ENGINEERING TOMORROW

Environmental **Product Declaration**

Actuator NovoCon M and AME 435

EPD issued	2025-04-15
EPD expires	2030-04-15
EPD author	Danfoss Climate Solutions A/S
EPD type	Cradle-to-gate with options
Declared unit	One product over its Reference Service Life
Product included	NovoCon M (003Z8540)
Products covered by EPD	See Annex 1
Manufacturing Location	Ljubljana, Slovenia
Use Location	European Union
Application	HVAC systems
Mass	0,612 kg without packaging 0,774 kg with packaging
Dimensions (H×W×D)	[147 x 82,5 x 159,5] mm without packaging
Verification	[ ] External [X] Internal [ ] None
Produced to	Danfoss Product Category Rules (2022-09)
Internal independent verifier	Danfoss Power Electronics & Drives A/S

DISCLAIMER
This EPD was prepared to the best of knowledge of Danfoss A/S. The life cycle assessment calculations were performed in accordance with ISO 14040 & 14044 and EN15804+A2.
All results were internally reviewed by independent experts. While this declaration has followed the guidance of ISO 14025, it has not been externally verified or registered by an EPD programme and therefore does not fully comply with the ISO 14025 standard.
This EPD has been published by Danfoss A/S on Danfoss Product Store and Danfoss Website. For questions, feedback or requests please contact your Danfoss sales representative.

Product Description

This Environmental Product Declaration (EPD) follows the Danfoss Product Category Rules (PCR) (2022-09-20). These rules provide a consistent framework for calculating and reporting the environmental performance of Danfoss' products and is aligned with relevant international standards, particularly ISO 14025:2006, EN 15804+A2:2019 and EN 50598-3:2015.

This document has been produced by Danfoss A/S following an internal verification process, but it is not a third-party verified document.

What is an EPD?

An EPD is a document used to communicate transparently, the quantified environmental impacts of a product over its lifecycle stages. This quantification is done by performing a Life Cycle Assessment (LCA) in line with a consistent set of rules known as a PCR (Product Category Rules).

An EPD provides:

- A product's carbon footprint together with other relevant environmental indicators, including air pollution, water use, energy consumption and waste, over its own life cycle (Modules A-C), as well as the expected benefits of reuse and recycling in reducing the impact of future products (Module D). See Table 1 for module descriptions.
- Environmental data allowing customers to calculate LCAs and produce EPDs for their own products.

Type of EPD

This EPD is of the type 'cradle-to-gate with options' and includes all relevant modules: production (A1-A3), shipping (A4) and installation (A5); operational energy use (B6); deconstruction (C1), waste collection and transport (C2), treatment (C3) and disposal (C4). It also includes potential net benefits to future products from recycling or reusing post-consumer waste (D). The codes in brackets are the module labels from EN 15804+A2. Modules concerning use, maintenance, repair, replacement, refurbishment (B1-B5) and operational water use (B7) are excluded, following the cut-off rules from EN 15804.

Table 1: Modules of the product's life cycle included in the EPD

Product stage			Installation		Use stage							End-of-life stage				Benefits
Raw materials	Transport	Manufacture	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-install.	Transport	Waste processing	Disposal	Benefits and loads outside system boundaries
A1	**A2**	**A3**	**A4**	**A5**	B1	B2	B3	B4	B5	**B6**	B7	**C1**	**C2**	**C3**	**C4**	**D**
X	**X**	**X**	**X**	**X**	MNR	MNR	MNR	MNR	MNR	**X**	MNR	**X**	**X**	**X**	**X**	**X**

(X = declared module; MNR = module not relevant)

Product Description

The product covered by this EPD is representative of NovoCon M and AME435 actuator. The production location is the Danfoss plant in Ljubljana, Slovenia. See more information on Danfoss Product Store.

The NovoCon M and AME435 actuator is a high accuracy multi-functional field bus actuator, specially designed for use with the Pressure Independent Balancing Control Valve type AB-QM in sizes from DN40 to DN100. Actuator can be directly connected to Building Management Systems (BMS) using BACnet or Modbus communication. This enables a whole new dimension to HVAC control, offering designers, system integrators and building owners many features and benefits. The actuators enable continuous monitoring, active energy management and preventive maintenance at the highest comfort level and lowest operating costs. The digital actuators can be used in many building types such as offices, hotels, hospitals and other HVAC systems.

The difference between the product codes of the actuators discussed in this EPD document (see Annex 1, Table 12) is in the control mode of the linear actuator stroke. All actuators in this EPD report are made of the same mechanical components, with the only difference being the use of different colours for the external housing. Different software and control settings are used to operate the actuators.

The basic technical characteristics are as follows: The total stroke of the actuator is 20 mm with four adjustable stroke speeds. The minimum stroke speed is 24 s/mm, and the highest stroke speed is 3s/mm. The actuator provides closing force in both directions of the linear stroke with a nominal closing force of 550N.

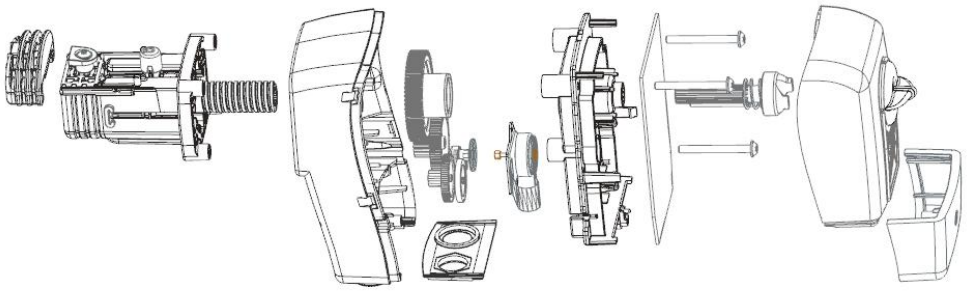

Figure 1: The exploded illustration of the NovoCon M and AME435 actuator

Reference Service Life

For the purpose of this EPD the reference service life (RSL) of the product is considered to be 10 years.

Intended market

The intended market of this study is European Union, and the baseline scenario involves the distribution, installation, and end-of-life in European Union. With regards to the use stage and the end-of-life stage, this EPD is not representative of regions other than European Union.

Product Description

Table 2: Product composition

Material	Mass (kg)	%
Metals	**0,0352**	**5,75%**
Steel (excl, stainless steel)	0,0211	3,45%
Stainless steel	0,0047	0,76%
Aluminium and its alloys	0,0094	1,53%
Plastics & Rubbers	**0,4799**	**78,47%**
Plastic with no GF	0,1132	18,51%
Plastic with GF	0,3659	59,83%
Rubbers	0,0008	0,13%
Natural materials	**0,0091**	**1,49%**
Paper and cardboard	0,0091	1,49%
Electrical/electronic	**0,08718**	**14,25%**
PCBA	0,05988	9,79%
Motor	0,02730	4,46%
Other materials	**0,0002**	**0,03%**
Grease and Oil	0,0002	0,03%
Product Total	**0,6116**	**100,00%**
Paper and cardboard	0,1635	100,00%
Packaging Total	**0,1635**	**100,00%**
Total (Product+Packaging)	**0,7751**	

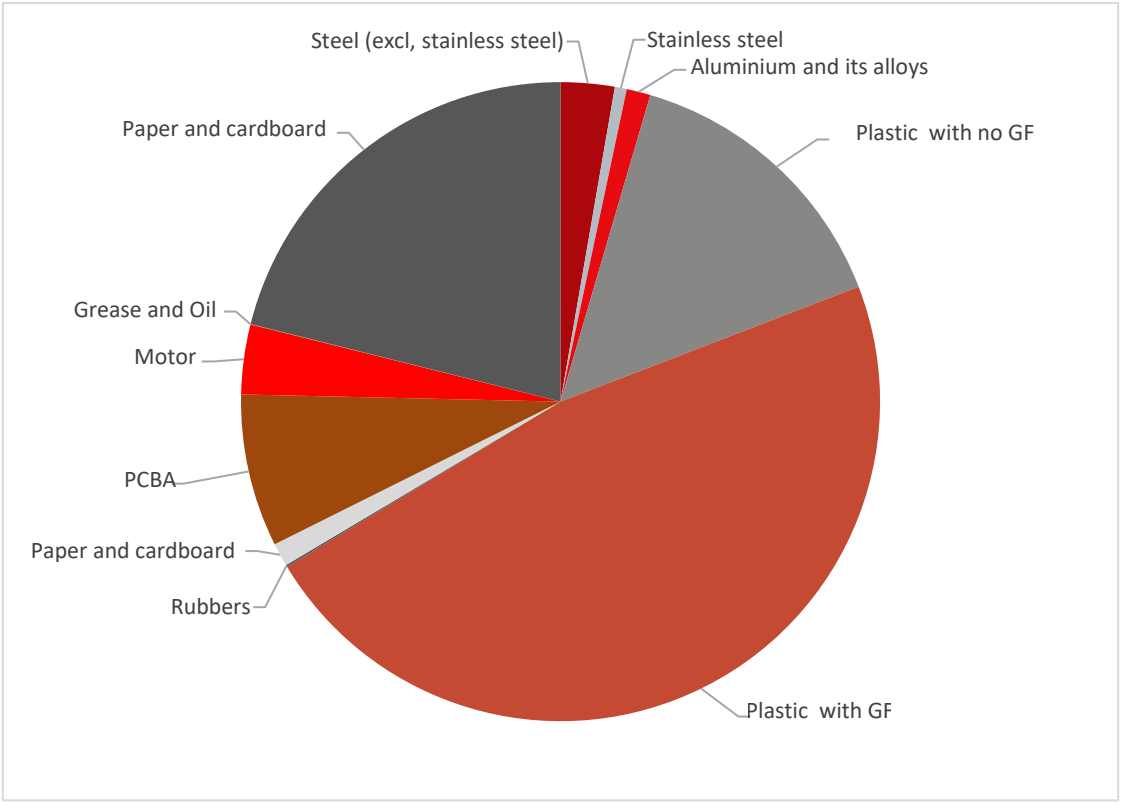

Figure 2: Material Composition Overview

Overview of LCA study

Data quality

Data quality of the selected datasets is generally assessed as good and very good in terms of geographical, time and technology representativeness and applicability. Background data is from *LCA for Experts*© database *version 2024.2*.

Allocation and cut-off criteria

The allocation is made in accordance with the provisions of EN 15804+A2. All major raw materials and all the essential energy are included. All hazardous materials and substances are considered in the inventory. Data sets within the system boundary are complete and fulfil the criteria for the exclusion of inputs and output criteria.

Assumptions:
- When determining data for electronic components, the component mass data obtained from the TDS (Technical Data Sheet) is considered due to the limited database. For components where the mass value is calculated based on the selection of the type and size of the component housing, in some cases, the housing dimensions are adjusted so that the calculated component mass data matches the component mass data obtained from TDS.

Cut off:
- Two electronics components, a fuse and a temperature sensor with a combined weight of 1,3071g are excluded from the calculation due to unavailability of data sets for these components.
- The calculation takes into account the motor but does not take into account the flex cable that connects the motor to the printed circuit board, due to the low mass of the cable in the motor portion and due to the lack of cable data.

Substitutions:
- Due to unavailability of data sets for the PA6T/6I, PA6T/XT and PA46GF50 materials, the materials in the selections are replaced by PA66GF material with the proper GF share.
- Due to unavailability of data sets for the PA66-RF20 material with aramid fibres, a PA66-GF20 with the same proportion of glass fibres (GF) is considered in the calculation.

Overview of LCA study

System boundaries

The results in this EPD are split into life cycle modules following EN 15804 (Figure 1): production (A1-A3), distribution (A4), installation (A5), use (B6) and the end of the product's life (C1-C4). Module D represents environmental benefits and loads that occur beyond the system boundary (i.e., in future products).

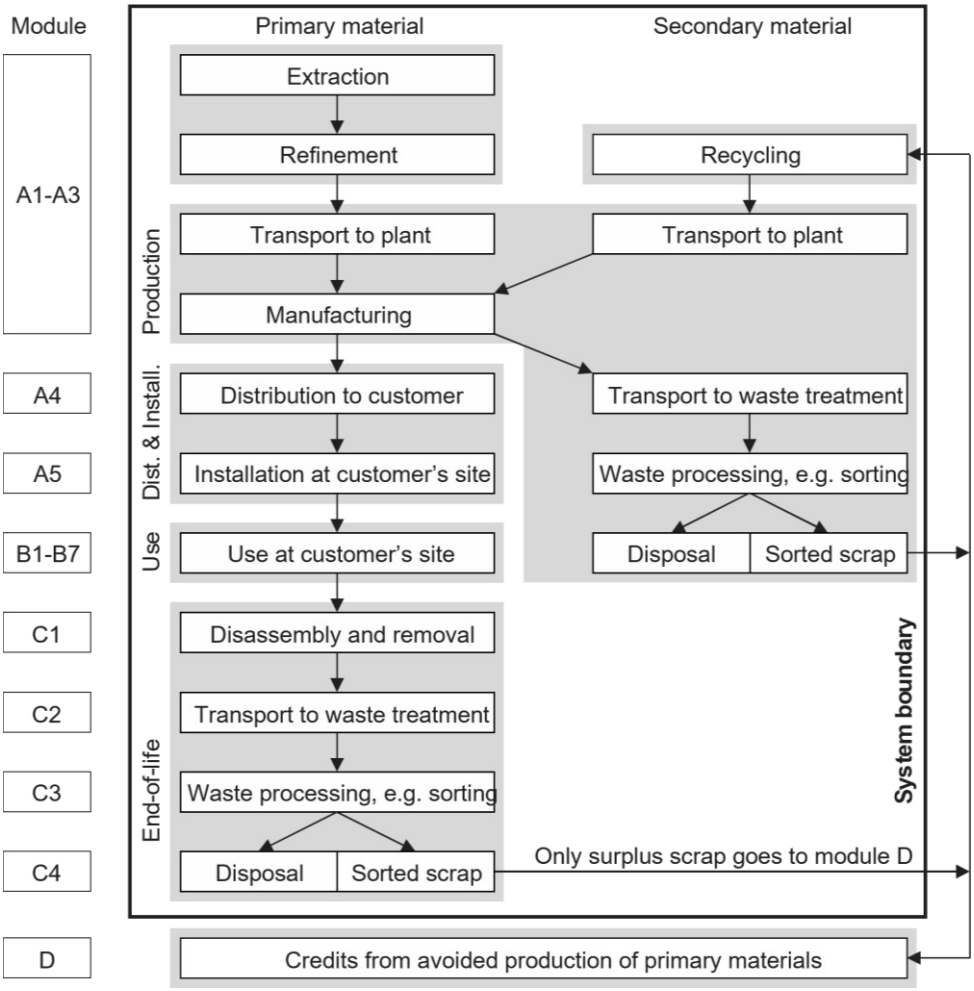

Figure 3: Modular structure used in this EPD (following EN 15804+A2)

Product and packaging manufacture (A1-A3)

Final manufacturing occurs in the Ljubljana plant, Slovenia, Europe. Data was collected for 2024 year. The facility is certified according to [IATF 16949, ISO 14001, ISO 45001, and ISO 9001]. Where waste generated on-site is recyclable, it is separated and recycled. For further information, see here. The product is shipped in the packaging as described in Table 1. All packaging materials can be safely recycled or incinerated if appropriate local facilities are available.

The component suppliers' production locations are divided based on the type of product into suppliers of mechanical parts, documentation, packaging and electronic components. The calculation takes into account that, based on the total weight of the components, the majority of the mechanical components

Overview of LCA study

are manufactured in the European Union. The transport of the mechanical components includes both, maritime transport and truck transport. The production of the product documentation is in Denmark, while the production of packaging is in Austria. The supplier of printed circuit board with electronic components (PCBA) is a Slovenian company. For all three categories of components in the BOM, truck transport is considered in the EPD calculation.

A mass allocation method was used to estimate the electrical and thermal energy used to produce one unit of the NovoCon M actuator. Data on energy consumption in the production of the finished product are for the year 2024. In the LCA calculation for the energy consumed in the product's final production, the carbon footprint of the electricity produced in Slovenia is taken into account.

Table 3: Biogenic carbon content in product and packaging

	Total (excluding recycling)
Biogenic carbon content in product [kg]	3,93E-03
Biogenic carbon content in accompanying packaging [kg]	7,03E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg of CO_2.

Shipping and installation (A4-A5)

Distribution is assumed to occur to customers within European Union. The calculation takes into account transportation by truck from the final production location in Ljubljana, Slovenia, to the central product warehouse for finished products in Rodekro, Denmark, a distance of 1,371 km. Additionally, the calculation includes the standard transport distance for markets within the European Union, which is 2,000 km. The total transport distance for the final product from the production location to the end customer is 3,371 km. This assumption was made following EN 50598-3, section 7.11 on default distance assumptions.

Module A5 includes disposal of packaging materials only, the benefits from e.g., energy recovered after plastic incineration are allocated to module D. The product is assumed to be installed by hand. Energy use in handheld tools during installation is not included as it falls under the cut-off criteria.

Use phase (B1-B7)

The scope of this study is targeted for the European Union market; therefore, the product under study is sold and used in European Union. However, for the purpose of this assessment, an average EU-27 CO2 factor from *LCA for Experts*© database *version 2024.2*. is applied. This factor will differ, depending on the country and share of renewables and fossil energy sources in the corresponding local electricity grid.

The electricity consumption by the NovoCon M and AME435 actuator use phase (B6) can vary based on application. The use scenario considered here is an average scenario to represent a range of applications, developed according to Danfoss Climate Solutions Segment global applications experts and internal sales data.

The estimated lifetime of the NovoCon M and AME435 actuator is 10 years. The power consumption in active and standby modes is measured as 2,0 W in active mode and 0,9 W in standby mode.

Overview of LCA study

The major limitation of the impact calculations for the use phase is that the electricity grid mix in use is assumed to remain at the same carbon intensity over time. Following the plans for the decarbonization of the grid across European Union, the environmental impacts are expected to decrease over time within the course of the next 10 years. However, as decarbonization will occur in the future and as the pace of decarbonization is uncertain, the use of the emission intensity of today's grid should prove to be a "worst-case", conservative assumption.

End-of-life (C1-C4)

The following end-of-life procedure has been applied:

- Manual dismantling is used to separate recyclable bulk materials, e.g. bulk metals and plastics.
- Shredding is used for the remaining parts, such as printed circuit board assemblies.
- Ferrous metals, non-ferrous metals and bulk plastics are recovered through recycling.
- The remaining materials go to either energy recovery or landfill.

In line with EN 15804+A2, only the 'net scrap' (i.e., the leftover recyclable materials remaining after inputs of recycled content required in the manufacturing phase are first satisfied) is used to calculate the benefits and loads beyond the system boundary (Module D).

For this EPD an average scenario with 50% of the product sent to recycling & 50% of the product sent to landfill (C3, C4, D) was used. This scenario is designed to represent an average end-of-life scenario.

For the EPD this average scenario was chosen as it is assumed that it represents the majority of cases on average.

1. Recycling scenario with 100% of the product sent to recycling at the end-of-life, excluding fractions that cannot be recycled or incinerated (e.g., glass reinforcing in glass-filled plastics) and are sent to landfill.

This scenario illustrates best case performance. It assumes a 100% collection rate and best available recycling technologies. Under this scenario electrical cables, and all metals, flat glass and unreinforced plastics found within the body and chassis of the product are recycled. Printed circuit board assemblies are incinerated, and the copper and precious metals (gold, silver, palladium, and platinum) are recycled.

2. Landfill scenario with 100% of the product sent to landfill.

This scenario assumes that the whole product, including its packaging, is landfilled. It is designed to represent a poor end of-life-route where valuable resources are lost.

Benefits and loads beyond the system boundary (D)

Module D considers the net benefit of recycling (including energy recovery) of materials in the product and packaging, taking account of losses in the recycling process and the recycled material used in the production of the product. Module D covers the two end-of-life scenarios, as described above. It does not cover energy recovery from incineration since the process used in LCA for Experts has an efficiency below 60%. Therefore, the impacts of this process are reported in module C4, and no benefits are claimed in module D.

Environmental performance

This section presents the environmental performance of one NovoCon M actuator. Figure 4 presents the environmental impact of the NovoCon M actuator across several environmental impact categories (following EN 15804+A2:2019) per life cycle stage, over its full 10-year life cycle, including Global Warming Potential.

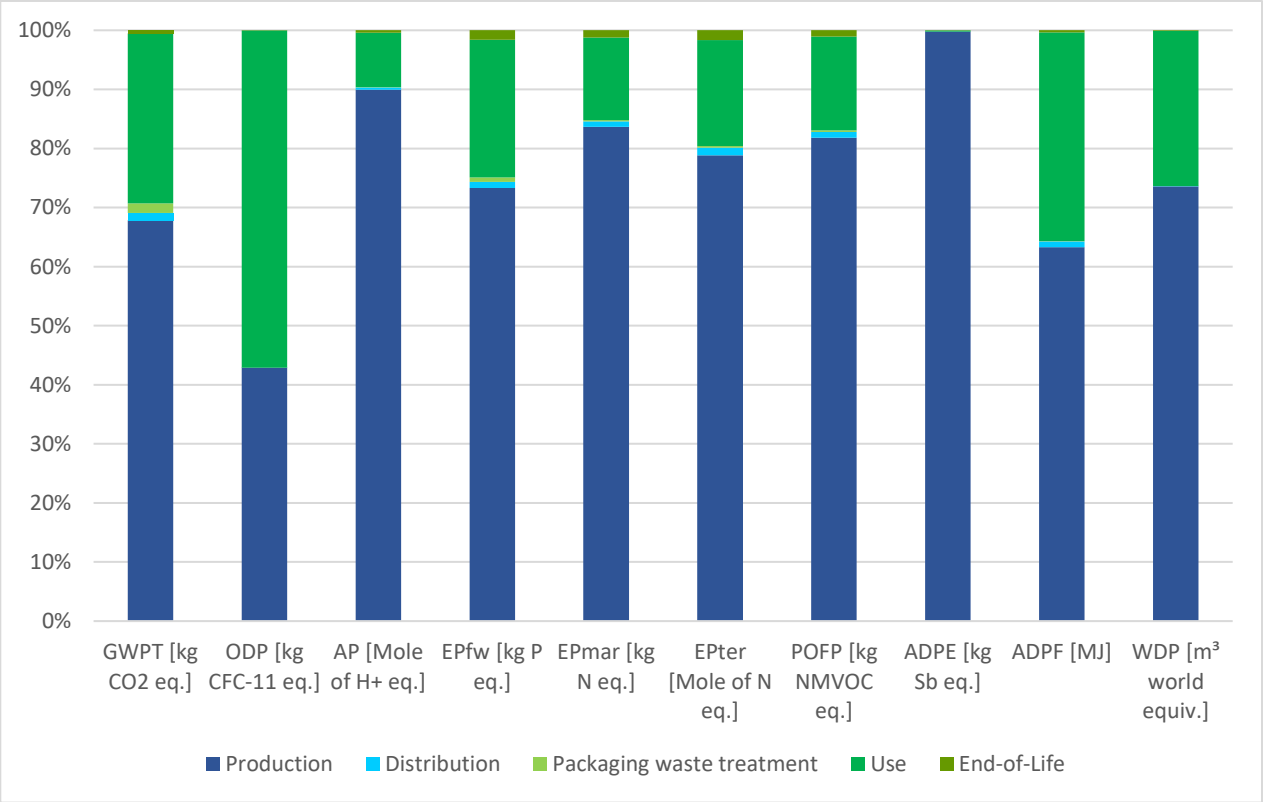

Figure 4: Breakdown of environmental impacts by life cycle stages (Average of Landfill and Recycling End-of-Life scenario/only Landfill scenario) See Table 5 and 6 for descriptions of environmental impact indicators).

Environmental performance

Table 4: Environmental impact indicators

	Production	Distribution	Packaging waste treatment	Use	End-of-Life				(not included in Figure 4)
Life cycle stages based on EN 15804+A2	**A1-A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
Description / **Environmental Impact Indicators**	Manufacture of the product from 'cradle-to-gate'	Transport of the product to the customer	Installation of the product and disposal of used packaging	Use of the product over its lifetime e.g. 10 years	Deinstallation of the product from the site	Transport of the product to waste treatment	Processing waste for recycling	Disposal of waste that cannot be recycled (through landfill and incineration)	Potential benefits and loads beyond the system boundary due to reuse, recycling, and energy recovery
GWPT [kg CO2 eq.]	1,19E+01	2,25E-01	2,87E-01	5,06E+00	0,00E+00	6,08E-03	5,90E-02	2,51E-02	-6,16E-01
GWPF [kg CO2 eq.]	1,22E+01	2,21E-01	1,50E-02	5,06E+00	0,00E+00	6,08E-03	5,81E-02	2,51E-02	-6,16E-01
GWPB [kg CO2 eq.]	-2,72E-01	0,00E+00	2,72E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWPLULUC [kg CO2 eq.]	8,49E-03	3,65E-03	1,43E-05	7,71E-04	0,00E+00	1,49E-07	9,07E-04	4,80E-05	-2,61E-04
ODP [kg CFC-11 eq.]	8,65E-11	3,20E-14	1,22E-14	1,15E-10	0,00E+00	7,19E-19	7,60E-14	2,93E-14	-5,76E-13
AP [Mole of H+ eq.]	9,56E-02	3,96E-04	8,36E-05	9,76E-03	0,00E+00	8,61E-06	3,50E-04	1,01E-04	-1,51E-02
EPfw [kg P eq.]	6,65E-05	9,28E-07	7,01E-07	2,11E-05	0,00E+00	1,33E-09	2,43E-07	1,22E-06	-2,91E-07
EPmar [kg N eq.]	1,46E-02	1,60E-04	4,50E-05	2,44E-03	0,00E+00	3,35E-06	1,71E-04	3,56E-05	-8,30E-04
EPter [Mole of N eq.]	1,12E-01	1,85E-03	4,09E-04	2,55E-02	0,00E+00	3,77E-05	1,89E-03	3,91E-04	-9,05E-03
POFP [kg NMVOC eq.]	3,32E-02	3,89E-04	1,14E-04	6,45E-03	0,00E+00	7,96E-06	3,32E-04	8,78E-05	-3,15E-03
ADPE [kg Sb eq.]	5,55E-04	1,89E-08	1,51E-09	9,47E-07	0,00E+00	2,19E-10	5,26E-09	7,75E-10	-1,24E-04
ADPF [MJ]	1,90E+02	2,86E+00	2,09E-01	1,06E+02	0,00E+00	8,89E-02	7,73E-01	2,10E-01	-9,51E+00
WDP [m^3 world equiv.]	3,87E+00	3,37E-03	9,90E-04	1,38E+00	0,00E+00	1,04E-05	1,65E-03	3,53E-03	-9,16E-02

How to read scientific numbers:

e.g. 2,05E02 = 2,05 x 10^2 = 205

2,04E-01 = 2,04 x 10^{-1} = 0,204

Environmental performance

Table 5: Environmental impact indicator descriptions

Acronym	Unit	Indicator
GWPT	kg CO_2 eq.	Carbon footprint (Global Warming Potential) – total
GWPF	kg CO_2 eq.	Carbon footprint (Global Warming Potential) – fossil
GWPB	kg CO_2 eq.	Carbon footprint (Global Warming Potential) – biogenic
GWPLULUC	kg CO_2 eq.	Carbon footprint (Global Warming Potential) – land use and land use change
ODP	kg CFC-11 eq.	Depletion potential of the stratospheric ozone layer
AP	Mole H+ eq.	Acidification potential
EPfw	kg P eq.	Eutrophication potential – aquatic freshwater
EPmar	kg N eq.	Eutrophication potential – aquatic marine
EPter	Mole of N eq.	Eutrophication potential – terrestrial
POFP	kg NMVOC eq.	Summer smog (photochemical ozone formation potential)
ADPE*	kg Sb eq.	Depletion of abiotic resources – minerals and metals
ADPF*	MJ	Depletion of abiotic resources – fossil fuels
WDP*	m^3 world eq.	Water deprivation potential (deprivation-weighted water consumption)

Results for module A1-A3 are specific to the product. All results from module A4 onwards should be considered as scenarios that represent one possible outcome. The true environmental performance of the product will depend on actual use.

The results in this section are relative expressions only and do not predict actual impacts, the exceeding of thresholds, safety margins, or risks. EPDs from others may not be comparable.

Carbon footprint

The total carbon footprint, cradle-to-grave, of the product is **1,76E+01 kg CO2-eq** (A1-C4), based on the baseline use phase scenario. The carbon footprint of production of this product, cradle-to-gate, is **1,19E+01 kg CO2-eq** (A1-A3).

Environmental performance

Table 6: Resource use

	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE [MJ]	5,57E+01	2,47E-01	1,40E-02	7,67E+01	0,00E+00	2,93E-04	1,07E-01	2,32E-02	-8,27E-01
PERM [MJ]	1,37E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT [MJ]	5,58E+01	2,47E-01	1,40E-02	7,67E+01	0,00E+00	2,93E-04	1,07E-01	2,32E-02	-8,27E-01
PENRE [MJ]	1,81E+02	2,86E+00	2,09E-01	1,06E+02	0,00E+00	8,89E-02	7,73E-01	2,10E-01	-9,51E+00
PENRM [MJ]	8,51E+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
PENRT [MJ]	1,90E+02	2,86E+00	2,09E-01	1,06E+02	0,00E+00	8,89E-02	7,73E-01	2,10E-01	-9,51E+00
SM [kg]	1,20E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
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 [m3]	1,20E-01	2,75E-04	3,11E-05	5,85E-02	0,00E+00	4,70E-07	1,03E-04	9,00E-05	-3,49E-03

Table 7: Resource use indicator descriptions

Acronym	Unit	Indicator
PERE	MJ	Use of renewable primary energy excluding renewable primary energy resources used as raw materials
PERM	MJ	Use of renewable primary energy resources used as raw materials
PERT	MJ	Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)
PENRE	MJ	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials
PENRM	MJ	Use of non-renewable primary energy resources used as raw materials
PENRT	MJ	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)
SM	kg	Use of secondary material
RSF	MJ	Use of renewable secondary fuels
NRSF	MJ	Use of non-renewable secondary fuels
FW	m^3	Net use of fresh water

Environmental performance

Table 8: Waste categories and output flows

	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD [kg]	1,65E-06	1,10E-10	3,17E-11	1,53E-07	0,00E+00	6,11E-13	1,18E-10	3,65E-11	-3,54E-06
NHWD [kg]	1,03E+00	4,68E-04	6,03E-02	8,76E-02	0,00E+00	8,89E-06	1,68E-04	5,03E-01	-5,65E-02
RWD [kg]	8,16E-03	5,22E-06	1,35E-06	1,69E-02	0,00E+00	9,51E-08	1,13E-05	1,91E-06	-9,40E-05
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]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,84E-01	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]	6,05E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET [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

Table 9: Waste category and output flow descriptions

Acronym	Unit	Indicator
HWD	kg	Hazardous waste disposed
NHWD	kg	Non-hazardous waste disposed
RWD	kg	Radioactive waste disposed
CRU	kg	Components for reuse
MFR	kg	Materials for recycling
MER	kg	Materials for energy recovery
EEE	kg	Exported energy (electrical)
EET	kg	Exported energy (thermal)

Environmental performance

Table 10: Additional indicators*

	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM [Disease incidences]	9,68E-07	3,55E-09	6,12E-10	8,16E-08	0,00E+00	5,10E-11	2,34E-09	1,00E-09	-1,31E-07
IRP [kBq U235 eq.]	1,05E+00	7,57E-04	1,81E-04	2,78E+00	0,00E+00	1,35E-05	1,84E-03	2,48E-04	-9,79E-03
ETPfw [CTUe]	1,77E+02	2,13E+00	1,59E-01	3,07E+01	0,00E+00	6,51E-02	5,46E-01	1,92E-01	-4,66E+00
HTPc [CTUh]	1,84E-08	4,29E-11	3,09E-12	1,73E-09	0,00E+00	1,20E-12	1,17E-11	4,05E-12	-7,09E-10
HTPnc [CTUh]	1,08E-07	1,93E-09	2,00E-10	2,65E-08	0,00E+00	3,91E-11	4,94E-10	1,47E-10	-5,28E-09
SQP [Pt]	4,81E+01	1,41E+00	3,26E-02	4,49E+01	0,00E+00	2,27E-04	3,76E-01	3,27E-02	-3,96E-01

Table 11: Optional indicator descriptions

Acronym	Unit	Indicator
PM	Disease incidence	Potential incidence of disease due to particulate matter emissions
IRP**	kBq U235 eq.	Potential human exposure efficiency relative to U235
ETPfw*	CTUe	Potential Comparative Toxic Unit for ecosystems (fresh water)
HTPc*	CTUh	Potential Comparative Toxic Unit for humans (cancer)
HTPnc*	CTUh	Potential Comparative Toxic Unit for humans (non-cancer)
SQP*	Dimensionless	Potential soil quality index

**Disclaimer for ADPE, ADPF, WDP, ETPfw, HTPc, HTPnc, SQP:* The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

***Disclaimer for ionizing radiation:* 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.

Annex

Annex 1: The sales codes of all products covered in this EPD

The EPD results are presented for the product code NovoCon M 003Z8540. Other product codes within the product line differ in component color, product labeling, minor electronic components, and software and control settings. The same environmental impact values apply to all product codes listed in the Table 12 in this document. A conservative approach has been used in the calculation, and the products do not differ by more than 10%

Table 12: NovoCon M and AME435 actuator covered by this EPD

Product code	Actuator designation	Description
003Z8540	NovoCon M	24V AC/DC 7,5-15s/mm, 20mm, 550N
082H0161	AME 435	24V AC/DC 7,5-15s/mm, 20mm, 550N
082H0171	AME 435 QM	24V AC/DC 7,5-15s/mm, 20mm, 550N

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