Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

OPTIMUS 60

EPD of multiple products, based on the results of a representative product

Included products: OPTIMUS 60-100, OPTIMUS 60-125, OPTIMUS 60-160, OPTIMUS 60-200, OPTIMUS 60-250, OPTIMUS 60-315, OPTIMUS 60-400, OPTIMUS 60-400, OPTIMUS 60-500, OPTIMUS 60-600

from

Bevent Rasch

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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): 2019:14 Construction products (v.1.3.1) 2019:14 c-PCR-018 Ventilation components (c-PCR under PCR 2019:14) (Adopted from EPD Norway)
PCR review was conducted by: The Technical Committee of the International EPD® System, Chair Claudia A. Peña. A full list of members available on www.environdec.com. Contact: info@environdec.com.
Life Cycle Assessment (LCA)
LCA accountability: Kristin Fransson and Jacob Näslund, AFRY, www.afry.com
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Martyna Mikusinska, Sweco Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:

Bevent Rasch AB
Skaraborgsvägen 6 | 506 30 Borås

Contact:

Tobias Jakobsson, Sustainability Manager
tobias.jakobsson@bevent-rasch.se

Description of the organisation:

Bevent Rasch is an industry-leading manufacturer of ventilation products in Sweden and the Nordic countries, with collaboration partners on the export market. Our products are at the forefront of development and have long set standards followed by the rest of the industry. With innovation, technology, and a long-term perspective as watchwords, we develop smart, high-tech solutions and safe installation methods, delivered with uncompromising timeliness.

Product-related or management system-related certifications:

ISO 9001 & ISO 14001 certified
EC certificate according to EN 15650:2010 402-CPD-SC0900-13
Classification of fire resistance EI60 (ve ho <-> o) S according to SS-EN 13501-3:2005+A1:2009

Name and location of production site(s):

Norrsten, 591 92 Motala, Sweden

Product information

Product name:

OPTIMUS 60

Product identification:

The following products are included in the EPD, see table for information on product names, article numbers and weights.

All included products in the OPTIMUS 60 series		
Product name	**GTIN**	**Article weight (kg/piece)**
OPTIMUS 60-100-1	07333404109530	2.68
OPTIMUS 60-125-1	07333404109561	2.95
OPTIMUS 60-160-1	07333404109592	3.36
OPTIMUS 60-200-1	07333404109622	3.83
OPTIMUS 60-250-1	07333404109653	4.53
OPTIMUS 60-315-1	07333404109684	5.42
OPTIMUS 60-400-1	07333404109714	9.71
OPTIMUS 60-500-1	07333404109745	12.99
OPTIMUS 60-630-1	07333404109776	16.67

Product description:
OPTIMUS 60 is a circular fire/smoke damper in fire class EI60/EI60S with a factory-installed safety actuator. The damper is very light and can be quickly and easily installed. OPTIMUS 60 is also designed for easy disassembly for future reuse or recycling.

UN CPC code:
54632

Geographical scope:
Raw materials and components (A1) are mainly bought from European suppliers, and some minor components are bought from Asian countries. The manufacturing of the final product (A3) is made in Sweden. The use phase (B6) and end-of-life (C1-C4) takes place in Sweden.

LCA information

The results in this EPD pertains to the representative product OPTIMUS 60-125

Declared unit:
1 kg OPTIMUS 60

Conversion factor to unit fire damper results:
1 piece = 2.954 kg for representative product.
Conversion factors for the complete series OPTIMUS 60 can be found under product identification.

Reference service life:
25 years

Time representativeness:
The information underlying this EPD is taken from the reference year 2022, considering inputs and outputs for the whole calendar year.

Database(s) and LCA software used:
Ecoinvent 3.9.1, Industry Data 2.0 and SimaPro 9.5.0.0

Description of system boundaries:
Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + A4-A5 + B6 + C + D)

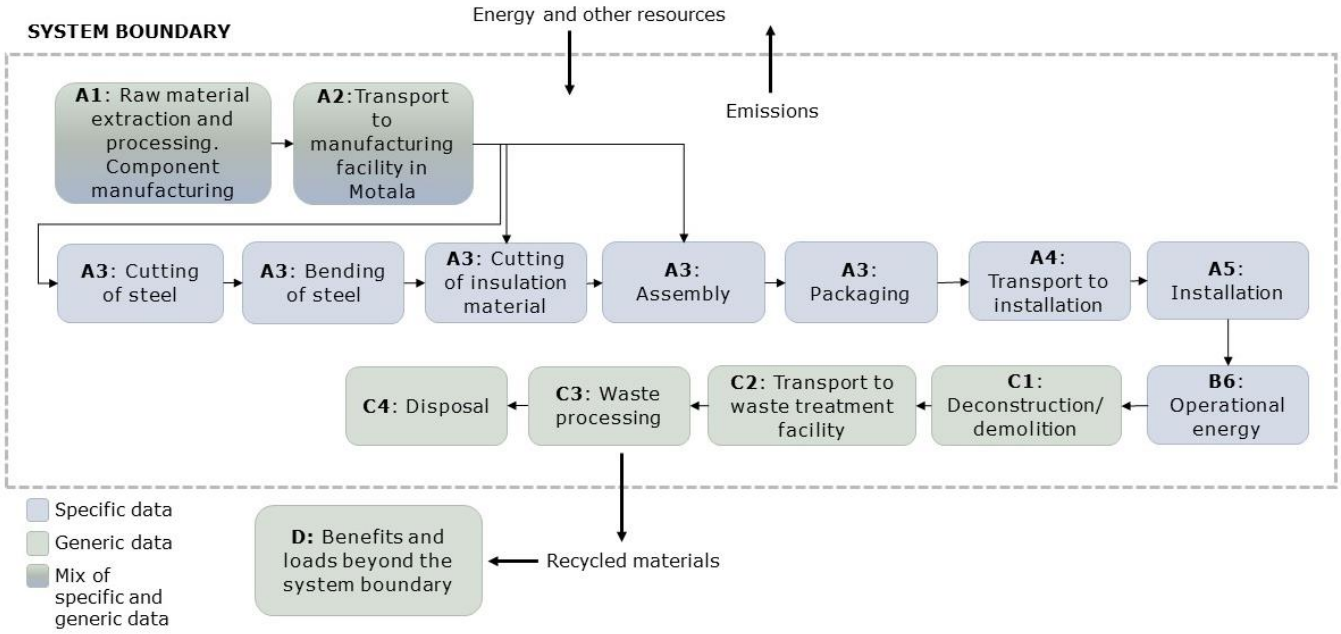
Assumptions:
The main assumptions pertain to the transports and transport distances, and demolition. It was assumed that all road transports are done with 16-32 ton truck of Euro class 5. It is assumed that only human labour is required during demolition, as it is assumed to be so during installation.

Cut-off criteria:
The study followed the cut-off criteria specified in EN 15804. All inputs and outputs were included in the calculations when data was available. Due to the unavailability of data on their production methods and energy requirements, only raw materials were included in the calculations for the swelling seal and fire stopping sealant. These components make up a small proportion of the total mass - 4% and 0.1%, respectively - and no substitutable data sets were found. As a result, the cut-off criteria of 95%, specified in the PCR, has been applied and is considered appropriate for these components.

Allocation:
The allocation of waste and energy is based on mass, with the energy consumed and waste produced assigned to the fire damper based on the quantity of processed steel used in the factory and the proportion of steel in the final product. The chosen mass allocation method adheres to ISO 14044 and aligns with the standard's emphasis on physically meaningful allocation factors. All Bevent Rasch's products contain some amount of steel, making the allocation method justifiable. Scrap output from A3 has not been allocated any environmental impact.

LCA practitioner:
Jacob Näslund & Kristin Fransson, AFRY Sustainability Consulting, www.afry.com

System diagram:



A1: Raw Material

This stage includes raw material extraction and production of bought components.

A2: Transport

This stage includes transportation of raw materials to production sites and of components to final site of assembly.

A3: Manufacturing

This stage includes resource use in the manufacturing facility in Motala such as use of energy. It also includes treatment of waste generated from the manufacturing processes. The manufacturing includes cutting and shaping the steel sheets, cutting insulation material, assembly, and packaging.
The electricity mix used is a fossil free mix (sourced from hydropower and nuclear power). The climate impact of the electricity mix is 11.9 g CO2-eq/kWh.

A4: Transportation

This stage includes transportation of the product to the installation site. 250 km transportation is assumed.

A5: Construction/Installation

This stage includes waste treatment of packaging. The packaging is assumed to be incinerated.

B6: Operational energy use

This stage includes the use of energy during operation. During standby, the actuator consumes 0.8 W. However, once every other day, as part of a test cycle, the actuator is activated for 60 seconds, during which it consumes 2.5 W. The yearly energy use is therefore calculated to be 7.01 kWh. Based on the industry standards and practices, it is assumed that the fire damper will remain operational for 25 years. The fire damper is only sold in Sweden, so a Swedish electricity mix is used to model the impact.

C1: Deconstruction
This stage includes impacts from energy use related to deconstruction of the fire damper.

C2: Waste Transport
Includes the transportation of the discarded product to a waste treatment facility. 100 km transportation is assumed.

C3: Waste Processing
This stage includes sorting of waste.

C4: Waste disposal
This stage includes waste disposal processes, such as landfill or incineration. Incineration is assumed for plastics, 20% of the electronics. The insulation material is assumed to be landfilled, 10% of the steel and 35% of the electronics are assumed to be landfilled. The remaining materials are assumed to be recycled.

D: Benefits and loads outside the system boundary
This stage includes benefits and burdens associated with recovery/recycling that affects future life cycles. For this product it includes benefits from the recycling of steel and metals, as well as energy recovery from waste incineration

Activities such as manufacturing of equipment, buildings and other capital goods are excluded as well as business travel and travel to and from work by personnel.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	X	ND	X	X	X	X	X
Geography	GLO/ EUR	GLO/ EUR	SE	SE	SE						SE		SE	SE	SE	SE	SE
Specific data used	11% of the total GWP-GHG impact stems from specific data																
Variation – products	31%																

The variety in products refer to GWP-GHG per kg product.

Declaration of general information

Inner diameter [mm]	Outer diameter [mm]	Length [mm]	Piece	Weight [kg]
125	262	375	1	2.95

Content information per one fire damper

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Steel sheets	1.47	90	
Actuator	1.03		
Fasteners	0.11		
Swelling seal	0.12		

Insulation material	0.12		
Axle	0.07		
Bearing support	0.016		
Rubber seal	0.024		
Fire resistant seal	0.003		
Bushing	0.001		
Cover plug	0.001		
TOTAL	2.954		
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
EUR-pallet	0.781	26%	0.25
Carton box	0.38	13%	0.079
TOTAL	1.16		0.33

No substances that appear in the REACH Candidate List of Substances of Very High Concern (SVHC) are present or used in the product.

Results of the environmental performance indicators

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Mandatory impact category indicators according to EN 15804

Results per kg fire damper										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	4.28E+00	4.71E-02	7.75E-02	2.39E+00	0.00E+00	1.92E-02	5.07E-02	1.32E-01	-1.15E+00
GWP-biogenic	kg CO_2 eq.	-2.80E-01	4.26E-05	4.84E-01	8.16E-02	0.00E+00	6.48E-06	1.33E-05	1.06E-05	2.23E-03
GWP-luluc	kg CO_2 eq.	6.88E-03	2.29E-05	5.63E-06	2.03E-01	0.00E+00	9.90E-06	4.53E-05	1.61E-06	-1.28E-03
GWP-total	kg CO_2 eq.	4.00E+00	4.71E-02	5.61E-01	2.67E+00	0.00E+00	1.92E-02	5.07E-02	1.32E-01	-1.15E+00
ODP	kg CFC 11 eq.	8.42E-08	1.02E-09	4.04E-10	8.19E-08	0.00E+00	2.88E-10	6.66E-10	1.63E-10	-2.47E-08
AP	mol H^+ eq.	3.06E-02	1.53E-04	1.02E-04	2.72E-02	0.00E+00	6.80E-05	4.03E-04	3.76E-05	-1.12E-02
EP-freshwater	kg P eq.	1.78E-03	3.29E-06	7.19E-06	2.09E-03	0.00E+00	1.56E-06	9.69E-06	4.88E-07	-8.39E-04
EP-marine	kg N eq.	4.71E-03	5.28E-05	5.07E-05	4.58E-03	0.00E+00	2.24E-05	1.59E-04	2.01E-05	-1.33E-03
EP-terrestrial	mol N eq.	5.12E-02	5.57E-04	4.72E-04	4.64E-02	0.00E+00	2.37E-04	1.73E-03	1.78E-04	-1.55E-02
POCP	kg NMVOC eq.	1.64E-02	2.29E-04	1.34E-04	1.19E-02	0.00E+00	9.15E-05	5.10E-04	4.77E-05	-7.01E-03
ADP-minerals&metals*	kg Sb eq.	4.50E-04	1.51E-07	3.61E-08	2.33E-04	0.00E+00	6.14E-08	1.81E-07	7.68E-09	-1.27E-04
ADP-fossil*	MJ	6.46E+01	6.67E-01	1.69E-01	3.59E+02	0.00E+00	2.70E-01	6.69E-01	4.98E-02	-1.22E+01
WDP*	m^3	-2.85E+00	2.72E-03	5.57E-03	4.58E+00	0.00E+00	1.20E-03	4.19E-03	7.01E-03	-1.81E-01
Acronyms	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 = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Additional mandatory and voluntary impact category indicators

Results per kg fire damper										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	4.28E+00	4.71E-02	7.75E-02	2.59E+00	0.00E+00	1.92E-02	5.07E-02	1.32E-01	-1.15E+00

Resource use indicators

Results per kg fire damper										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1.39E+01	1.04E-02	3.73E-03	1.61E+02	0.00E+00	3.44E-03	3.77E-02	1.20E-03	-2.68E+00
PERM	MJ	1.27E+00	0.00E+00	-1.27E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.52E+01	1.04E-02	-1.27E+00	1.61E+02	0.00E+00	3.44E-03	3.77E-02	1.20E-03	-2.68E+00
PENRE	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
PENRM	MJ	3.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.02E+00	0.00E+00
PENRT	MJ	3.02E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.02E+00	0.00E+00
SM	kg	8.30E-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
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	5.70E-02	1.08E-04	2.90E-04	9.87E-02	0.00E+00	4.60E-05	1.21E-04	2.43E-04	-6.04E-03
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

For PERM and PENRM the impacts have been calculated according to option A in Annex 3, in PCR 2019:14, so that the impact from modules A-C is 0.

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Waste indicators

Results per kg fire damper										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	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
Non-hazardous waste disposed	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
Radioactive waste disposed	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

Output flow indicators

Results per kg fire damper										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	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
Material for recycling	kg	2.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.75E-01	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	0.00E+00
Exported energy, electricity	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
Exported energy, thermal	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

Disclaimer: The results from modules A1-A3 should not be used without considering the results of module C.

Additional environmental information

OPTIMUS 60 has been designed with a focus on facilitating future reusability and recyclability. During the installation of the fire damper, no sealants need to be used, thereby ensuring a straightforward installation process and seamless disassembly in the future. The minimal use of sealants in the manufacturing of OPTIMUS 60 further contributes to the ease of future disassembly.

For further information on installation of OPTIMUS 60 refer to datasheet provided at www.bevent-rasch.se

The table below shows results for total climate impact from modules A1-A3 (Cradle-to-gate) for all included sizes in the OPTIMUS series. The products vary in impact due to the differences in composition. The product with the lowest impact differs 31% from the product with the highest impact in the modules A1-A3 per kg fire damper.

Results GWP-GHG for all dimensions			
Dimension	**GWP-GHG (A1-A3) [kg CO2-eq/kg fire damper]**	**Article weight [kg/piece]**	**GWP-GHG (A1-A3) [kg CO2-eq per 1 piece fire damper]**
100	4.36	2.68	11.70
125	4.28	2.95	12.65
160	4.19	3.36	14.07
200	4.09	3.83	15.63
250	4.03	4.53	18.28
315	3.88	5.42	21.06
400	3.44	9.71	33.36
500	3.18	12.99	41.24
630	3.02	16.67	50.32

References

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