



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

EPD HUB, HUB-3086

Published on 21.03.2025, last updated on 25.03.2025, valid until 20.03.2030

Urbino LED

LUG Light Factory sp. z o. o.



MANUFACTURER AND SITE

Manufacturer	LUG Light Factory sp. z o. o.
Address	ul. Gorzowska 11, 65-127, Zielona Góra, Poland
Contact details	lug@lug.com.pl
Website	www.lug.com.pl/en
Place of production	ul. Gorzowska 11, 65-127, Zielona Góra, Poland
Period for data	2023

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2 and ISO 14025
PCR	EPD Hub Core PCR version 1.1, 5 Dec 2023
Sector	Electrical product
Category of EPD	Third party verified EPD
Parent EPD number	
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Bartosz Brodecki
EPD verification	Independent verification of this EPD and data, marg ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Abderazak Guiz, as an authorized verifier acting for EPD Hub Limited.

PRODUCT SPECIFICATION

Product name	Urbino LED
Product number / reference	130222.5L101.081

PRODUCT CLASSIFICATION

Declared operating voltage, Volt	220 - 240
Light source color temperature, Kelvin	4000
Protection index for water and dust (IP)	66
Impact resistance index (IK)	9
Luminous flux, Lumen	13200
Electrical power, Watt	102
Luminous efficiency, Lm/W	129
Additional characteristic	For more detailed specs. Please visit our website. https://www.lug.com.pl/pl/oswietlenie-led/oswietlenie-infrastrukturalne/urbino/urbino-led

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

ABOUT THE MANUFACTURER

LUG LIGHT Factory is a leading lighting manufacturer with over 35 years of experience in the industry. Our company specializes in designing, manufacturing, and distributing innovative lighting solutions for various sectors, from industrial to commercial and urban spaces.

LUG LIGHT Factory is a service provider, offering product customization services. By utilizing knowledge and experience of our employees, we are able to satisfy partners' expectations. On top of that, we support our partners with highest quality lighting consulting services from concept to supervision of implementation.

LUG LIGHT Factory is a business partner that prioritizes innovation, quality, and customer satisfaction. With our passion for light and commitment to continuous development, we are ready to meet even the most demanding lighting challenges

Our Mission and Values:

LUG Light Factory is a family-run business. In our company we nurture family values and use them as a compass to guide our business decisions. These values are: Trust, Innovation, Partnership, Responsibility, Sustainability. Our operating philosophy is reflected in our mission:

"Through light, we create a sustainable environment for living and developing for a better tomorrow.

We have always been committed to delivering the highest quality lighting that not only meets but exceeds our customers' expectations. We want to offer positive social and environmental value to our Partners by supporting them in generating significant savings and reducing greenhouse gas emissions.

Together with all the company's Stakeholders, we are creating an efficient ecosystem of collaboration, which allows us to reach for the largest and most prestigious projects more efficiently than ever.

History and Development:

Founded in 1989, our company has steadily grown to become one of the most renowned lighting manufacturers in the international market. Since 2008, LUG Light Factory is a subsidiary of LUG S.A. Capital Group, entity listed on NewConnect, an alternative stock exchange run by the Warsaw Stock Exchange. Our two manufacturing facilities and headquarters are located in Zielona Góra. Over the past 10 years, we have developed a strong foundation in electronic production, allowing us to integrate cutting-edge technology into our lighting solutions seamlessly. Additionally, we have established several branches and show-rooms to effectively serve customers worldwide. As a result, we are present in around 70 markets worldwide, delivering the most demanding projects.

Certifications and Competencies:

As a lighting company, we prioritize the highest standards of product quality. Our laboratories are equipped with state-of-the-art equipment, and our employees possess high competencies and experience in the field of lighting design and production. We hold a range of certifications confirming the compliance of our products with safety and quality standards, demonstrating our professionalism and commitment to delivering top-quality products.

Among the others, we hold below mentioned certificates:

ISO 45001:2018 Occupational Health and Safety Management System
ISO 9001:2015 Certificate of the Quality Management System
ISO 50001:2018 Energy Management System certificate
ISO 14001:2015 Environmental Management System certificate

ISO 17025:2018 Certificate of recognition allowing our laboratory to perform photometric, thermal, leakage, calorimetric and electrical tests

Social and Environmental Initiatives:

In LUG Light Factory we conduct our business in a sustainable way. We are aware of our environmental and social impact, both through operations and products. In day-to-day activities we aim to reduce our GHG emissions as well as apply rules of circular economy. Our adherence to principles of sustainable development is embodied in our products. By employing LED technology in luminaires, we provide our partners with energy-efficient lighting solutions, enabling them to reduce their GHG emissions and energy costs up to 60%. Further 20% efficiency is achieved by using our URBAN system, a smart – city Lighting Management System, designed and developed to monitor and manage infrastructure lighting and the sensors connected to it in a network with a MESH topology.

All products offered by our company are manufactured in compliance with The Ecodesign Directive and RoHS Directive. The foundation of LUG's daily actions is the Sustainable Development Strategy, which guides our approach to environmental, social and governance matters. Furthermore, we support local communities through various charitable and educational initiatives, promoting environmental awareness and the development of local talents.

To learn more about our adherence to sustainable development, please check our recent Sustainability Report, available at www.ri.lug.com.pl or contact us: bzik@lug.com.pl.

PRODUCT DESCRIPTION

The two-chamber technical luminaire is made from high-pressure injected and powder-coated aluminum. It is a modern and functionally optimized part of the LUG infrastructure luminaire portfolio, designed to meet various power and flux requirements. The street luminaire features a contemporary design and is equipped with an optimized light source, making it an environmentally responsible choice.

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass, kg	7,11
Mass of packaging, kg	0,72
Functional unit	-
Reference service life (years)	25
Assigned lifetime (hours)	100000
GWP-total, A1-A3 (kg CO ₂ e)	3,03E+01
GWP-fossil, A1-A3 (kg CO ₂ e)	3,12E+01
Secondary material, inputs (%)	8,51
Secondary material, outputs (%)	59,07
Total energy use, A1-A3 (kWh)	135
Net freshwater use, A1-A3 (m ³)	1,05E+00

LIFE CYCLE ASSESSMENT

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Beyond the system boundaries		D	Reuse, Recovery, Recycling
End of life stage	C4	X	Disposal
	C3	X	Waste processing
	C2	X	Transport
	C1	X	Deconstr./demo.
	B7	X	Operational water use
Use stage	B6	X	Operational energy use
	B5	X	Refurbishment
	B4	X	Replacement
	B3	X	Repair
	B2	X	Maintenance
Assembly stage	B1	X	Use
	A5	X	Assembly
	A4	X	Transport
Product stage	A3	X	Manufacturing
	A2	X	Transport
	A1	X	Raw materials

Modules not declared = MND.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. There is no neglected unit process more than 1% of total mass or energy flows. The module-specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	Allocated by mass
Manufacturing energy and waste	Allocated by mass

AVERAGES AND VARIABILITY

This EPD is product and factory-specific and does not contain average calculations.

LCA SOFTWARE AND BIBLIOGRAPHY

The LCA and EPD have been prepared according to the reference standards, EN 50693, and ISO 14040/14044. Ecoinvent v3.10 and One Click LCA databases were used as sources of environmental data.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	75	EU
Minerals	9	EU
Fossil materials	1	EU
Bio-based materials	0	N/A
Electronic parts	15	EU

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,297

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE CYCLE

MANUFACTURING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production. The material losses occurring during the manufacturing processes are treated as per the waste handling practices in the factory, while scenario assumptions are made in the absence of exact data. The study also considers the fuels used by machines as well as losses during electricity transmission.

The product is made of metals, plastics, and electronic components. All components are transported to the production facility, where the main manufacturing processes are associated with assembly of different parts and components. The finished product is packaged with polyethylene, cardboard, and/or paper as packaging material before being sent to customers.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation distances from manufacturing sites to customer locations are based on sales volume-based weighted averages. In the absence of exact data, conservative assumptions are made (A4). Environmental impacts from installation include waste packaging materials (A5). The impacts of energy consumption and the used ancillary materials during installation are considered negligible.

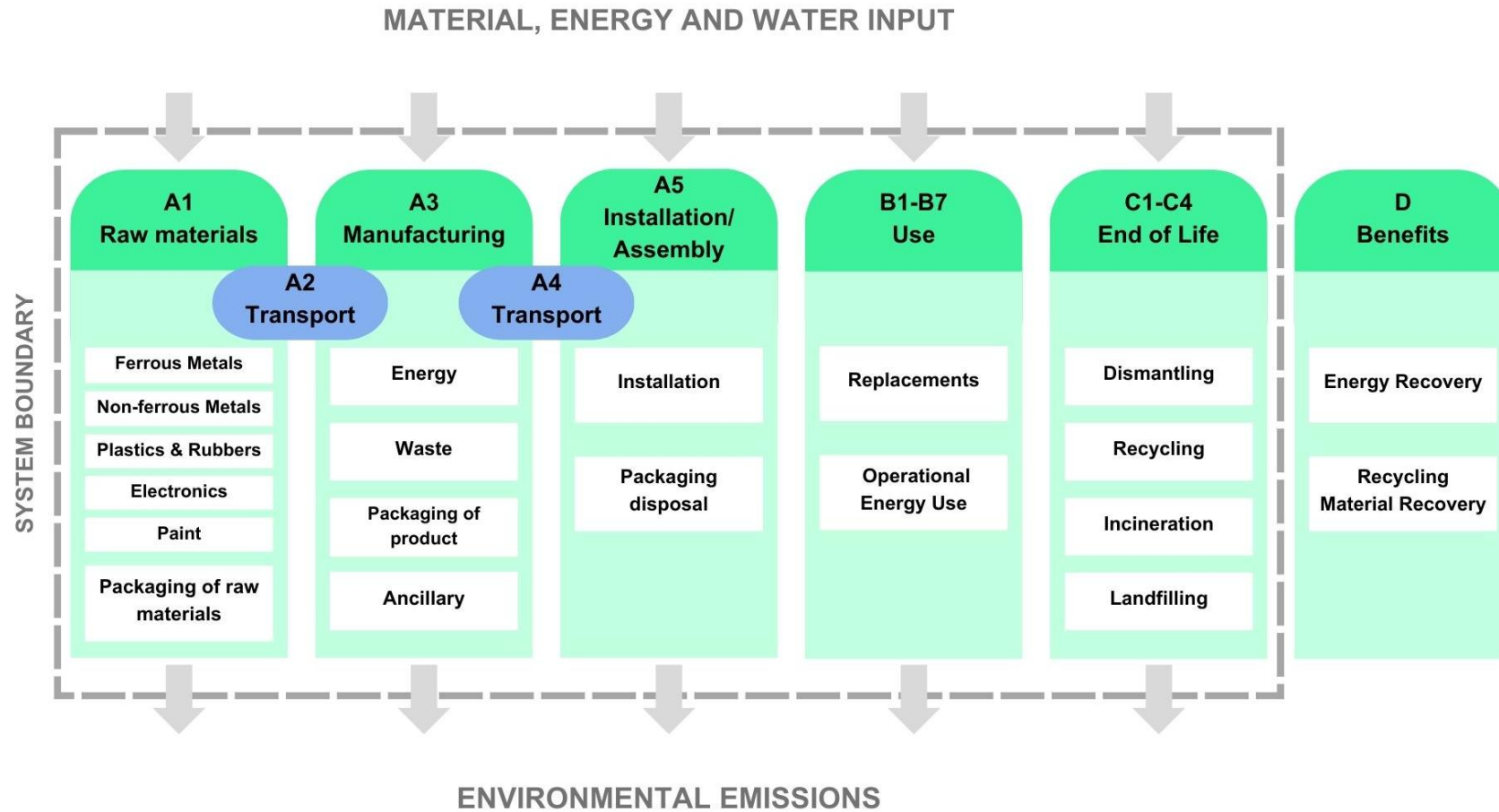
PRODUCT USE AND MAINTENANCE (B1-B7)

During the use phase, the product consumes electricity (B6). Impacts due to electricity production include direct emissions to air, transformation, and transmission losses.

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. It is assumed that the waste is collected separately and transported to the waste treatment centre. The transport distance is 150 km while the transportation method is assumed to be lorry (C2). According to EN 50693:2019, the sequence of treatment operations occurring to the product shall include de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery and disposal. In this study, the default values from table G.4 of EN 50693 is used for treating materials in different waste treatment methods. Due to the material and energy recovery potential of parts in the lighting system, the end-of-life product is converted into recycled raw materials, while the energy recovered from incineration displaces electricity and heat production (D). The benefits and loads of incineration and recycling are included in Module D.

LIFE CYCLE FLOW DIAGRAM



ENVIRONMENTAL IMPACT DATA, RESULTS PER DECLARED UNIT

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	2,18E+01	1,50E+00	6,99E+00	3,03E+01	1,89E+00	1,13E+00	MNR	MNR	MNR	0,00E+00	MNR	7,18E+03	MNR	0,00E+00	6,36E-02	2,39E-01	5,83E-01	3,24E-01
GWP – fossil	kg CO ₂ e	2,17E+01	1,50E+00	8,05E+00	3,12E+01	1,89E+00	4,00E-02	MNR	MNR	MNR	0,00E+00	MNR	7,18E+03	MNR	0,00E+00	6,36E-02	2,38E-01	5,83E-01	3,27E-01
GWP – biogenic	kg CO ₂ e	8,28E-06	0,00E+00	-1,09E+00	-1,09E+00	0,00E+00	1,09E+00	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	MNR	0,00E+00	1,28E-08	-1,41E-07	-1,02E-07	-5,23E-06
GWP – LULUC	kg CO ₂ e	1,20E-01	8,30E-04	3,13E-02	1,52E-01	3,46E-04	2,11E-05	MNR	MNR	MNR	0,00E+00	MNR	3,94E-01	MNR	0,00E+00	2,82E-05	1,18E-04	2,20E-05	-3,83E-03
Ozone depletion pot.	kg CFC ₁₁ e	4,62E-07	2,62E-08	1,46E-07	6,34E-07	3,10E-08	4,26E-10	MNR	MNR	MNR	0,00E+00	MNR	3,29E-04	MNR	0,00E+00	8,90E-10	6,21E-10	3,52E-10	-1,04E-08
Acidification potential	mol H ⁺ e	1,85E-01	8,84E-03	3,88E-02	2,33E-01	1,23E-02	1,55E-04	MNR	MNR	MNR	0,00E+00	MNR	5,66E+01	MNR	0,00E+00	2,12E-04	5,23E-04	1,47E-04	-1,96E-01
EP-freshwater ²⁾	kg Pe	9,02E-03	1,83E-04	2,56E-03	1,18E-02	5,12E-05	5,97E-06	MNR	MNR	MNR	0,00E+00	MNR	2,33E+00	MNR	0,00E+00	4,95E-06	3,34E-05	3,64E-06	-1,08E-02
EP-marine	kg Ne	2,03E-02	3,25E-03	7,98E-03	3,15E-02	4,08E-03	1,42E-04	MNR	MNR	MNR	0,00E+00	MNR	8,20E+00	MNR	0,00E+00	6,87E-05	1,21E-04	1,64E-04	-5,38E-03
EP-terrestrial	mol Ne	1,93E-01	3,56E-02	7,60E-02	3,04E-01	4,48E-02	4,91E-04	MNR	MNR	MNR	0,00E+00	MNR	9,89E+01	MNR	0,00E+00	7,48E-04	1,28E-03	6,59E-04	-8,98E-02
POCP (“smog”) ³⁾	kg NMVOCe	7,33E-02	1,23E-02	2,54E-02	1,11E-01	1,41E-02	1,97E-04	MNR	MNR	MNR	0,00E+00	MNR	2,47E+01	MNR	0,00E+00	2,95E-04	3,63E-04	1,96E-04	-2,68E-02
ADP-minerals & metals ⁴⁾	kg Sbe	4,73E-03	9,80E-06	1,48E-05	4,76E-03	1,61E-06	2,15E-07	MNR	MNR	MNR	0,00E+00	MNR	1,51E-02	MNR	0,00E+00	2,09E-07	1,67E-06	5,61E-08	-3,51E-03
ADP-fossil resources	MJ	3,13E+02	2,04E+01	1,02E+02	4,36E+02	2,54E+01	4,36E-01	MNR	MNR	MNR	0,00E+00	MNR	9,36E+04	MNR	0,00E+00	8,92E-01	8,85E-01	3,02E-01	-1,82E+00
Water use ⁵⁾	m ³ e depr.	3,00E+02	1,42E-01	7,16E-01	3,01E+02	6,04E-02	9,64E-03	MNR	MNR	MNR	0,00E+00	MNR	3,36E+03	MNR	0,00E+00	4,14E-03	2,65E-02	1,41E-02	-1,35E+00

1) GWP = Global Warming Potential. 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e. 3) POCP = Photochemical ozone formation. 4) ADP = Abiotic depletion potential. 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. 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 experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	2,13E-06	1,53E-07	1,95E-07	2,48E-06	6,03E-08	2,54E-09	MNR	MNR	MNR	0,00E+00	MNR	9,99E-05	MNR	0,00E+00	5,05E-09	5,79E-09	2,52E-09	-2,70E-07
Ionizing radiation ⁶⁾	kBq U235e	3,42E+00	4,87E-02	1,68E-01	3,64E+00	1,29E-02	1,67E-03	MNR	MNR	MNR	0,00E+00	MNR	4,67E+02	MNR	0,00E+00	7,22E-04	6,88E-03	3,49E-04	-1,20E-01
Ecotoxicity (freshwater)	CTUe	2,78E+02	3,21E+00	1,85E+01	2,99E+02	1,65E+00	3,06E+00	MNR	MNR	MNR	0,00E+00	MNR	6,41E+04	MNR	0,00E+00	1,41E-01	6,42E-01	1,42E+01	-1,90E+02
Human toxicity, cancer	CTUh	3,90E-08	1,37E-09	2,65E-09	4,30E-08	1,88E-10	2,03E-11	MNR	MNR	MNR	0,00E+00	MNR	7,80E-07	MNR	0,00E+00	1,08E-11	4,76E-11	6,69E-10	-2,95E-08
Human tox. non-cancer	CTUh	5,83E-07	1,19E-08	6,50E-08	6,60E-07	1,75E-08	1,10E-09	MNR	MNR	MNR	0,00E+00	MNR	3,59E-05	MNR	0,00E+00	5,59E-10	3,01E-09	4,98E-09	-3,13E-06
SQP ⁷⁾	-	9,54E+01	9,34E+00	4,39E+01	1,49E+02	7,55E+00	2,93E-01	MNR	MNR	MNR	0,00E+00	MNR	7,83E+03	MNR	0,00E+00	5,33E-01	6,85E-01	4,60E-01	-8,24E+01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on the 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. 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	5,39E+01	6,35E-01	-8,58E+00	4,60E+01	1,75E-01	-1,18E+01	MNR	MNR	MNR	0,00E+00	MNR	1,27E+04	MNR	0,00E+00	1,22E-02	1,24E-01	6,37E-03	-5,69E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	9,31E+00	9,31E+00	0,00E+00	-9,31E+00	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	5,39E+01	6,35E-01	7,37E-01	5,53E+01	1,75E-01	-2,11E+01	MNR	MNR	MNR	0,00E+00	MNR	1,27E+04	MNR	0,00E+00	1,22E-02	1,24E-01	6,37E-03	-5,69E+00
Non-re. PER as energy	MJ	3,22E+02	2,04E+01	9,76E+01	4,40E+02	2,54E+01	4,36E-01	MNR	MNR	MNR	0,00E+00	MNR	9,36E+04	MNR	0,00E+00	8,92E-01	-1,72E+00	-4,79E+00	-1,81E+00
Non-re. PER as material	MJ	1,53E+01	0,00E+00	3,05E-02	1,53E+01	0,00E+00	-3,05E-02	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	MNR	0,00E+00	0,00E+00	-5,22E+00	-9,96E+00	0,00E+00
Total use of non-re. PER	MJ	3,37E+02	2,04E+01	9,76E+01	4,55E+02	2,54E+01	4,06E-01	MNR	MNR	MNR	0,00E+00	MNR	9,36E+04	MNR	0,00E+00	8,92E-01	-6,94E+00	-1,48E+01	-1,81E+00
Secondary materials	kg	6,05E-01	0,00E+00	0,00E+00	6,05E-01	0,00E+00	0,00E+00	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renew. secondary fuels	MJ	5,81E-02	9,77E-05	6,70E-02	1,25E-01	4,32E-05	3,54E-06	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	MNR	0,00E+00	5,11E-06	4,00E-05	4,51E-06	-6,05E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	8,73E-01	3,67E-03	1,73E-01	1,05E+00	1,82E-03	-6,45E-05	MNR	MNR	MNR	0,00E+00	MNR	2,74E+01	MNR	0,00E+00	1,18E-04	5,39E-04	-3,36E-04	-7,67E-02

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,95E+00	5,14E-02	8,56E-01	3,86E+00	1,84E-02	3,31E-03	MNR	MNR	MNR	0,00E+00	MNR	2,80E+02	MNR	0,00E+00	1,56E-03	9,10E-03	1,65E-01	-5,00E-01
Non-hazardous waste	kg	1,11E+02	1,06E+00	1,63E+01	1,29E+02	3,34E-01	4,66E-01	MNR	MNR	MNR	0,00E+00	MNR	1,21E+04	MNR	0,00E+00	2,92E-02	3,45E-01	1,82E+00	-7,34E+01
Radioactive waste	kg	1,19E-03	1,23E-05	4,22E-05	1,25E-03	3,17E-06	4,25E-07	MNR	MNR	MNR	0,00E+00	MNR	1,99E-01	MNR	0,00E+00	1,77E-07	1,68E-06	8,60E-08	-3,40E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for reuse	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	2,51E-07	0,00E+00	5,83E-01	5,83E-01	0,00E+00	5,95E-01	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	MNR	0,00E+00	0,00E+00	4,20E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	1,80E-15	0,00E+00	0,00E+00	1,80E-15	0,00E+00	0,00E+00	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	2,34E-01	2,34E-01	0,00E+00	3,35E-01	MNR	MNR	MNR	0,00E+00	MNR	0,00E+00	MNR	0,00E+00	0,00E+00	8,16E-01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	2,19E+01	1,49E+00	8,05E+00	3,14E+01	1,88E+00	1,33E-01	MNR	MNR	MNR	0,00E+00	MNR	7,10E+03	MNR	0,00E+00	6,33E-02	2,38E-01	5,82E-01	3,15E-01
Ozone depletion Pot.	kg CFC ₁₁ e	4,14E-07	2,09E-08	1,19E-07	5,53E-07	2,45E-08	3,47E-10	MNR	MNR	MNR	0,00E+00	MNR	2,58E-04	MNR	0,00E+00	7,11E-10	5,26E-10	2,86E-10	-8,04E-09
Acidification	kg SO ₂ e	1,61E-01	6,59E-03	3,21E-02	2,00E-01	9,42E-03	1,19E-04	MNR	MNR	MNR	0,00E+00	MNR	4,80E+01	MNR	0,00E+00	1,62E-04	4,22E-04	1,06E-04	-1,74E-01
Eutrophication	kg PO ₄ ³ e	3,29E-02	1,58E-03	4,73E-03	3,92E-02	1,56E-03	1,08E-04	MNR	MNR	MNR	0,00E+00	MNR	1,11E+01	MNR	0,00E+00	3,95E-05	6,54E-05	4,64E-05	-5,88E-03
POCP (“smog”)	kg C ₂ H ₄ e	1,20E-02	7,21E-04	2,09E-03	1,49E-02	6,07E-04	3,14E-05	MNR	MNR	MNR	0,00E+00	MNR	1,67E+00	MNR	0,00E+00	1,45E-05	2,45E-05	9,72E-06	-6,79E-03
ADP-elements	kg Sbe	4,73E-03	9,71E-06	1,46E-05	4,75E-03	1,57E-06	2,11E-07	MNR	MNR	MNR	0,00E+00	MNR	1,51E-02	MNR	0,00E+00	2,04E-07	1,66E-06	4,91E-08	-3,51E-03
ADP-fossil	MJ	2,69E+02	1,96E+01	9,95E+01	3,88E+02	2,52E+01	4,08E-01	MNR	MNR	MNR	0,00E+00	MNR	9,36E+04	MNR	0,00E+00	8,81E-01	7,75E-01	2,96E-01	-1,08E-01

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier and has been generated using an end-to-end verified tool.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification. EPD Hub confirms that it possesses sufficient knowledge and experience in construction products and the relevant standards to carry the verification.

Abderazak Guiz, as an authorized verifier acting for EPD Hub Limited.
21.03.2025



EPD Hub has performed a detailed examination of the end-to-end verified tool and underlying data to ensure that there are no deviations in the studied Environmental Product Declaration (EPD), its Life Cycle Assessment (LCA), and project report. The tool is implemented according to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules version 1.1 and General Program Instructions version 1.2.

Tool verifier: Hai Ha Nguyen & Nemanja Nedic
Tool verification validity: 11 July 2024 - 11 July 2027

EPD Hub has examined the company-specific data for plausibility and consistency. The declaration owner is responsible for ensuring its factual integrity and legal compliance.

APPENDIX 1

SECTION 1

This section represents the scaling calculation methodology for the **B6 module**. The GWP results were scaled from a reference variant of a product family, based on various light management scenarios and power inputs of the luminaires within the same product family.

EQUATION 1.

$$B6^{GWP_{TOTAL}} = E_{el} \cdot 10^{-3} \cdot RSL \cdot CC \cdot X$$

Which:

E_{el} [W] - Energy consumption for the calculated luminaire,

RSL [h] - Reference service life, for URBINO LED $RSL = 100\,000$ [h],

CC [-] - Control coefficient according to the table 1,

$X \left[\frac{kg\ CO_2^{eq}}{kWh} \right]$ - GHG emission factor value for the electricity generation mix,

Important:

In the EPD X is based on percentage share of the total URBINO LED sales market. Value calculated this way is $X = 0,703922 \left[\frac{kg\ CO_2^{eq}}{kWh} \right]$

If needed, more accurate calculation should be done using location based GHG emission factor value for the specific project. Example data of X value for EU countries in 2023 are shown in the table 2 and they are based on European Environment Agency.

TABLE 1.

According to PSR-0014-ed2.0-EN-2023 07 13

Scenario	CC
No control	1,0
Variation or extinction system according to the brightness of day Light	0,75
Variation or extinction system according to the brightness of day Light	0,75
Combination of presence detection function and luminosity function	0,55
Luminaire capable of communicating with an external Light Management System	0,5

TABLE 2.

Source European Environment Agency

<https://www.eea.europa.eu/en/analysis/indicators/greenhouse-gas-emission-intensity-of-1>

Country / Region	GHG emission intensity of electricity generation, country level
-	$\frac{kg\ CO_2^{eq}}{kWh}$
EU-27	2,10E-01
Austria	8,50E-02
Belgium	1,45E-01
Bulgaria	2,81E-01
Croatia	1,34E-01
Cyprus	5,85E-01
Czechia	4,40E-01
Denmark	9,40E-02
Estonia	6,90E-01
Finland	4,00E-02
France	5,00E-02
Germany	3,29E-01
Greece	2,58E-01
Hungary	1,54E-01
Ireland	2,60E-01
Italy	2,25E-01
Latvia	6,70E-02
Lithuania	1,24E-01
Luxembourg	5,60E-02
Malta	3,42E-01
Netherlands	2,63E-01
Poland	6,14E-01
Portugal	1,19E-01
Romania	2,34E-01
Slovakia	8,40E-02
Slovenia	1,76E-01
Spain	1,58E-01
Sweden	8,00E-03

SECTION 2

TABLE 3.

This table presents the non-linearly scaling options caused by different components weight. The reported A1-A3 GWP have been calculated separately. The differences in energy consumption for individual products were calculated in equation 1.

Start of the index	Number of the LED diodes per one lens	Number of the LED diodes	Index extension	Weight	A1	A2	A3	A1-A3
-	-	-	-	kg	kgCO2eq	kgCO2eq	kgCO2eq	kgCO2eq
13022	4in1	12	None	6,34	1,44E+01	8,70E-01	6,29E+00	2,16E+01
			.985	6,44	1,51E+01	9,60E-01	6,33E+00	2,24E+01
			.825	6,37	1,46E+01	9,00E-01	6,30E+00	2,18E+01
			.829	6,51	1,46E+01	8,80E-01	6,44E+00	2,19E+01
			.870, .871, .872	6,39	1,47E+01	9,20E-01	6,30E+00	2,19E+01
			.867	6,77	1,51E+01	9,00E-01	6,65E+00	2,27E+01
		16	None	6,38	1,49E+01	9,10E-01	6,33E+00	2,21E+01
			.985	6,48	1,55E+01	1,00E+00	6,37E+00	2,29E+01
			.825	6,41	1,50E+01	9,40E-01	6,34E+00	2,23E+01
			.829	6,55	1,50E+01	9,20E-01	6,48E+00	2,24E+01
			.870, .871, .872	6,43	1,51E+01	9,60E-01	6,34E+00	2,24E+01
			.867	6,81	1,56E+01	9,40E-01	6,69E+00	2,32E+01
		24	None	6,45	1,57E+01	9,60E-01	6,41E+00	2,30E+01
			.985	6,55	1,63E+01	1,05E+00	6,45E+00	2,38E+01
			.825	6,48	1,58E+01	9,90E-01	6,42E+00	2,32E+01
			.829	6,62	1,58E+01	9,70E-01	6,56E+00	2,33E+01
			.870, .871, .872	6,50	1,59E+01	1,01E+00	6,42E+00	2,34E+01
			.867	6,88	1,64E+01	9,90E-01	6,77E+00	2,41E+01
		36	None	7,05	2,10E+01	1,52E+00	6,93E+00	2,95E+01
			.985	7,15	2,17E+01	1,61E+00	6,97E+00	3,03E+01
			.825	7,08	2,12E+01	1,55E+00	6,94E+00	2,97E+01
			.829	7,22	2,12E+01	1,53E+00	7,08E+00	2,98E+01
			.870, .871, .872	7,10	2,13E+01	1,57E+00	6,94E+00	2,98E+01
			.867	7,48	2,17E+01	1,55E+00	7,29E+00	3,06E+01
		48	None	7,11	2,18E+01	1,57E+00	6,99E+00	3,04E+01
			.985	7,21	2,25E+01	1,66E+00	7,03E+00	3,12E+01
			.825	7,14	2,20E+01	1,60E+00	7,00E+00	3,06E+01
			.829	7,28	2,20E+01	1,58E+00	7,14E+00	3,07E+01
			.870, .871, .872	7,16	2,21E+01	1,62E+00	7,00E+00	3,07E+01
			.867	7,54	2,25E+01	1,60E+00	7,35E+00	3,15E+01

Start of the index	Number of the LED diodes per one lens	Number of the LED diodes	Index extension	Weight	A1	A2	A3	A1-A3
-	-	-	-	kg	kgCO2eq	kgCO2eq	kgCO2eq	kgCO2eq
13022	8in1	24	None	6,46	1,58E+01	9,60E-01	6,41E+00	2,32E+01
			.985	6,56	1,64E+01	1,05E+00	6,45E+00	2,39E+01
			.825	6,50	1,60E+01	9,90E-01	6,42E+00	2,34E+01
			.829	6,63	1,59E+01	9,70E-01	6,56E+00	2,35E+01
			.870, .871, .872	6,51	1,61E+01	1,01E+00	6,42E+00	2,35E+01
			.867	6,90	1,65E+01	9,90E-01	6,77E+00	2,43E+01
		32	None	6,52	1,64E+01	1,01E+00	6,46E+00	2,39E+01
			.985	6,62	1,71E+01	1,10E+00	6,50E+00	2,47E+01
			.825	6,55	1,66E+01	1,04E+00	6,47E+00	2,41E+01
			.829	6,68	1,66E+01	1,02E+00	6,61E+00	2,42E+01
			.870, .871, .872	6,56	1,67E+01	1,06E+00	6,47E+00	2,42E+01
			.867	6,95	1,71E+01	1,04E+00	6,82E+00	2,50E+01
		48	None	6,99	2,09E+01	1,43E+00	6,88E+00	2,92E+01
			.985	7,09	2,16E+01	1,52E+00	6,92E+00	3,00E+01
			.825	7,02	2,11E+01	1,46E+00	6,89E+00	2,94E+01
			.829	7,16	2,11E+01	1,44E+00	7,03E+00	2,95E+01
			.870, .871, .872	7,04	2,12E+01	1,48E+00	6,89E+00	2,96E+01
			.867	7,43	2,16E+01	1,46E+00	7,24E+00	3,03E+01
		72	None	7,14	2,28E+01	1,54E+00	7,01E+00	3,13E+01
			.985	7,24	2,34E+01	1,63E+00	7,05E+00	3,21E+01
			.825	7,17	2,29E+01	1,57E+00	7,02E+00	3,15E+01
			.829	7,31	2,29E+01	1,55E+00	7,16E+00	3,16E+01
			.870, .871, .872	7,19	2,30E+01	1,59E+00	7,02E+00	3,16E+01
			.867	7,57	2,35E+01	1,57E+00	7,37E+00	3,24E+01
		96	None	7,41	2,57E+01	1,76E+00	7,27E+00	3,47E+01
			.985	7,51	2,63E+01	1,85E+00	7,31E+00	3,55E+01
			.825	7,44	2,59E+01	1,79E+00	7,28E+00	3,49E+01
			.829	7,58	2,58E+01	1,77E+00	7,42E+00	3,50E+01
			.870, .871, .872	7,46	2,60E+01	1,81E+00	7,28E+00	3,50E+01
			.867	7,84	2,64E+01	1,79E+00	7,63E+00	3,58E+01