eq.]	1,31E+03	3,71E+01	6,83E-01	1,21E+04	7,08E-03	1,77E+00	1,81E+01	2,29E-01	-6,10E+02
GWP-biogenic	[kg CO_2 eq.]	7,78E+00	1,64E-02	1,29E+00	1,78E+02	1,05E-04	1,28E-03	1,45E-01	1,68E-03	2,26E+00
GWP-luluc	[kg CO_2 eq.]	6,55E+00	2,04E-02	1,63E-04	1,81E+01	1,06E-05	8,08E-04	1,54E-02	2,07E-04	-7,40E-02
ODP	[kg CFC 11 eq.]	2,52E-05	7,35E-07	1,88E-09	1,01E-04	5,92E-11	3,84E-08	9,88E-08	3,90E-09	-5,84E-06
AP	[mol H^+ eq.]	1,57E+01	4,10E-01	7,21E-04	4,96E+01	2,91E-05	5,50E-03	5,50E-02	1,52E-03	-5,62E+00
EP-freshwater	[kg P eq.]	6,61E-01	2,16E-03	8,09E-05	8,70E+00	5,11E-06	1,22E-04	7,10E-03	5,04E-05	-3,17E-01
EP-marine	[kg N eq.]	1,54E+00	1,10E-01	2,46E-04	1,01E+01	5,95E-06	1,88E-03	1,01E-02	4,67E-04	-7,50E-01
EP-terrestrial	[mol N eq.]	4,38E+01	1,20E+00	2,31E-03	9,79E+01	5,75E-05	1,99E-02	1,01E-01	4,99E-03	-7,79E+00
POCP	[kg NMVOC eq.]	4,99E+00	3,67E-01	6,41E-04	2,92E+01	1,72E-05	8,24E-03	3,07E-02	1,69E-03	-2,50E+00
ADPm[1]	[kg Sb eq.]	6,56E-02	9,61E-05	8,37E-07	8,87E-02	5,21E-08	5,79E-06	1,99E-04	4,32E-07	1,40E-03
ADPf[1]	[MJ]	1,63E+04	5,06E+02	1,88E+00	1,80E+05	1,05E-01	2,50E+01	1,47E+02	4,04E+00	-6,04E+03
WDP[1]	[m^3 world eq. deprived]	5,79E+02	2,16E+00	1,06E-01	2,91E+03	1,71E-03	1,21E-01	2,82E+00	3,27E-02	-3,97E+01
Caption		GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidifcation; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential								
		The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								
Disclaimer		[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								

	ADDITIONAL ENVIRONMENTAL IMPACTS PER PIECE									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	1,56E-04	2,10E-06	5,37E-09	2,81E-04	1,65E-10	1,21E-07	5,89E-07	2,74E-08	-3,20E-05
IRP[2]	[kBq U235 eq.]	1,41E+02	6,57E-01	2,27E-02	2,66E+03	1,56E-03	4,01E-02	1,84E+00	1,06E-02	-2,94E+01
ETP-fw[1]	[CTUe]	1,40E+04	2,53E+02	1,58E+00	3,52E+04	2,07E-02	1,26E+01	5,59E+01	3,21E+01	-8,25E+02
HTP-c[1]	[CTUh]	4,90E-06	1,57E-08	1,26E-10	4,27E-06	2,51E-12	7,43E-10	6,81E-09	1,68E-10	1,45E-07
HTP-nc[1]	[CTUh]	5,98E-05	2,85E-07	5,10E-09	1,85E-04	1,09E-10	1,66E-08	2,97E-07	2,18E-09	-2,16E-06
SQP[1]	-	5,17E+03	1,98E+02	6,02E-01	4,86E+04	2,85E-02	1,27E+01	6,65E+01	6,46E+00	-1,02E+03
Caption		PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)								
		The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								
Disclaimers		[1] The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.								
		[2] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.								

	RESOURCE USE PER PIECE									
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**

PERE	[MJ]	3,64E+03	7,34E+00	1,79E+01	3,35E+04	1,96E-02	4,33E-01	2,59E+01	1,60E-01	-1,39E+02
PERM	[MJ]	1,76E+01	0,00E+00	-1,76E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	3,66E+03	7,34E+00	2,88E-01	3,35E+04	1,96E-02	4,33E-01	2,59E+01	1,60E-01	-1,39E+02
PENRE	[MJ]	1,62E+04	5,06E+02	1,20E+01	1,80E+05	1,05E-01	2,50E+01	2,03E+02	4,04E+00	-6,04E+03
PENRM	[MJ]	9,84E+01	0,00E+00	-1,01E+01	0,00E+00	0,00E+00	0,00E+00	-5,55E+01	0,00E+00	0,00E+00
PENRT	[MJ]	1,63E+04	5,06E+02	1,88E+00	1,80E+05	1,05E-01	2,50E+01	1,47E+02	4,04E+00	-6,04E+03
SM	[kg]	3,20E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,33E+02
RSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m^3]	1,73E+01	5,25E-02	1,43E-03	9,45E+01	5,55E-05	3,05E-03	8,68E-02	3,53E-03	-5,11E+00
Caption		PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water								
		The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

WASTE CATEGORIES AND OUTPUT FLOWS PER PIECE										
Parameter	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	2,02E+02	3,01E-01	8,29E-03	4,90E+02	2,88E-04	1,55E-02	4,92E-01	2,02E-02	-6,50E+01
NHWD	[kg]	2,64E+03	9,43E+00	3,60E-01	4,09E+04	2,40E-02	5,39E-01	3,22E+01	2,66E-01	-1,40E+03
RWD	[kg]	3,48E-02	1,60E-04	5,34E-06	6,24E-01	3,66E-07	9,84E-06	4,33E-04	2,57E-06	-7,05E-03

CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	1,95E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,33E+02	0,00E+00	0,00E+00
MER	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	[MJ]	0,00E+00	0,00E+00	6,81E-01	0,00E+00	0,00E+00	0,00E+00	2,09E+00	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	2,23E+00	0,00E+00	0,00E+00	0,00E+00	1,47E+01	0,00E+00	0,00E+00
Caption		HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy								
		The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: $1,95*10^2$ or 195, while 1,12E-11 is the same as $1,12*10^{-11}$ or 0,0000000000112.								

BIOGENIC CARBON CONTENT PER PIECE		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	[kg C]	0
Biogenic carbon centent in accompanying packagaing	[kg C]	9,796
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO_2	

Additional information

Allocations

With regard to electricity and natural gas, an allocation of the total consumption for 2021 was made on the basis of the number of units produced, as it was not possible to provide product-specific information. The steel scrap generated during production is considered a co-product, meaning that a co-product allocation is applied here. However, according to Novenco, the revenue generated with the scrap corresponds to less than 2% of the revenue generated with the main product. As a conservative approach, all loads are therefore allocated to the main product. For the end-of-life allocation, a credit approach is chosen. Secondary materials enter the system burden-free.

LCA interpretation

The generation of electrical energy for operation in the defined use scenario has by far the largest contribution in all impact categories.
Apart from the use phase, galvanised sheet steel is one of the main materials responsible for the environmental impacts. Other important contributors are aluminium components and the copper winding of the electric motor. Copper in particular has a disproportionately high influence in some impact categories (AP, POCP).

Technical information on scenarios

Transport to the building site (A4)

Scenario information	Lorry	Ship	Ferry	Unit
Fuel type	Diesel	Heavy Fuel Oil	Heavy Fuel Oil	-
Transport distance	652	5949	36	km
Payload distance	98	896	5	tkm
Size	7,5-16t	-	-	-
Gross Vehicle Weight	9,29	18.165 t	3.686	t
Average Load Factor	3,29	43.000 (DWT)	1.200 (DWT)	t

Installation of the product in the building (A5)

Scenario information	Value	Unit
Waste materials	22,35	kg

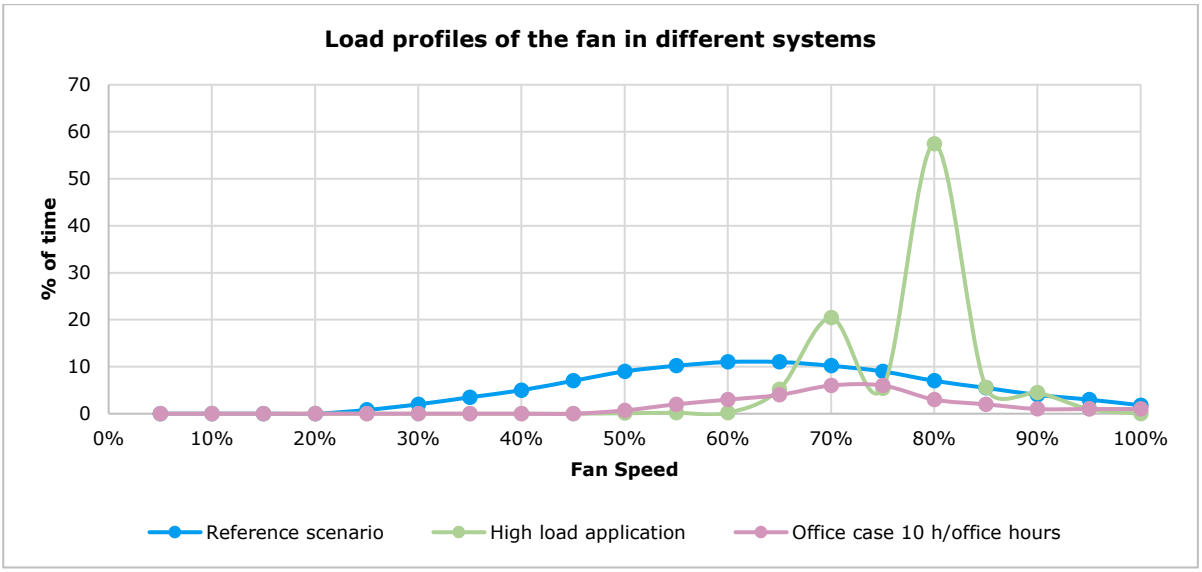
Reference service life

RSL information		Unit
Reference service life	20	Years

Use (B6)
According to the reference case scenario (as declared) a fan is utilized constantly for a whole year (100% = 8760 h). The fan speed varies between 20% and 100% while most of the time it is between 50% and 75%.
The volume of air conveyed in the reference scenario during one year is 81,5 million m³, the average static pressure is 393 Pa. With an electricity consumption of 20,4 MWh, this results in a consumption of 0,251 kWh/1000 m³. Note: this value only applies to the scenario described and depends strongly on the fan speed and pressure.

In addition, the annual energy consumption was determined for 2 further scenarios. Using the formulas given in the table below, the figures in B6 can be converted for these scenarios.
In a high load application, the fan has an operational time of 100% (8760 h per year). Over 80% of the time the fan speed is between 70% and 80%. The average power is 3,60 kW.
In an office application, the operational time of the fan is approximately 30%, which means it is not running 70% of the time. In operation, the fan speed is at least 50% and is mostly between 60% and 80% with an average power of 3,07 kW. Including downtime, the average power is 0,91 kW.

The values of B6 can be converted for these scenarios by dividing by the energy consumption in the reference scenario (see table below) and multiplying by the energy consumption of the selected scenario.



Scenario information	Operational hours per day [h]	Average power (kW)	Energy consumption (kWh/a)	Air conveyed (m³/a)
Reference scenario	24 (100%)	2,33	20.441	81.516.145
High load application	24 (100%)	3,60	31.553	114.887.225
Office case	10 (29,7%)*	3,07** 0,91***	7.999	28.588.961
*With the exception of weekends **During operational time (10h) ***Average power including downtime				

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	132,966	kg
Collected with mixed waste	0	kg
For reuse	0	kg
For recycling	132,966	kg
For energy recovery	1,92	kg
For final disposal	15,72	kg

Re-use, recovery and recycling potential (D)

Scenario information/Materiel	Value	Unit
Energy recovery from waste incineration	33,22	MJ

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the product is not exposed to either. Also, the horizontal standards on the relevant measurements are not available. Read more in EN15804+A2 chapter 7.4.2.

References

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Programme operator	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	*Alexander Boeth (Ramboll Deutschland GmbH)* *Berkay Abay (Ramboll Deutschland GmbH)*
LCA software /background data	*Umberto 11* *Ecoinvent v3.9.1* *EN 15804+A2:2019 reference package*
3rd party verifier	*Charlotte Merlin* *FORCE Technology* *Park Alle 345* *2605 Brøndby* *Denmark* *https://forcetechnology.com/*

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