WEVER & DUCRÉ LIGHTING

Environmental *product* declaration

EPD of multiple products, based on a representative product in accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/ AC:2021 for:

CENO ceiling recessed | surface

from Wever & Ducré

INCLUDING MULTIPLE VARIANTS OF THE CENO COLLECTION
Included products are specified on page 4

PROGRAMME
The International EPD® System
www.environdec.com

PROGRAMME OPERATOR
EPD International AB

EPD REGISTRATION NUMBER	EPD-IES-0028996:001
VERSION DATE	2026-03-19
VALIDITY DATE	2031-03-18

This EPD follows additional requirements for construction products considered as Electronic or Electric Equipment. An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see *www.environdec.com.*

EPD INTERNATIONAL EPD SYSTEM

ECO PLATFORM EPD VERIFIED

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	support@environdec.com

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

PRODUCT CATEGORY RULES (PCR)
PCR 2019:14 Construction products version 2.0.1, 2025-06-05.
UN CPC code(s): 4653 (Ver. 2.1) Lighting Equipment

PCR REVIEW WAS CONDUCTED BY
The Technical Committee of the International EPD® System.
See www.environdec.com for a list of members.

Review Chair: Rob Rouwette (chair), Noa Meron (co-chair).

The review panel may be contacted via support@environdec.com

LIFE CYCLE ASSESSMENT (LCA) ACCOUNTABILITY
XAL GmbH, Auer-Welsbach-Gasse 36, 8055 Graz, Austria

INDIVIDUAL EPD VERIFICATION WITHOUT A PRE-VERIFIED LCA/EPD TOOL.
THIRD-PARTY VERIFIER:

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Procedure for follow-up of data during EPD validity involves third-party verifier:
☒ Yes ☐ No

APPROVED BY
The International EPD® System

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

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

INTERNAL FOLLOW-UP PROCEDURE
An internal annual follow-up procedure has been established and implemented by the EPD Owner to ensure that the EPD remains compliant and up-to-date throughout its validity period, as required by the International EPD System. Follow-up activities are conducted at least once per year and documented. For additional information, see https://www.environdec.com/news/epd-internal-follow-up

Company *information*

DESCRIPTION OF THE ORGANISATION

EXCITING BELGIAN DESIGN LIGHTING FOR
EVERYONE DELIVERED FAST

We all know it, the famous glimpse at the ceiling during which you think: “Well, everyone really does have that light”. That’s why we strive to achieve lighting solutions that first and foremost fit the description: unique. Who inspires us in the process? From people like you, who share our enthusiasm for beautiful things and attach as much importance to noble design as to high-quality workmanship. Does it sound passionate? Well, that’s what it is. After all, life is simply far too short for boring light fixtures.

Name and location of production site(s):
The production sites are in China (TBL), in Graz (Wever & Ducré GmbH, Austria) and in Kortrijk (Wever & Ducré bv)

The production facilities operate in a complementary manner with each product passing through the same facilities.

More information
weverducre.com

OWNER OF THE EPD
WEVER & DUCRÉ BV
Spinnerijstraat 99/21
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BELGIUM

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PRODUCT NAME

CENO ceiling recessed | surface

PRODUCT IDENTIFICATION

Ceiling recessed | surface spotlight.
This EPD covers multiple products of the CENO Collection:

- CENO SEMI RECESSED 1.0
- CENO 1.0 (reference product)[1]
- CENO 1.1
- CENO 2.0
- CENO 3.0
- CENO SURFACE 1.0
- CENO SURFACE 2.0
- CENO SURFACE 4.0
- CENO SURFACE 4.1
- CENO SURFACE 6.0

[1] Comment: Including both mounting options: blade springs and wire springs

PRODUCT DESCRIPTION

Ceiling recessed spotlight made from die-cast aluminium with round base; wet pain; All variants available in different colours; black matt, bronze, black matt + gold, white matt; installation without tools using blade springs; suitable for ceiling thickness of 4-26 mm; recessed depth 85 mm; with COB (Chip on Board) technology for maximum efficiency; light colour 2700 K, 3000 K; ≤ 2 SDCM (initial MacAdam); CRI ≥ 90; beam angle 31°; 350° rotatable and 90° tiltable; degree of protection IP20; Class 3; IC rated; driver not included; light source replaceable by Wever & Ducré or by a professional with explicit authorization.

The products are compatible with various LED drivers. For this LCA, drivers recommended on the official product page have been added.

Scaling factors for all variants can be found in the Annex of the EPD.

SMALL SPOTS, MASSIVE IMPACT

Don’t mistake CENO’s discreet appearance for shyness. Our designers just wanted to develop a light that creates a cosy atmosphere even in small or rooms full of nooks and crannies. That’s why our CENOs come in many surface-mounted and recessed variants, and also as attractive wall lights or insets for our track systems. And all that in many colour options.

WHEN YOU CAN HAVE THEM ALL

Even small lights can be used to create beautiful accents. That’s why CENO comes in many different variants. For example, as CENO 6.0, which perfectly illuminates every corner with six swivelling spots, or a great all-rounder: CENO 4.1 Surface, which skillfully puts the focus on our favourite objects.

TECHNICAL SPECIFICATIONS

SPECIFICATION	CENO SEMI RECESSED 1.0	CENO 1.0 (ref. P.)	CENO 1.1	CENO 2.0
Inset Power	6 W	6 W	6 W	12 W
Luminous efficacy	Up to 66 lm/W	Up to 66 lm/W	Up to 66 lm/W	Up to 72 lm/W
Colour temperature	2700 K, 3000 K	**2700 K**, 3000 K	2700 K, 3000 K	2700 K, 3000 K
Physical	Diameter 35 mm Height 55 mm	Diameter 35 mm Height 55 mm	Diameter 35 mm Height 55 mm	Diameter 35 mm Height 55 mm

SPECIFICATION	CENO 3.0	CENO SURFACE 1.0	CENO SURFACE 2.0	CENO SURFACE 4.0
Inset Power	18 W	9 W	14 W	30 W
Luminous efficacy	Up to 74 lm/W	41 lm/W	59 lm/W	55 lm/W
Colour temperature	2700 K, 3000 K	2700 K, 3000 K	2700 K, 3000 K	2700 K, 3000 K
Physical	Diameter 35 mm Height 55 mm	Diameter 35 mm Height 55 mm	Diameter 35 mm Height 55 mm	Diameter 35 mm Height 55 mm

SPECIFICATION	CENO SURFACE 4.1	CENO SURFACE 6.0
Inset Power	30 W	41 W
Luminous efficacy	55 lm/W	60 lm/W
Colour temperature	2700 K, 3000 K	2700 K, 3000 K
Physical	Diameter 35 mm Height 55 mm	Diameter 35 mm Height 55 mm

Technical data was tested in house according to following standards:
EN 13032-1: 2004 +A1: 2012
EN 13032-4: 2015 +A1: 2019
CIE S 025/E: 2015
IES LM-79-19: 2019

UN CPC CODE
4653 (Ver. 2.1) Lighting Equipment

Content *declaration*

CONTENT DECLARATION PER DECLARED UNIT

PRODUCT COMPONENTS	WEIGHT, KG	WEIGHT-% (VERSUS TOTAL WEIGHT)	POST-CONSUMER MATERIAL, WEIGHT-%	BIOGENIC MATERIAL, WEIGHT-% / DECLARED UNIT	BIOGENIC MATERIAL, KG C /DECLARED UNIT
Aluminum	0.11	44.87	0.00	0.00	0.00
Polyphenylene ether (PPE)	0.03	13.14	0.00	0.00	0.00
Steel	0.03	11.53	0.00	0.00	0.00
Epoxy-Resin	0.012	5.14	0.00	0.00	0.00
Zinc	0.010	4.02	0.00	0.00	0.00
Brass	0.008	3.27	0.00	0.00	0.00
Polycarbonate	0.007	2.96	0.00	0.00	0.00
Glass fibers	0.006	2.54	0.00	0.00	0.00
Copper in alloy	0.005	2.28	0.00	0.00	0.00
Copper	0.005	2.15	0.00	0.00	0.00
Others (<1%)	0.013	8.10	0.00	0.02	0.0002
TOTAL	**0.236**	**100.00**	**0.00**	**0.02**	**0.0002**

PACKAGING MATERIALS*	WEIGHT, KG	WEIGHT-% (VERSUS THE PRODUCT)	WEIGHT BIOGENIC CARBON, KG C / DECLARED UNIT
Paper	0.009	3.59	0.004
Cardboard	0.067	28.50	0.034
TOTAL	**0.076**	**32.09**	**0.038**

The products do not contain any REACH and RoHS SVHC substances in amounts greater than 0.1 % (1000 ppm).

*Disclaimer: The packaging material table includes only product packaging. Transport packaging also included in the LCA.

DECLARED UNIT

The declared unit is one piece of CENO 1.0 including the LED-Driver. This product has been chosen as the reference due to the highest share of sales. The weight of the product per declared unit is 0.236 kg, 2700 K.

For better comparison with other types of luminaires, conversion factors are also available to convert the results to 1000 lumens during a reference lifetime of 35000 hours. This reference value is proposed by the PEP Category rules (PSR-0014-ed2.0-EN-2023 07 13). The conversion factors are available under “Additional environmental information“.

The principles of “Modularity” and “polluter pay” have been followed.

REFERENCE SERVICE LIVE
10.5 years

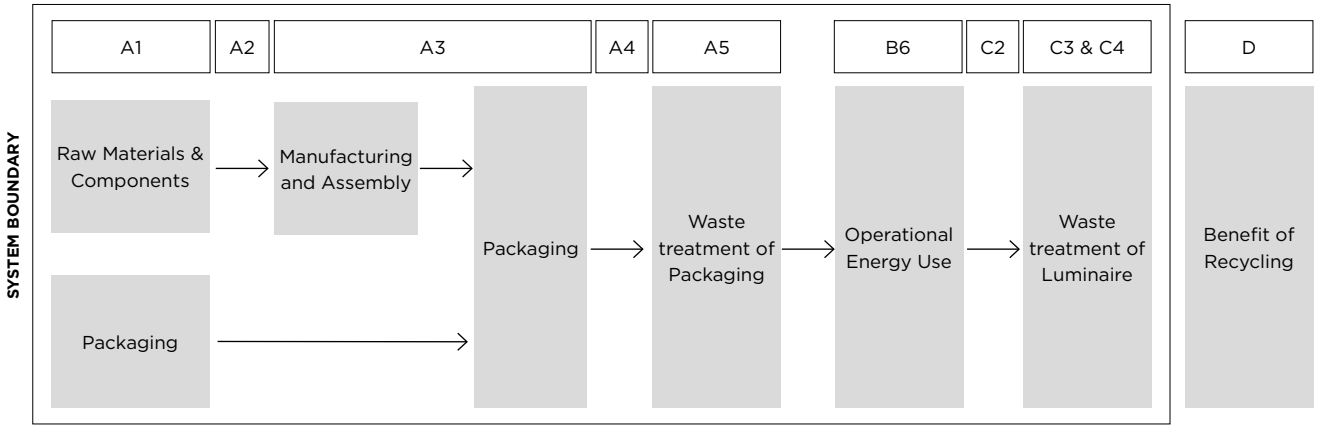
TIME REPRESENTATIVENESS
2024 - 2025*

DATABASE AND LCA SOFTWARE USED
LCA for Experts 10.9.1.19

SYSTEM BOUNDARIES
Cradle to gate with options, modules C1-C4, module D and with optional modules

*Some primary data (BoM and supplier data) is from a period < 12 months. It will be reviewed once one year of production is effective to confirm that the data is still representative.

SYSTEM DIAGRAM



ALLOCATION

Allocation was performed to determine the quantities of flows commonly associated with the factory, including electricity for general operations and packaging, the use of packaging materials (such as wooden pallets and polyethylene film), and packaging waste from purchased components.

PRODUCT STAGE (A1 – A3)

Raw materials are found in the components used for the luminaire production. The raw materials and the necessary process steps have been modelled using LCA for Experts 10.9.1.19. The manufacturing of the luminaire is done in Dongguan, China. Products are then transported to Kortrijk, Belgium, where the LED-Drivers are added. The product is sold from there to the costumers. The corresponding electricity mix and natural gas have been used for manufacturing. Production losses are close to zero and therefore not included in the LCA. Transportation of all the components is incorporated. For the components which are delivered from China, aggregated data has been used, since transportation involved various routes and transport vehicles. It is calculated that 24% are delivered by plane and 76% are delivered by ship from Dongguan to Belgium. Packaging for the components has been accounted for using a worst-case approach.

TRANSPORT TO BUILDING (A4)

The transport is calculated from Brussel, Belgium to the capitals of the countries with sales shares >4% (Brussel, Paris, Berlin, Roma, Amsterdam, Madrid, Bern). The product market includes countries all over the world.

Weighted distance	539 km
Truck used	Class EURO 6, 26-28 t
Fuel type	Diesel (0.00287 l/100 kkm)

INSTALLATION INTO BUILDING (A5)

No emissions occur during the installation. This module includes the waste treatment of the packaging.

Packagingwaste incl. transport packaging:

Material	Weight (kg)
Cardboard	0.067
Paper	0.008

OPERATIONAL ENERGY USE (B6)

Electricity consumption during the use stage is modelled based on the technical parameters of the luminaires and is representative for a weighted average of the following applications – residential (64%), restaurant (17%), hotel (7%), office (7%), retail (5%), with an average lifetime of 10.5 years. Geography of the electricity mix is modelled by sales shares and is representative for European countries (98% - EU-28) and rest of world countries (2%). For the rest of world countries, an electricity mix for China is used following a worst-case approach.

The energy consumption is calculated using the formula from EN 15193:2007:
Energy consumption [kWh] = {Pa x FCP x FO x (FD x tD + FN x tN) + Pp x ty} x 1/1.000 x a

The results and additional Use Phase Information is presented in the table below:

Scenario	CENO 1.0	Unit
Electricity use (10.5 years)	333.36	kWh
Active power	8	W
Total active time	35948	hours
Total passive time	55594	hours
Driver used	6W DALI	-
Presence control	No	-

END-OF-LIFE STAGE (C1-C4)

The product is presumed to be decomposed manually; therefore, no emissions should occur in C1. In accordance with PCR 2.0.1, the following transport distances are used for end-of-life waste treatment:

- Waste not destined for incineration – 80 km
- Waste destined for incineration – 130 km

Based on official statistics and literature, waste treatment options are taken into account for Europe and rest of the world countries. One mixed end-of-life scenario (see below) and three 100% end-of-life scenarios are calculated and presented in this EPD (see additional LCA results).

Scenario	CENO 1.0	Unit
Collected separately	0.236	kg
Collected with mixed (construction) waste	-	kg
For reuse	-	kg
For recycling	0.140	kg
For energy recovery	0.012	kg
For final disposal	0.084	kg

MODULE D

According to the guidelines of EN 15804+A2 and the PCR from EPD International, calculations are made for Module D. The loads and benefits result from the export of secondary materials and the energy which comes from incineration and landfilling. In Module D also the benefits from the product packaging waste are included.

Scenario	CENO 1.0	Unit
Materials for recycling	0.201	kg
Materials for export of secondary fuels	-	kg
Materials for incineration	0.019	kg

CUT-OFF RULES

Consistent with the PCR, a minimum of 95% of total inflows (mass and energy) are included. In addition, materials and processes with insignificant contributions of less than 1% are also included. For the use and end-of-life stage, scenarios are used, factoring in geographical conditions (such as electricity mix) and applications (waste treatment practices).

The following LCA modules have been excluded:
- B1: For the use stage (B1), no energy and material inputs, or emissions are involved.
- B2-B5: During the reference service life no maintenance (B2), repair (B3), replacement (B4) or refurbishment (B5) is expected.
- B7: The use of the product does not require water consumption (B7).

The following processes have been excluded:
- Manufacture of equipment used in production, buildings or any other capital goods;
- The transportation of personnel to the plant;
- Transportation of personnel within the plant;
- Research and development activities;
- Long-term emissions.

DATA QUALITY

This LCA study reflects the production for 2025, while overhead electricity consumption is based on 2024 data. Components are sourced from external suppliers, and their manufacturing processes are modeled using LCA for Experts, applying the most suitable representative geographical conditions and applications. Geographical representativeness is global, mainly China and Europe. Data quality is very good / good.

ELECTRICITY GRID

For the manufacturing in Dongguan, China, the corresponding electricity grid mix as stated on the invoice is used: Hard coal (39.7%), Hydro (27.6%), Photovoltaic (12.2%), Wind (11.4%), Nuclear (4.7%), other RE (4.4%). For the manufacturing in Graz, Austria, the corresponding electricity grid mix as stated on the invoice is used: Biomass (65.64%), Solar (25.28%), other RE (9.08%).

ENVIRONMENTAL IMPACT OF THE ELECTRICITY USED IN CN AND AUT	CN	AUT
CO_2 eq. [kg/kWh]	0.435	0.033

MODULES DECLARED, GEOGRAPHICAL SCOPE, SHARE OF SPECIFIC DATA (IN GWP-GHG RESULTS) AND DATA VARIATION (IN GWP-GHG RESULTS):

	Product stage			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	GLO	CN, BEL	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
Specific data used	11.66%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	-23%/+51%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acronyms	GLO = Global, CN = China, BEL = Belgium																

PRIMARY DATA USED

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

CALCULATION OF PRIMARY DATA USED FOR MODULE A1-A3:

PROCESS	SOURCE TYPE	SOURCE	REFERENCE YEAR	DATA CATEGORY	SHARE OF PRIMARY DATA OF GWP-GHG RESULTS FOR A1-A3
Others (<10% each)	Collected Data	EPD Owner	2024	Primary data	11.66%
Total share of primary data of GWP-GHG results for A1-A3					11.66%

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.

Usage of results from A1-A3 without considering the results of module C is not encouraged.

MANDATORY IMPACT CATEGORY INDICATORS ACCORDING TO EN 15804+A2 (BASED ON EF 3.1)

		RESULTS PER DECLARED UNIT								
INDICATOR	**Unit**	**A1 – A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
GWP – fossil	kg CO2 eq.	5.49E+00	1.79E-02	1.47E-03	1.11E+02	0.00E+00	2.02E-03	5.31E-02	1.13E-03	-9.38E-01
GWP – biogenic	kg CO_2 eq.	-1.41E-01	0.00E+00	1.41E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.96E-04
GWP – luluc	kg CO_2 eq.	6.78E-03	4.58E-04	8.14E-06	3.65E-01	0.00E+00	2.16E-05	9.81E-06	2.77E-06	-1.79E-03
GWP – total	**kg CO_2 eq.**	**5.36E+00**	**1.84E-02**	**1.42E-01**	**1.11E+02**	**0.00E+00**	**2.04E-03**	**5.31E-02**	**1.13E-03**	**-9.40E-01**
ODP	kg CFC 11 eq.	2.74E-09	3.42E-15	2.64E-15	2.47E-09	0.00E+00	2.47E-16	6.10E-14	3.13E-15	-1.29E-11
AP	mol H+ eq.	2.87E-02	2.52E-05	6.76E-06	2.46E-01	0.00E+00	3.28E-06	1.99E-05	7.65E-06	-3.68E-03
EP – freshwater	kg P eq.	3.28E-05	3.34E-08	6.24E-08	2.32E-04	0.00E+00	5.65E-09	9.10E-09	1.79E-09	-4.80E-07
EP – marine	kg N eq.	5.17E-03	9.93E-06	3.15E-06	5.89E-02	0.00E+00	1.34E-06	6.61E-06	1.92E-06	-7.24E-04
EP – terrestrial	mol N eq.	5.61E-02	1.11E-04	2.81E-05	6.59E-01	0.00E+00	1.42E-05	9.09E-05	2.10E-05	-7.86E-03
POCP	kg NMVOC eq.	1.54E-02	2.31E-05	9.58E-06	1.47E-01	0.00E+00	2.83E-06	1.72E-05	5.88E-06	-2.10E-03
ADP – minerals & metals*	kg Sb eq.	3.62E-04	2.38E-09	8.59E-11	2.26E-05	0.00E+00	1.39E-10	7.43E-10	9.93E-11	-2.15E-05
ADP – fossil*	MJ	6.63E+01	2.29E-01	1.99E-02	2.23E+03	0.00E+00	2.67E-02	6.69E-02	1.66E-02	-1.26E+01
WDP*	m^3	1.30E+00	6.56E-05	1.36E-03	2.79E+01	0.00E+00	8.39E-06	6.73E-03	1.29E-04	-8.48E-02
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.

MANDATORY AND VOLUNTARY IMPACT CATEGORY INDICATORS

		RESULTS PER DECLARED UNIT								
INDICATOR	**Unit**	**A1 – A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
GWP – GHG[1]	kg CO_2 eq.	5.50E+00	1.84E-02	1.47E-03	1.11E+02	0.00E+00	2.04E-03	5.31E-02	1.13E-03	-9.40E-01
PM	disease inc.	4.05E-07	2.40E-10	5.27E-11	2.09E-06	0.00E+00	3.12E-11	2.17E-10	9.15E-11	-5.11E-08
IRP – HE**	kg U235-eq	1.76E-01	2.55E-05	4.22E-05	5.74E+01	0.00E+00	4.87E-06	1.11E-03	2.57E-05	-5.18E-02
ETP – fw*	CTUe	3.15E+01	2.62E-01	1.89E-02	3.76E+02	0.00E+00	3.46E-02	1.85E-02	1.09E-02	-4.43E+00
HTP – c*	CTUh	2.69E-09	3.74E-12	3.56E-13	3.56E-08	0.00E+00	4.66E-13	1.89E-12	8.13E-13	-6.18E-10
HTP – nc*	CTUh	4.80E-08	1.42E-10	2.36E-11	7.47E-07	0.00E+00	2.63E-11	1.01E-10	7.82E-11	-6.90E-09
SQP	dimension-less	1.47E+01	1.20E-01	5.56E-03	8.87E+02	0.00E+00	1.18E-02	2.47E-02	3.11E-03	1.54E+01
Acronyms	PM = particulate matter emissions. IRP-HE = ionizing radiation potential-human exposure. ETP-fw = ecotoxicity (freshwater). HTP-c = human toxicity potential. cancer effects. HTP-nc = human toxicity potential. non-cancer effects. SQP = land use related impacts.									

[1] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Results of the Environmental *performance indicators*

RESOURCE USE INDICATORS

		RESULTS PER DECLARED UNIT								
INDICATOR	**Unit**	**A1 – A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1.95E+01	1.92E-02	2.35E-03	1.51E+03	0.00E+00	1.96E-03	3.64E-02	2.60E-03	-4.00E+00
PERM	MJ	1.38E+00	0.00E+00	-1.34E+00	0.00E+00	0.00E+00	0.00E+00	-3.76E-02	0.00E+00	0.00E+00
PERT	MJ	2.08E+01	1.92E-02	-1.34E+00	1.51E+03	0.00E+00	1.96E-03	-1.16E-03	2.60E-03	-4.00E+00
PENRE	MJ	6.63E+01	2.29E-01	1.99E-02	2.23E+03	0.00E+00	2.67E-02	6.69E-02	1.66E-02	-1.26E+01
PENRM	MJ	4.35E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.35E-01	0.00E+00	0.00E+00
PENRT	MJ	6.67E+01	2.29E-01	1.99E-02	2.23E+03	0.00E+00	2.67E-02	-3.68E-01	1.66E-02	-1.26E+01
SM	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	1.52E-01
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	3.54E-02	1.39E-05	3.25E-05	1.19E+00	0.00E+00	9.46E-07	1.69E-04	3.85E-06	-4.64E-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

WASTE INDICATORS

		RESULTS PER DECLARED UNIT								
INDICATOR	**Unit**	**A1 – A3**	**A4**	**A5**	**B6**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	4.23E-08	1.09E-11	3.28E-12	2.90E-06	0.00E+00	9.66E-13	6.11E-11	2.23E-12	-3.15E-09
Non-hazardous waste disposed	kg	5.50E-01	3.29E-05	5.91E-03	1.72E+00	0.00E+00	3.51E-06	6.58E-03	6.63E-02	-2.36E-01
Radioactive waste disposed	kg	1.56E-03	2.66E-07	2.76E-07	3.48E-01	0.00E+00	3.51E-08	7.16E-06	2.08E-07	-5.27E-04

OUTPUT FLOW INDICATORS

		RESULTS PER DECLARED UNIT								
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	5.92E-02	0.00E+00	7.51E-03	0.00E+00	0.00E+00	0.00E+00	1.08E-01	0.00E+00	0.00E+00
Materials for energy reco-very	kg	0.00E+00	0.00E+00	6.07E-02	0.00E+00	0.00E+00	0.00E+00	3.17E-02	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 ener-gy. 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

Results of the Environmental *performance indicators*

ADDITIONAL LCA RESULTS

Results for additional scenarios for End-of-Life modules.
Mandatory impact category indicators according to EN 15804 + A2 (based on EF 3.1)

		100% RECYCLING				100% INCINERATION				100% LANDFILL			
INDICATOR	**Unit**	**C2**	**C3**	**C4**	**D**	**C2**	**C3**	**C4**	**D**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	1.97E-03	1.34E+00	0.00E+00	-4.24E+00	3.19E-03	2.03E-01	0.00E+00	-4.65E-01	1.97E-03	0.00E+00	4.49E-03	-3.54E-01
GWP-biogenic	kg CO_2 eq.	1.02E-05	9.58E-03	0.00E+00	-4.55E-01	1.66E-05	-1.08E-04	0.00E+00	-3.26E-01	1.02E-05	0.00E+00	-4.93E-05	-3.26E-01
GWP-luluc	kg CO_2 eq.	2.10E-05	5.26E-04	0.00E+00	-4.60E-03	3.41E-05	1.58E-05	0.00E+00	2.16E-05	2.10E-05	0.00E+00	1.21E-05	1.56E-04
GWP-total	kg CO_2 eq.	2.00E-03	1.35E+00	0.00E+00	-4.70E+00	3.25E-03	2.03E-01	0.00E+00	-7.91E-01	2.00E-03	0.00E+00	4.45E-03	-6.80E-01
GWP-GHG	kg CO_2 eq.	1.99E-03	1.34E+00	0.00E+00	-4.25E+00	3.23E-03	2.03E-01	0.00E+00	-4.65E-01	1.99E-03	0.00E+00	4.50E-03	-3.54E-01
ODP	kg CFC 11 eq.	2.40E-16	2.94E-12	0.00E+00	-7.00E-11	3.90E-16	-2.71E-13	0.00E+00	-1.84E-12	2.40E-16	0.00E+00	1.33E-14	-9.22E-13
AP	mol H+ eq.	3.19E-06	8.37E-04	0.00E+00	-4.14E-02	5.18E-06	6.67E-05	0.00E+00	-3.66E-04	3.19E-06	0.00E+00	2.93E-05	-2.45E-04
EP-freshwater	kg P eq.	5.50E-09	4.17E-07	0.00E+00	-2.49E-06	8.93E-09	-6.78E-10	0.00E+00	-2.55E-07	5.50E-09	0.00E+00	2.01E-07	-1.65E-07
EP-marine	kg N eq.	1.30E-06	3.09E-04	0.00E+00	-3.74E-03	2.11E-06	2.68E-05	0.00E+00	-1.13E-04	1.30E-06	0.00E+00	7.22E-06	-7.72E-05
EP-terrestrial	mol N eq.	1.38E-05	3.81E-03	0.00E+00	-4.06E-02	2.25E-05	3.56E-04	0.00E+00	-1.07E-03	1.38E-05	0.00E+00	7.89E-05	-6.68E-04
POCP	kg NMVOC eq.	2.75E-06	7.95E-04	0.00E+00	-1.21E-02	4.47E-06	7.07E-05	0.00E+00	-4.49E-04	2.75E-06	0.00E+00	2.22E-05	-3.50E-04
ADP-minerals&metals*	kg Sb eq.	1.35E-10	3.03E-08	0.00E+00	-1.19E-03	2.19E-10	-1.89E-09	0.00E+00	-8.97E-08	1.35E-10	0.00E+00	3.59E-10	-7.97E-08
ADP-fossil*	MJ	2.59E-02	3.07E+00	0.00E+00	-5.39E+01	4.21E-02	2.61E-01	0.00E+00	-1.05E+01	2.59E-02	0.00E+00	6.90E-02	-8.59E+00
WDP*	m^3	8.15E-06	2.24E-01	0.00E+00	-7.45E-01	1.32E-05	3.85E-02	0.00E+00	-1.47E-02	8.15E-06	0.00E+00	5.18E-04	-4.48E-03

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 Environmental *information*

SCALING FACTORS FOR OTHER VARIANTS

The different variants for CENO luminaires are very similar but show some differences in their construction or dimensions. Those differences have been accounted for in the LCA. The results of the environmental performance indicators above can be scaled to the corresponding variants with the following conversion factors. The scaling factors were determined using the GWP-GHG indicator and are only valid for this indicator.

VARIANT	DRIVER USED	SYSTEM POWER [W]	A1 – A3	A4	A5	B6	C1 – C4	D
CENO SEMI RECESSED 1.0	6W	8.00	0.77	0.87	1.00	1.00	0.80	0.98
	10W dim	8.33	1.00	1.00	1.00	1.04	1.00	1.00
	10W phase-cut dim	8.00	1.00	1.00	1.00	1.00	1.00	1.00
	10W phase-cut dim	8.00	0.95	0.97	1.00	1.00	0.96	1.00
	14W DALI	7.06	0.95	0.97	1.00	0.88	0.96	1.00
	17W DALI	6.90	1.09	1.05	1.00	0.86	1.08	1.01
CENO 1.0	6W	8.00	0.77	0.87	1.00	1.00	0.80	0.98
	10W dim	8.33	1.00	1.00	1.00	1.04	1.00	1.00
	10W phase-cut dim	8.00	1.00	1.00	1.00	1.00	1.00	1.00
	10W phase-cut dim	8.00	0.95	0.97	1.00	1.00	0.96	1.00
	14W DALI	7.06	0.95	0.97	1.00	0.88	0.96	1.00
	17W DALI	6.90	1.09	1.05	1.00	0.86	1.08	1.01
CENO 1.1	6W	8.00	1.18	1.19	2.26	1.00	0.79	1.82
	10W dim	8.33	1.42	1.32	2.26	1.04	0.99	1.84
	10W phase-cut dim	8.00	1.42	1.32	2.26	1.00	0.99	1.84
	10W phase-cut dim	8.00	1.37	1.29	2.26	1.00	0.95	1.84
	14W DALI	7.06	1.37	1.29	2.26	0.88	0.95	1.84
	17W DALI	6.90	1.51	1.37	2.26	0.86	1.07	1.85
CENO 2.0	15W phase-cut dim	14.81	1.86	1.79	2.52	1.85	1.52	2.42
	28W DALI	13.79	2.09	1.77	2.52	1.72	1.48	2.41
	28W DALI	13.79	2.47	2.10	2.52	1.72	2.00	2.47
CENO 3.0	20W phase-cut dim	21.43	2.80	2.73	3.93	2.68	2.28	3.64
	28W DALI	20.69	2.89	2.70	3.93	2.59	2.24	3.64
	28W DALI	20.69	3.27	3.04	3.93	2.59	2.76	3.70
CENO SURFACE 1.0	6W phase-cut dim	13.24	1.23	1.25	2.25	1.65	0.83	1.75
CENO SURFACE 2.0	12W phase-cut dim	17.95	2.20	2.46	4.51	2.24	1.61	3.14
CENO SURFACE 4.0	12W phase-cut dim	38.46	4.68	5.30	9.60	4.81	3.49	6.68
CENO SURFACE 4.1	15W phase-cut dim	37.50	3.71	3.70	4.38	4.69	3.11	5.29
CENO SURFACE 6.0	12W phase-cut dim	52.56	7.33	8.36	15.86	6.57	5.31	10.46

The maximum variation of 737% between the different versions in the A1–A3 results is mainly driven by differences in product configuration, total weight, and driver mass. The product CENO CEILING SURFACE 6.0, which consists of a cluster of six luminaires, has a total product weight that is 5.95 times higher and a driver weight that is 1.98 times higher than the reference product. This leads to a significant increase in material-related impacts and consequently results in considerable variation in resource use and emissions. The observed differences are therefore consistent with the variability expected within a product family and are reported in accordance with ISO 14025 requirements.

Additional Environmental *information*

RESULTS FOR 1000 LUMENS DURING A REFERENCE LIFE OF 35000 HOURS (AS PER REFERENCE OF PEP-ECO PASSPORT PSR-0014-ED2.0-EN-2023 07 13).

A conversion factor can be used for converting the results to 1000 lumens during a reference life of 35000 hours.

VARIANT	DRIVER USED	CCT	lm/W	A1–A3	A4	A5	B6	C1–C4	D
CENO SEMI RECESSED 1.0	6W	2700K	63	2.00	2.00	2.00	0.00	2.00	2.00
	6W	3000K	66	1.89	1.89	1.89	0.00	1.89	1.89
	10W dim	2700K	60	2.00	2.00	2.00	0.00	2.00	2.00
	10W dim	3000K	64	1.89	1.89	1.89	0.00	1.89	1.89
	10W phase-cut dim	2700K	63	2.00	2.00	2.00	0.00	2.00	2.00
	10W phase-cut dim	3000K	66	1.89	1.89	1.89	0.00	1.89	1.89
	10W phase-cut dim	2700K	63	2.00	2.00	2.00	0.00	2.00	2.00
	10W phase-cut dim	3000K	66	1.89	1.89	1.89	0.00	1.89	1.89
	14W DALI	2700K	71	2.00	2.00	2.00	0.00	2.00	2.00
	14W DALI	3000K	75	1.89	1.89	1.89	0.00	1.89	1.89
	17W DALI	2700K	73	2.00	2.00	2.00	0.00	2.00	2.00
	17W DALI	3000K	77	1.89	1.89	1.89	0.00	1.89	1.89
CENO 1.0	6W	2700K	63	2.00	2.00	2.00	0.00	2.00	2.00
	6W	3000K	66	1.89	1.89	1.89	0.00	1.89	1.89
	10W dim	2700K	60	2.00	2.00	2.00	0.00	2.00	2.00
	10W dim	3000K	64	1.89	1.89	1.89	0.00	1.89	1.89
	10W phase-cut dim	2700K	63	2.00	2.00	2.00	0.00	2.00	2.00
	10W phase-cut dim	3000K	66	1.89	1.89	1.89	0.00	1.89	1.89
	10W phase-cut dim	2700K	63	2.00	2.00	2.00	0.00	2.00	2.00
	10W phase-cut dim	3000K	66	1.89	1.89	1.89	0.00	1.89	1.89
	14W DALI	2700K	71	2.00	2.00	2.00	0.00	2.00	2.00
	14W DALI	3000K	75	1.89	1.89	1.89	0.00	1.89	1.89
	17W DALI	2700K	73	2.00	2.00	2.00	0.00	2.00	2.00
	17W DALI	3000K	77	1.89	1.89	1.89	0.00	1.89	1.89
CENO 1.1	6W	2700K	63	2.00	2.00	2.00	0.00	2.00	2.00
	6W	3000K	66	1.89	1.89	1.89	0.00	1.89	1.89
	10W dim	2700K	60	2.00	2.00	2.00	0.00	2.00	2.00
	10W dim	3000K	64	1.89	1.89	1.89	0.00	1.89	1.89
	10W phase-cut dim	2700K	63	2.00	2.00	2.00	0.00	2.00	2.00
	10W phase-cut dim	3000K	66	1.89	1.89	1.89	0.00	1.89	1.89
	10W phase-cut dim	2700K	63	2.00	2.00	2.00	0.00	2.00	2.00
	10W phase-cut dim	3000K	66	1.89	1.89	1.89	0.00	1.89	1.89
	14W DALI	2700K	71	2.00	2.00	2.00	0.00	2.00	2.00
	14W DALI	3000K	75	1.89	1.89	1.89	0.00	1.89	1.89
	17W DALI	2700K	73	2.00	2.00	2.00	0.00	2.00	2.00
	17W DALI	3000K	77	1.89	1.89	1.89	0.00	1.89	1.89

Additional Environmental *information*

CENO 2.0	15W dim	2700 K	68	1.00	1.00	1.00	0.00	1.00	1.00
	15W dim	3000 K	72	0.94	0.94	0.94	0.00	0.94	0.94
	28W DALI	2700 K	73	1.00	1.00	1.00	0.00	1.00	1.00
	28W DALI	3000 K	77	0.94	0.94	0.94	0.00	0.94	0.94
	28W DALI	2700 K	73	1.00	1.00	1.00	0.00	1.00	1.00
	28W DALI	3000 K	77	0.94	0.94	0.94	0.00	0.94	0.94
CENO 3.0	20W dim	2700 K	70	0.66	0.66	0.66	0.00	0.66	0.66
	20W dim	3000 K	74	0.63	0.63	0.63	0.00	0.63	0.63
	28W DALI	2700 K	73	0.66	0.66	0.66	0.00	0.66	0.66
	28W DALI	3000 K	76	0.63	0.63	0.63	0.00	0.63	0.63
	28W DALI	2700 K	73	0.66	0.66	0.66	0.00	0.66	0.66
	28W DALI	3000 K	76	0.63	0.63	0.63	0.00	0.63	0.63
CENO SURFACE 1.0	6W phase-cut dim	2700 K	39	1.92	1.92	1.92	0.00	1.92	1.92
	6W phase-cut dim	3000 K	41	1.85	1.85	1.85	0.00	1.85	1.85
CENO SURFACE 2.0	12W phase-cut dim	2700 K	54	1.04	1.04	1.04	0.00	1.04	1.04
	12W phase-cut dim	3000 K	59	0.95	0.95	0.95	0.00	0.95	0.95
CENO SURFACE 4.0	12W phase-cut dim	2700 K	53	0.49	0.49	0.49	0.00	0.49	0.49
	12W phase-cut dim	3000 K	55	0.47	0.47	0.47	0.00	0.47	0.47
CENO SURFACE 4.1	15W phase-cut dim	2700 K	54	0.49	0.49	0.49	0.00	0.49	0.49
	15W phase-cut dim	3000 K	57	0.47	0.47	0.47	0.00	0.47	0.47
CENO SURFACE 6.0	12W phase-cut dim	2700 K	55	0.35	0.35	0.35	0.00	0.35	0.35
	12W phase-cut dim	3000 K	60	0.32	0.32	0.32	0.00	0.32	0.32

INFORMATION RELATED TO THE SECTORIAL EPD
This EPD is not sectoral.

VERSION HISTORY
This is the first version of the EPD.

Abbreviations

ADPE – Abiotic depletion potential non-fossil resources
ADPF – Abiotic depletion potential fossil resources
AP – Acidification potential, accumulated exceedance
AUT – Austria
CB – Certification Body
CRU – Components for re-use
d/i – direct / indirect
DALI – Digital Adressable Lighting Interface
EEE – Exported electrical energy
EET – Exported thermal energy
EPD – Environmental Product Declaration
EP-freshwater – Eutrophication potential freshwater
EP-marine – Eutrophication potential marine
EP-terrestrial – Eutrophication potential terrestrial
ETP-fw – Eco toxicity freshwater
FW – Net use of fresh water
GLO – Global
GWP-biogenic – Global warming potential biogenic
GWP-fossil – Global warming potential fossil fuels
GWP-GHG – Global warming potential
GWP-luluc – Global warming potential land use and land use change
GWP-total – Global warming potential total
HTTP-c – Human toxicity, cancer effect
HTTP-nc – Human toxicity, non-cancer effects
HWD – Hazardous waste disposed
IRP – Ionizing radiation, human health
LCA – Life Cycle Assessment
MER – Materials for energy recovery
MFR – Materials for recycling
NHWD – Non–harzardous waste disposed
NRSF – Use of non–renewable secondary fuels
ODP – Depletion potential of the stratospheric ozone layer
PCR – Product Category Rules
PENRE – Use of non renewable primary energy as energy carrier
PENRM – Use of non renewable primary energy resources used as raw materials
PENRT – Total use of non renewable primary energy resource
PERE – Use of renewable primary energy as energy carrier
PERM – Use of renewable primary energy resources used as raw materials
PERT – Total use of renewable primary energy
PM – Particulate matter emissions
PMMA – Polymethylmetacrylate
POCP – Photochemical ozone creation potential
PSR – Product Specific Rules
RE – Renewable Energy
RSF – Use of renewable secondary fuels
RWD – Radioactive waste disposed
SLO – Slovenia
SM – Use of secondary material
SQP – Land use related impacts/Soil quality
UN CPC – United Nations Central Product Classification
WDP – Water (user) deprivation potential

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