

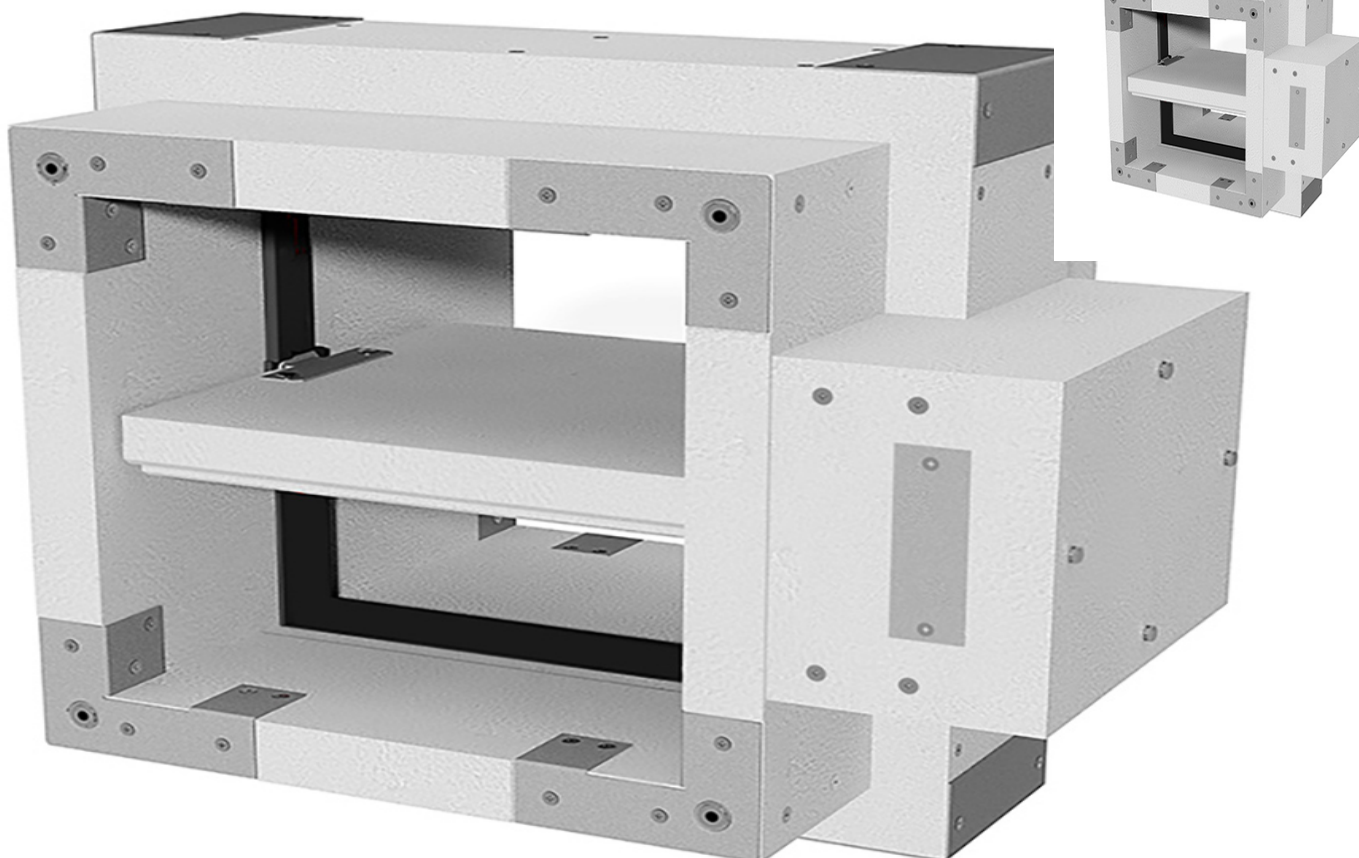
ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A1

Owner of the Declaration	Wildeboer Bauteile GmbH
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-WIL-20210246-ICC1-EN
Issue date	19.11.2021
Valid to	18.11.2026

EK90 smoke control damper (EK92 series)
Wildeboer Bauteile GmbH

www.ibu-epd.com | <https://epd-online.com>



1. General Information

Wildeboer Bauteile GmbH

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number

EPD-WIL-20210246-ICC1-EN

This declaration is based on the product category rules:

Fire dampers and fire protection valves and smoke control damper, 11.2017
(PCR checked and approved by the SVR)

Issue date

19.11.2021

Valid to

18.11.2026



Dipl. Ing. Hans Peters
(chairman of Institut Bauen und Umwelt e.V.)



Dr. Alexander Röder
(Managing Director Institut Bauen und Umwelt e.V.)

EK90 smoke control damper (EK92 series)

Owner of the declaration

Wildeboer Bauteile GmbH
Marker Weg 11
DE - 26826 Weener

Declared product / declared unit

1 x smoke control damper with electric drive motor

Scope:

This document relates to manufacture, transportation, installation, operation and disposal of smoke control dampers (EK 90, 200x200x350mm, comprising the housing and small drive) in smoke extraction systems, for smoke protection, air supply and in combined systems for ventilation of buildings. The smoke control dampers are produced exclusively in Germany, at the Weener plant, from which the production data for the year 2020/2021 was gathered.

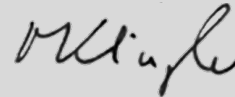
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of *EN 15804+A1*. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard *EN 15804* serves as the core PCR
Independent verification of the declaration and data
according to *ISO 14025:2010*

internally externally



Matthias Klingler
(Independent verifier)

2. Product

2.1 Product description/Product definition

The maintenance-free, corrosion-resistant EK90 smoke control damper (EK92 series) comprises a housing made of highly temperature resistant, abrasion resistant calcium silicate, with an internal break resistant damper blade. The smoke control damper is designed with edge protection profiles made of galvanized sheet steel and drilled connection holes. The drive axles are made of stainless steel. Protective grilles, as optional accessory for smoke control dampers without connection lines to protect the flow openings, are made of galvanized sheet steel. An electric drive motor actuates the smoke control damper to close and open it. Special seals without additional limit stops make for large free cross-sections, extremely low pressure losses and sound power levels. The smoke control damper can still be opened 25 minutes after full exposure to fire.

Directive (EU) No. 305/2011(CPR) applies for the marketing of the product in the EU/EFTA (with the exception of Switzerland). The product requires a declaration of performance taking into account *EN*

12101-8:2011-08, Smoke and heat control systems - Part 8: Smoke control dampers and the CE mark. The respective national provisions apply for use.

2.2 Application

The EK90 smoke control damper (EK92 series) is suitable for smoke protection, smoke extraction systems, air supply and in combined systems for ventilation of buildings. Furthermore, it is appropriate for use in systems with automatically or manually triggered opening and closing of the smoke control dampers. The operating modes "fully opened", "fully closed" and any intermediate positions have been verified and approved. The smoke control damper can be used for installation in ≥ 100 mm thick rigid walls and ceilings, in ≥ 95 mm thick metal stud walls, on and between vertical or horizontal smoke extraction ducts. Smoke extraction ducts with fire resistance period can be connected on one side or both sides of the smoke control damper; the smoke extraction ducts without fire resistance period can only be connected on one side; the protective grilles on one side or both

sides. Installation is performed wet or dry. Refer to the *manufacturer's documents* for further information.

2.3 Technical Data

The following chapter contains information on the sizes and performance in levels and categories in relation to the respective characteristics of *EN 12101-8*. Refer to the *declaration of performance* from **Wildeboer Bauteile GmbH** for the fully declared performance of the product in relation to all essential characteristics as per *EN 12101-8*. Fire tests were performed as per *EN 1366-10* and *EN 1366-2*.

Constructional data

Name	Value	Unit
Width	200 - 1500	mm
Height	200 - 800	mm
Length	350 - 850	mm
Sealing class nach EN 1751	C	-
Classification of the smoke damper nach EN 13501-4	EI 90 (vedw - hodw, i<- >o) S 1500 Cmod HOT400/3 0 MA multi	-

Performance ratings of the product as per the declaration of performance in relation to its essential characteristics as per *EN 12101-8:2011-08, Smoke and heat control systems - Part 8: Smoke control dampers*.

2.4 Delivery status

The size variants (B x H) 200 mm x 200 mm to 1500 mm x 800 mm, lengths of 350 mm to 850 mm are supplied. In addition, the electric drive motor and, as optional accessories, the protective grilles and accessory kit for installation, e.g. shear protection brackets, terminal strip etc.

2.5 Base materials/Ancillary materials

All specifications are in percent by weight. They are approximate specifications.

EK90 (without motor, standard accessory kit included)

Galvanized steel: 6 % to 22 %
 Stainless steel: 0.2 % to 1 %
 Brass: 0.2 % to 1 %
 Calcium silicate: 72 % to 93 %
 Plastic: < 0.1 %
 Miscellaneous (intumescent seal, adhesive etc.): 1 % to 3 %

Electric drive motor for H ≤ 450 mm

Steel: 73 %
 Brass: 0.2 %
 Plastic: 11 %
 Electronic components (printed circuit board and cables): 16 %

Electric drive motor for H > 450 mm

Steel: 83.5 %
 Brass: 0.1 %
 Plastic: 4 %
 Electronic components (printed circuit board and cables): 12.5 %

The product contains substances on the *ECHA* list of substances which, for approval, may be regarded as substances of very high concern (SVHC) (date 08/07/2021) in quantities of more than 0.1 mass %: no.

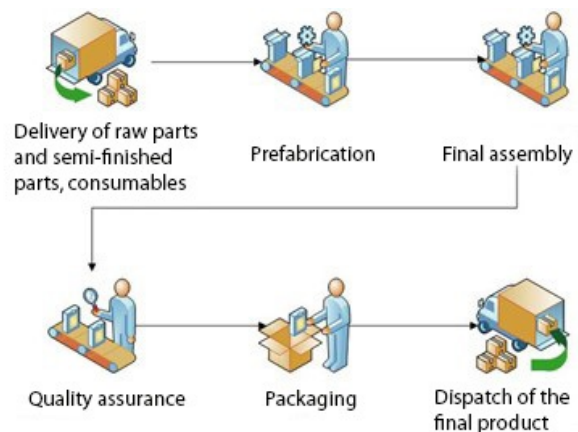
The product contains further CMR substances of category 1A or 1B which are not on the candidate list, in quantities of more than 0.1 mass % in at least one sub-assembly.: no.

Biocidal products have been added to the construction product or it has been treated with biocidal products (it is regarded as treated goods as per the Biocidal Products Regulation (EU) No. 528/2012): no.

2.6 Manufacture

Production is performed at a location in the plant in Weener. The necessary raw parts and semi-finished parts, auxiliary parts and consumables are supplied by suppliers and enter into production. The production of semi-finished parts is performed in prefabrication with standard production methods. Metal parts are punched and chamfered or milled into shape. Calcium silicate parts are sawn and milled. Pre-cut parts are optimised accordingly in order to avoid waste. Waste which is generated nevertheless is collected and recycled as far as possible by appropriate companies, or disposed of as domestic waste and burned. Lubricants are predominantly collected, treated and re-used in production. Dust and vapours are extracted and collected on site.

The parts from prefabrication are installed in final assembly together with purchased part to construct the smoke control dampers, inspected, packaged and dispatched within the scope of quality assurance as per *ISO 9001*.



2.7 Environment and health during manufacturing

No measures going beyond the legally stipulated occupational health and safety measures are required at any time during the entire manufacturing process. Waste is prevented using optimised pre-cut parts, lubricants are re-used by way of recycling measures.

2.8 Product processing/Installation

The manuals, installation regulations, operating instructions, declarations of performance and approvals of **Wildeboer Bauteile GmbH** must be observed. Moreover, the safety and processing regulations, for example those for drywalling, masonry

and electrical work, and the legal occupational health and safety regulations must be observed.

2.9 Packaging

The products are packaged on reusable pallets using support and securing elements made of corrugated cardboard, and in polyethylene (PE) films. Disposal, with the exception of the pallets, is performed by local recycling companies. Pallets are reused within the exchange pool. Only the necessary amount of packaging material is used. Packaging is performed in an optimised manner.

2.10 Condition of use

The material composition does not change during use. This does not apply in case of extremely unusual effects which can lead to changes. Smoke control dampers are maintenance-free. The *manufacturer's documents* must be observed for regular functional checks on the smoke control dampers.

2.11 Environment and health during use

No negative effects on the environment or health are to be expected during use. The maintenance-free, enclosed electric drive motors are lubricated for their complete service life, and are not situated in the air flow. There are no deposits of soiling resulting from the construction.

2.12 Reference service life

If used properly, an average service life of approximately 20 years is to be expected for EK90 smoke control dampers (EK92 series).

2.13 Extraordinary effects

Fire

In accordance with the *list of technical building rules* of the Deutsches Institut für Bautechnik (German Institute for Structural Engineering) (DIBt) in Berlin the following applies: "Smoke control dampers must essentially be made of non-combustible materials". See table for minimum ratings.

Fire protection

Name	Value
Building material class	A2
Burning droplets	s1
Smoke gas development	d0

Water

In case of the extreme influence of water the materials become partially soaked. Smoke control dampers must then be repaired or replaced. Large amounts of water generally do not arise in ventilation and air conditioning systems. The smoke control dampers are protected by the packaging on construction sites.

Mechanical destruction

Not relevant.

2.14 Re-use phase

Given the composition of the smoke control dampers, the metal and electronic components can be recycled. The remaining components (e.g. calcium silicate) can be disposed of as construction waste.

2.15 Disposal

Disposal can be classified in accordance with the reference values of the European List of Wastes Regulation as per the List of Wastes (LoW): Steel (17 04 05), concrete (17 01 01) or mixtures of concrete (17 01 07), plastic (17 02 03), electrical (20 01 36).

2.16 Further information

www.wildeboer.de/en

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to a single EK90 smoke control damper (EK92 series) from **Wildeboer Bauteile GmbH**, size 200 mm x 200 mm x 350 mm (total weight 30.2 kg) including small electric drive motor (weight 1.37 kg) and standard accessory kit (weight approx. 0.9 kg). The eco-balance results of variants or varying dimensions of the declared product can be provided by **Wildeboer Bauteile GmbH** on request.

Declared unit

Name	Value	Unit
Declared unit	1	pce.
Mass reference	30.2	kg/pce
conversion factor [Mass/Declared Unit]	30.2	-

3.2 System boundary

The system limit of the EPD of the type "cradle to the grave" follows a modular structure as per *EN 15804*. The eco-balance of the observed products takes into consideration modules A, B, C and D:

Product stage (A1-A3)

Provision of raw materials and transportation of the raw materials by truck to the factory. Production outlay including packaging material. Treatment of non-metallic production waste. Metallic production waste reaches the end of the waste property directly after generation, and is exported as per module D.

Stage of construction of the building structure (A4-A5)

Transportation by truck to the construction site (100 km). The transportation distance can be adjusted to building level as necessary (e.g. in case of an actual transportation distance of 200 km: multiplication of the eco-balance values by a factor of 2).

Module A5: Packaging treatment. Any resultant credits in module D. Power consumption for installation (any use of manual machines) has not been considered.

Stage of use (B1-B5):

No emissions are released during use of the product (B1). Servicing (B2) and repair (B3) or replacement of individual components (B4) is not relevant during the observed service life (maintenance-free). According to the manufacturer's information, renovation of the

product (B5) is not necessary during the service life. Modules B1 to B5 are therefore declared as "0".

Stage of use – Operation of the building (B6-B7):

The required electrical energy for operation of the product with an electric drive motor, and the electrical energy for set point adjustments.

Disposal stage (C1-C4)

Manual removal (unencumbered) and transportation by truck to waste processing location (50 km). The transportation distance can be adjusted to building level as necessary (e.g. in case of an actual transportation distance of 100 km: multiplication of the eco-balance values by a factor of 2). The end-of-waste status of the motors is reached after treatment or sorting of the contained material fractions. The outlay for treatment has been disregarded in the product life cycle.

Module C3: Thermal treatment of raw materials with calorific value.

Module C4: Disposal of raw materials without calorific value.

Credits and debits outside the system limit (D)

Debits and credits from material recycling of metals (including processing) and credits for substituted thermal energy and electricity which has been exported from modules A1-A3, A5 and C3.

3.3 Estimates and assumptions

In the absence of suitable background data, estimates have been made for a few raw materials with a mass fraction of less than 1 % each of the overall product.

3.4 Cut-off criteria

All data from the capture of operating data, i.e. all basic materials used as per the recipe, and the electricity and water requirement were considered in

the assessment. Transportation costs were taken into account for all considered inputs, with the exception of packaging material. The end-of-waste status of the motors is reached after treatment or sorting of the contained material fractions. The outlay for treatment has been disregarded in the product life cycle. Thus, as per PCR Part A, material and energy flows with a fraction of < 1 % were also considered.

3.5 Background data

GaBi databases (service pack 40) were used for calculation of the eco-balance.

3.6 Data quality

The data quality can be regarded as high. The manufacture of the products has been modelled with primary data of Wildeboer Bauteile GmbH. Appropriate background datasets were available in the *GaBi database* for all the relevant primary products used. The last revision of the data used took place within the last 5 years.

3.7 Period under review

Data capture for the volume flow controller is carried out at **Wildeboer Bauteile GmbH**, at the Weener (Germany) site for the year 2020/2021.

3.8 Allocation

No by-products are generated during production. Therefore, no allocation has been used.

3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

The used background database has to be mentioned

4. LCA: Scenarios and additional technical information

The following technical information is the basis for the declared modules, or can be used for the development of specific scenarios in the context of building evaluation.

The eco-balance results of variants or varying dimensions of the declared product can be provided by **Wildeboer Bauteile GmbH** on request.

The declared products are maintenance-free. Therefore, there is no scenario data for modules B1-B5.

Transportation to the construction site (A4)

Name	Value	Unit
Transport distance	100	km
Capacity utilisation (including empty runs)	61	%

Reference service life

Name	Value	Unit
Reference service life	20	a

Operational energy (B6) and water usage (B7)

Name	Value	Unit
Power consumption, at rest	0,5	W
Operating time, at rest	8760	h / year

The data on environmental effects due to energy usage during the service life (module B6) is stated in relation to one year, and, if necessary, must be multiplied by the scheduled service life (in years) at building level.

End of the service life (C1-C4)

Name	Value	Unit
Collected separately waste type	30.2	kg
Recycling	7.98	kg
Energy recovery	0.22	kg
Landfilling	22	kg

5. LCA: Results

The following illustrates the results of the indicators of the impact assessment, of resource usage and on waste and other output flows in relation to one EK90 smoke control damper (EK92 series) unit [30.2 kg/unit], including electric drive motor and standard accessory kit.

The data can be requested from the manufacturer for calculation (scaling) of other volumes, any accessories used and the VR controller.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED; MNR = MODULE NOT RELEVANT)

PRODUCT STAGE		CONSTRUCTION PROCESS STAGE			USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: 1 EK90 smoke control damper (EK92 series) unit, including electric drive motor with 30.2 kg/unit

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP	[kg CO ₂ -Eq.]	3.08E+1	1.78E-1	3.47E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.46E+0	0.00E+0	0.00E+0	8.90E-2	7.10E-1	3.00E-1	-1.70E+1
ODP	[kg CFC11-Eq.]	6.47E-13	5.89E-17	5.12E-16	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.02E-13	0.00E+0	0.00E+0	1.45E-17	2.88E-16	1.65E-15	4.69E-14
AP	[kg SO ₂ -Eq.]	8.27E-2	1.19E-4	3.03E-4	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.91E-3	0.00E+0	0.00E+0	6.94E-5	6.25E-5	1.90E-3	-6.28E-2
EP	[kg (PO ₄) ³ -Eq.]	7.15E-3	2.23E-5	6.56E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.75E-4	0.00E+0	0.00E+0	1.28E-5	1.31E-5	2.14E-4	-3.49E-3
POCP	[kg ethene-Eq.]	8.12E-3	-3.06E-6	2.63E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.40E-4	0.00E+0	0.00E+0	-2.99E-7	6.25E-6	1.44E-4	-5.55E-3
ADPE	[kg Sb-Eq.]	2.09E-3	1.50E-8	6.35E-9	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.51E-7	0.00E+0	0.00E+0	6.52E-9	3.25E-9	3.02E-8	-1.39E-3
ADPF	[MJ]	3.49E+2	2.38E+0	5.79E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.44E+1	0.00E+0	0.00E+0	1.21E+0	2.58E-1	4.25E+0	-1.52E+2

Caption GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: 1 EK90 smoke control damper (EK92 series) unit, including electric drive motor with 30.2 kg/unit

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	[MJ]	5.44E+1	1.39E-1	2.71E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.78E+1	0.00E+0	0.00E+0	6.79E-2	5.85E-2	5.73E-1	2.50E-1
PERM	[MJ]	2.70E+1	0.00E+0	2.70E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	8.14E+1	1.39E-1	1.26E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.78E+1	0.00E+0	0.00E+0	6.79E-2	5.85E-2	5.73E-1	2.50E-1
PENRE	[MJ]	3.58E+2	2.39E+0	1.16E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.10E+1	0.00E+0	0.00E+0	1.21E+0	4.14E-1	4.38E+0	-1.52E+2
PENRM	[MJ]	1.11E+1	0.00E+0	-1.09E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.27E-1	0.00E+0	0.00E+0
PENRT	[MJ]	3.69E+2	2.39E+0	6.76E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.10E+1	0.00E+0	0.00E+0	1.21E+0	4.38E+0	-1.52E+2	
SM	[kg]	2.70E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m ³]	8.34E-2	1.25E-4	8.23E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.65E-3	0.00E+0	0.00E+0	7.87E-5	1.76E-3	1.10E-3	-4.99E-2

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 = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A1: 1 EK90 smoke control damper (EK92 series) unit, including electric drive motor with 30.2 kg/unit

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	[kg]	7.33E-7	8.92E-8	4.69E-10	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.08E-8	0.00E+0	0.00E+0	5.63E-8	9.88E-10	6.67E-8	-2.83E-7
NHWD	[kg]	5.50E+0	4.19E-4	2.24E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.38E-2	0.00E+0	0.00E+0	1.85E-4	7.24E-2	2.20E+1	-9.26E-1
RWD	[kg]	7.88E-3	2.51E-6	3.88E-5	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.59E-3	0.00E+0	0.00E+0	1.50E-6	1.17E-5	4.97E-5	-1.50E-4
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	2.15E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.98E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	5.51E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.57E+0	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	9.88E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.82E+0	0.00E+0	0.00E+0

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
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6. LCA: Interpretation

The two most important phases of the life cycle are the manufacturing and use phases.

In relation to the manufacturing phase, the upstream steel chain dominates all indicators. Relevant debits in all indicators also originate from the upstream chain processes of drive manufacture, and from the upstream chain processes of calcium silicate and stainless steel manufacture. Electricity consumption also contributes significantly to the indicator ODP – in all other indicators the contribution is very low. Moreover, low to negligible environmental effects

originate from the components adhesive, brass and packaging. All other phases of the life cycle, processes and materials have low to very low relevance for the product system.

When observing a typical service life of 20 years, the environmental effects identified in relation to one unit and year accumulate accordingly for operation (energy consumption) of the products. The associated environmental effects are accordingly significantly as a result of this energy consumption for the indicators GWP, EP and ADPF.

7. Requisite evidence

Certification as per *PCR part B: Fire dampers and fire protection valves and smoke control dampers* for the declared product are not relevant.

8. References

LoW (AVV)

Ordinance on the List of Wastes (LoW) of 10 December 2001 (BGBl. I page 3379) which was most recently amended with article 5 paragraph 22 of the law from 24 February 2012 (BGBl. I page 212)

ISO 9001

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EN 1366-2

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EN 1366-10/A1

DIN EN 1366-10/A1: 2017-07, Fire resistance tests for service installations - Smoke control dampers; German version EN 1366-10/A1: 2017

EN 13501-4

DIN EN 13501-4: 2016-12, Fire classification of construction products and building elements – Classification using data from fire resistance tests on components of smoke control systems

EN 1751

DIN EN 1751:2014-06, Ventilation for buildings - Air terminal devices - Aerodynamic testing of damper and valves

EN 12101-8

DIN EN 12101-8: 2011-08, Smoke and heat control systems: Smoke control dampers

Manufacturer's documents on the EK90 (EK92 series) in the respective current version, user manual 5.32, EK90 operating instructions (2017-09)

Declaration of performance for the EK90 (EK92 series) from **Wildeboer Bauteile GmbH**, available at www.wildeboer.de

ECHA

ECHA list: 2017-07

GaBi

GaBi 9.5 2020: Sphera Solutions GmbH, GaBi 9.5: software system and database for complete assessment. Copyright, TM, Stuttgart, Leinfelden-Echterdingen, 1992-2020

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PCR Part A

Product category calculation rules for building-related products and services. Part A: Calculation rules for the eco-balance and requirements of the background report, version 1.0 Institut Bauen und Umwelt e.V., www.ibu-epd.com, 2021



PCR Part B

Product category calculation rules for building-related products and services. Part B: Requirements for EPD for fire dampers and fire protection valves and smoke

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