ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	ASSA ABLOY Entrance Systems
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20240095-IBA1-EN
Issue date	28.01.2025
Valid to	27.01.2030

ASSA ABLOY DL6120T teledock

ASSA ABLOY Entrance Systems

Institut Bauen und Umwelt e.V.

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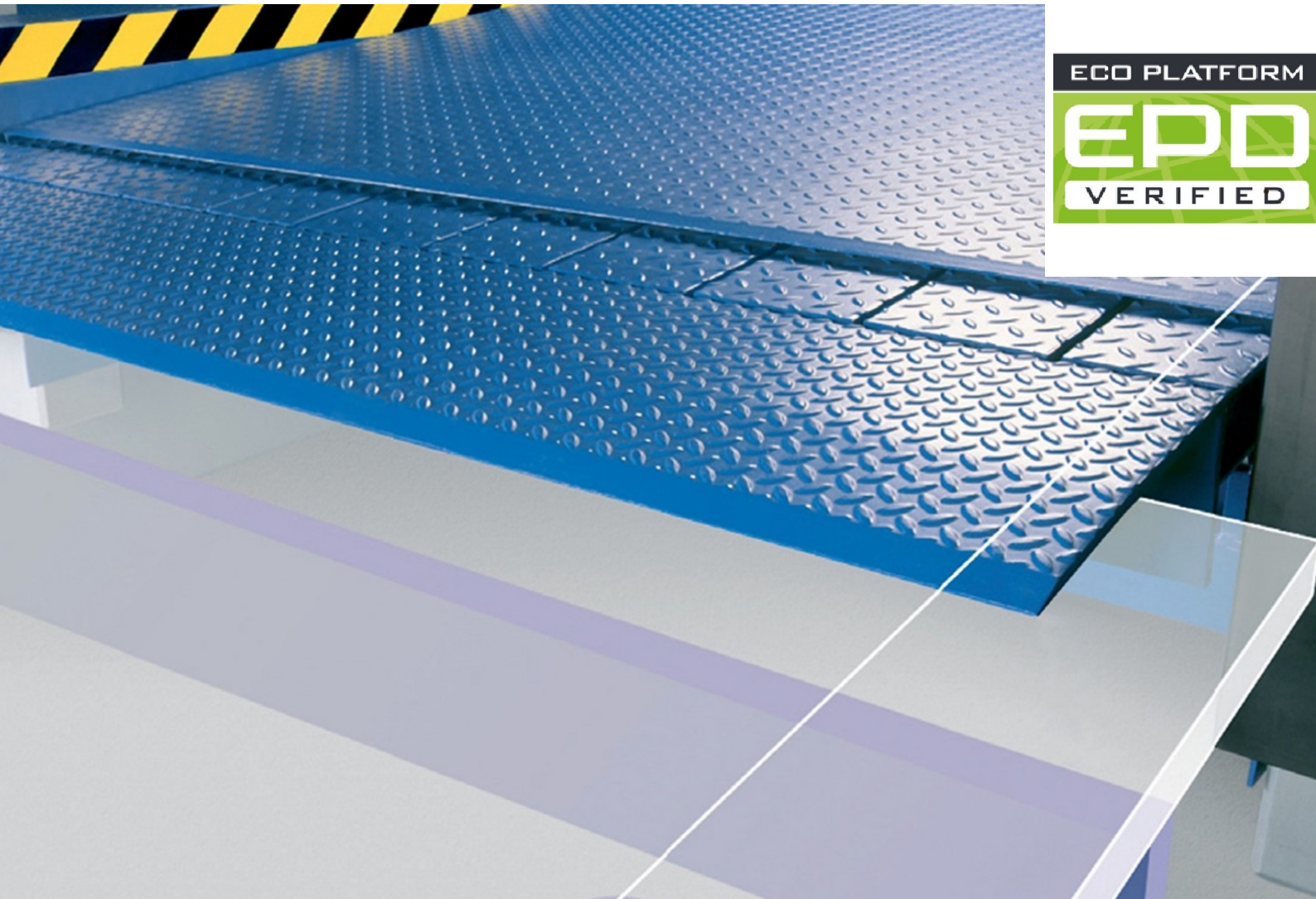

1. General Information

ASSA ABLOY Entrance Systems

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-ASA-20240095-IBA1-EN

This declaration is based on the product category rules:

Loading dock and loading dock equipment, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

28.01.2025

Valid to

27.01.2030

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

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

ASSA ABLOY DL6120T teledock

Owner of the declaration

ASSA ABLOY Entrance Systems
Lodjursgatan 10
26144 Landskrona
Sweden

Declared product / declared unit

This declaration represents 1 electrically operated teledock leveler with telescopic lip technology and with the following configuration: Leveler height 700 mm, nominal length 2500 mm, nominal width 2000 mm, surface treatment painted 80µm in RAL 5010, load capacity 60kN.

Scope:

This declaration and its LCA study are relevant to the ASSA ABLOY DL6120T telescopic-lip dock leveler.
The production location is Hunedoara, Romania and components are sourced from international tier one suppliers. ASSA ABLOY DL6120T telescopic-lip dock leveler size vary according to project requirements; a standard dock leveler height 700 mm, nominal length 2500 mm, nominal width 2000 mm, surface treatment painted 80µm in RAL 5010, load capacity 60kN is used in this declaration.

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+A2. 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 14025:2011
☐ internally ☒ externally

Dr.-Ing. Wolfram Trinius,
(Independent verifier)

2. Product

2.1 Product description/Product definition

Product name: ASSA ABLOY DL6120T teledock
Product characteristic: Telescopic-lip dock leveler

The dock leveler safely bridges the gap between the ramp and the truck bed. It connects the building with the vehicle to enable a safe and efficient process for loading and unloading. The dynamic load capacity is 60kN.

Hydraulic telescopic lip-dock levelers have a movable telescopic lip, which provides a larger contact area between vehicle bed and dock leveler and can be precisely positioned on the vehicle bed for optimal load utilization and improved safety. The docking control system offers complete control of the dock leveler, dock shelter and door, all in one control unit. A few self-explanatory buttons make the system easy to operate. Separate steering units or complex wiring are not needed to operate all equipment from a single control panel.

The dock leveler consists of five main components:
1) Platform
2) Frame
3) Lip
4) Hydraulics
5) Control box

The solid steel tear plate platform is supported by reinforcement profiles to provide stability in the forklift truck traffic direction. The frame is the levelers' connection point to the building and a rigid support for the leveler. The frame can be embedded in concrete or welded to a steel profile in the pit inside the building. The lip provides the connection between the building and the truck bed and makes the forklift truck traffic for loading and unloading of goods possible.

The hydraulics is the power pack of the dock leveler. The two lift cylinders lift and lower the platform and are equipped with safety valves to keep a stable position without twisting in case of emergency stop (truck leave accidentally). The lip cylinder extends and moves back the lip. The hoses connect the tank of the hydraulic
unit with the cylinders and provide the right flow of oil in every operation situation. The key function of the hydraulic system is the "free floating position" – the dock leveler follows the vertical movements of the vehicles during the loading and unloading operation.

The control box of the dock leveler has a few self - explaining buttons for the operation. It includes fault and service indicators.

The ASSA ABLOY dock leveler has been designed to meet all operational and safety requirements in the European Directives and the standards issued by the European Standardization Committee (CEN):
2006/42/EC Machinery Directive (MD)
2004/30/EU Electromagnetic Compatibility Directive (EMCD)
2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment with the applicable amendments (RoHS).
2015/863/EU amending Annex II to Directive 2011/65/EU (RoHS)

The equipment must not be used until the final installed door system has been subject to a risk assessment in accordance with the Machinery Directive 2006/42/EC and safely installed by the installation organisation. The manufacturing process ensures the compliance of the equipment with the technical file. The manufacturing process is regularly assessed by a third party.

Harmonized European standards, which have been applied:

- EN 1398:2009 Dock Levelers – Safety requirements
- EN 61000-6-2:2019 Electromagnetic Compatibility
- EN 61000-6-2:2019 Electromagnetic Compatibility
- EN 61000-6-3:2021 Electromagnetic Compatibility
- EN 60204-1:2019-06 Safety of machinery – Electrical equipment of machines

The ASSA ABLOY dock leveler fully complies with the rules and regulations of the European Standard EN 1398. The basic safety features according to the European Standard EN 1398 are as follows:

- Emergency Stop Function.
- Safety valves block lowering movement after max. 6% of the nominal length of the leveler.
- Two lift cylinders make sure the leveler stops in a horizontal position.
- Free floating position.
- Platform torsion. Lateral deflection of at least 3% of nominal width.
- Toe guards cover gap between platform and pit in leveler's highest position.
- Working range gradient max. 12.5% (~7°).
- Warning stripes on side plates and on frame (black/yellow).

Other standards or technical specifications, which have been applied:

- EN 349 Safety of machinery — Minimum gaps to avoid crushing of parts of the human body.

For the application and use, the respective national provisions apply.

2.2 Application

The ASSA ABLOY dock leveler is the main device of a total docking solution. It bridges the difference in distance and height between the ramp and the vehicle. The ASSA ABLOY dock leveler meets the demands of most loading operations, those available in the market.

2.3 Technical Data

The table presents the technical properties of the ASSA ABLOY DL6120T teledock:

Technical data (specify system and properties)

Name	Value	Unit
Length (normal) (Dock leveler)	2.5	m
Width (normal) (Dock leveler)	2	m
Weight (Dock leveler)	0.989	t
Load capacity (Dock leveler)	-	kN
Vertical working range (Dock leveler)	Above dock: 0 – 660 Below dock 0 – 440	kg/m^3
Platform tear-plate thickness (Dock leveler)	8	mm
Point load platform (max.) (Dock leveler)	6.5	N/mm^2
Length of lip (Dock leveler)	1	m
Material of lip (Dock leveler)	Steel	-
Protection type of control unit (Dock leveler)	IP 54	-
temperature range hydraulic oil (Dock leveler)	ASSA ABLOY standard hydraulic oil (-20°C -+60°C) ASSA ABLOY low temperature hydraulic oil (-30°C - +60°C) ASSA ABLOY bio hydraulic oil (-20°C - + 60°C)	°C
Motor (Dock leveler)	1.5	kW
Power input "On mode"	1500	W
Power input "Idle"	1.8	W

Other sizes available for this product
*In accordance with EN 59220

Product for which no legal provisions for harmonisation of the EU exist:

- EN 1398:2009 Dock Levelers - Safety requirements
- EN 61000-6-2:2019 Electromagnetic Compatibility
- EN 61000-6-3:2021 Electromagnetic Compatibility
- EN 60204-1:2019-06 Safety of machinery – Electrical equipment of machines

2.4 Delivery status

ASSA ABLOY DL6120T teledock is delivered partly pre-assembled and in individual parts for completion and installation on site. The complete machine is unpacked, it has integrated transport legs and can stand alone without any kind of pallet. It is secured with ordinary straps. The control box is put into a cardboard box that is placed under the top platform (inside the machine). The standard transport volume of one piece is about 2700x2200x700 mm.

2.5 Base materials/Ancillary materials

The average composition for ASSA ABLOY DL6120T teledock is as following:

Name	Value	Unit
Plastics	0.14	%
Electronics	0.32	%
Steel	95.54	%
Electro mechanics	1.21	%
Others	2.39	%
Total	100	%

2.6 Manufacture

The final manufacturing processes occur in the factory Hunedoara, Romania. The electronics are produced in Ostrov, Czech Republic. Some steel components are delivered fully processed by local Romanian suppliers. The dock leveler production process in Hunedoara is composed of cutting, bending, folding, stamping, CNC, welding, sand-blasting and spraying processed painting. The final assembly is composed of fixing the hydraulic aggregate, the hoses, and the cylinders to the steel construction as well as a functional test of a full sequence.

The factory in Hunedoara has a Quality Management system certified according to ISO 9001:2015.

Offcuts and scraps during the manufacturing process are directed to a recycling unit. Waste is sent for disposal. Waste codes according to European Waste Catalogue and Hazardous Waste List -Valid from 1 January 2002.

- EWC 12 01 01 ferrous metal filings and turnings
- EWC 12 01 03 non-ferrous metal filings and turnings
- EWC 17 02 03 plastic
- EWC 17 04 01 copper, bronze, brass
- EWC 17 04 02 aluminium
- EWC 17 04 05 iron and steel
- EWC 17 04 11 cables with the exception of those outlined in 17 04 10

2.7 Environment and health during manufacturing

ASSA ABLOY Entrance Systems is committed to producing and distributing door opening solutions with minimal environmental impact, where health & safety is the primary focus for all employees and associates. • Environmental operations, Greenhouse gases, energy, water, waste, Volatile Organic Compound (VOC), surface treatment and Health & Safety are being routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and environment management program effectiveness is evaluated.
• Code of Conduct covers human rights, labor practices and decent work. Management of ASSA ABLOY Entrance Systems is aware of their roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
• Any waste metals during machining are separated and recycled.
• Water and soil contamination does not occur and all production related waste is processed internally in the appropriate manner.
• The factory of Hunedoara, Romania has an Environmental Management system certified according to ISO 14001:2015ASSA ABLOY Entrance Systems is committed to producing and distributing door opening solutions with minimal environmental impact, where health & safety is the primary focus for all employees and associates. • Environmental operations, Greenhouse gases, energy, water, waste, Volatile Organic Compound (VOC), surface treatment and Health & Safety are being routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and environment management program

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• The factory of Hunedoara, Romania has an Environmental Management system certified according to ISO 14001:2015

2.8 Product processing/Installation

The dock leveler is delivered as one compact unit ready for installation. With the help of lifting equipment like a forklift or a crane, the complete unit is lifted and put in right place in the concrete pit. The frame of the dock leveler is welded to connection points in the pit; all concrete work to connect the dock leveler to the building is done by others. From factory the hydraulic unit with cable harness, the hoses, and the cylinders are mounted to the complete steel construction. The cable of the hydraulic unit is equipped with fast connectors that are connected with the control box. The tools needed are hand welder machine, drills and other hand tools.

The installation is performed by trained and qualified installation technicians. Qualified person is defined as a person, suitably trained, qualified by knowledge, skills, and practical experience, and provided with the necessary instructions to enable the required installation, to be carried out correctly and safely.

2.9 Packaging

Packaging exists for the purpose of protection during transportation. The ASSA ABLOY DL6120T teledock requires minimal packaging material. The dock leveler is placed on wooden planks to avoid friction between steel parts that can lead to damages during transportation. The control box comes in a cardboard box that is placed under the top platform (inside the machine).

The packaging includes cardboard/paper (2.26%) and wood (97.74%).

All materials incurred during installation are sent to a recycling unit (e.g. steel) and waste incineration plant (wood, paper and plastic) for its energy recovery.

Waste codes according to European Waste Catalogue and Hazardous Waste List -Valid from 1 July 2015.

- EWC 15 01 01 paper and cardboard packaging
- EWC 15 01 03 wooden packaging

2.10 Condition of use

Regular inspections by a trained and qualified person are recommended a minimum of one visit per year or more. The dock levers must be inspected for wear and tear, the general functionality and the functioning of the safety devices.

- The hydraulic oil must be replaced every 2 years
- The hydraulic hoses must be replaced every 6 years
- On daily basis the user should clean the leveler platform and lip.
- On monthly basis the user should inspect the leveler platform, lip and frame for any damage.
- The user should also inspect the electrical and hydraulic system and lubricate the dock leveler.

2.11 Environment and health during use

There is no harmful emissive potential. No damage to health or impairment is expected under normal use corresponding to the intended use of the product.

2.12 Reference service life

ASSA ABLOY DL6120T teledock hydraulic dock levelers are rated for 15 years of standard daily use. This reference service life is based on ASSA ABLOY´s own experience over the last 50 years and is valid for the 10 main competitor's products in the docking industry. For this EPD a lifetime of 15 years of the product was considered.

2.13 Extraordinary effects

Fire

The teledock itself is not fireproof and is not suitable to use in a fireproof system.

Water

Contains no substances that impact water in case of a flood. In case of a flood, electric operation of the device will be influenced negatively.

Mechanical destruction

No danger to the environment can be anticipated during mechanical destruction.

2.14 Re-use phase

The product is possible to re-use during the reference service life and be moved from one docking station to another. The majority, by weight, of components is steel, which can be recycled. The plastic components can be used for energy recovery within a waste incineration process.

All recyclable materials are directed to a recycling unit where they are recycled (steel,electronics and electro-mechanics). On the other hand, the plastic components are sent to the waste incineration plant for its energy recovery.

Waste codes according to European Waste Catalogue and Hazardous Waste List -Valid from 1 July 2015.

- EWC 16 02 14 Used devices with the exception of those outlined in 16 02 09 to 16 02 13
- EWC 17 02 03 plastic
- EWC 17 04 01 copper, bronze, brass
- EWC 17 04 02 aluminium
- EWC 17 04 05 iron and steel
- EWC 17 04 11 cables with the exception of those outlined in 17 04 10
- EWC 13 01 01 to EWC 13 01 13 Hydraulic oil

2.15 Disposal

The product can be mechanically dissembled to separate the different materials. The majority, of components are steel which will be recycled. The plastic components are used for energy recovery in an incineration plant. No disposal is foreseen for the product nor for the corresponding packaging.

2.16 Further information

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3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of ASSA ABLOY DL6120T TELEDOCK (height 700 mm, nominal length 2500 mm and nominal width 2000 mm) as specified in Part B requirements on the EPD IBU: PCR Loading dock and loading dock equipment. The functional unit for module B6: Use of 1 piece of ASSA ABLOY DL6120T TELEDOCK for 15 years.

Declared unit

Name	Value	Unit
Mass (without packaging)	989.07	kg
Mass packaging (paper wood, steel and plastics)	0.84	kg
Declared unit (Teledock)	1	pce.
Mass reference	989.07	kg/pce
Dimensions (L x H)	2500 x 700	mm

3.2 System boundary

Type of the EPD: cradle to gate - with options

The following life cycle stages were considered:

Production stage:

- A1 – Raw material extraction and processing
- A2 – Transport to the manufacturer and
- A3 – Manufacturing

Construction stage:

- A4 - Transport from the gate to the site
- A5 – Packaging waste processing

Use stage related to the operation of the building includes:

- B6 – Operational energy use

End-of-life stage:

- C2 – Transport to waste processing,
- C3 – Waste processing for recycling and
- C4 – Disposal (landfill, waste for incineration).

This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of-waste state or disposal of final residues.
Benefits and loads beyond the system boundaries: D – Declaration of all benefits and loads.

3.3 Estimates and assumptions

Transportation:
Data on the mode of transport and distances, as reported by suppliers were used for those materials and parts contributing more than 2 % of the total product mass.

Use stage:
For the use stage, it is assumed that the product is used in the European Union, thus a European electricity grid mix is considered within this stage. According to the most representative scenario, the operating hours of the product are accounted for 2.7 hours in on mode and finally 21.3 hours in idle mode per day (220 days per year in use, 15 years lifetime); the power consumption throughout the whole life cycle is 13491.5 kWh.

EoL:

In the End-of-Life stage, for all the materials from the product which can be recycled, a recycling scenario with 100 % collection rate was assumed. The plastic components are sent for energy recovery within a waste incineration process.

EoL is assumed to happen within EU-28. Furthermore, a transport distance by truck of 100 km has been assumed in the model.

3.4 Cut-off criteria

In the assessment, all available data from the production process are considered, i.e. all raw materials used, auxiliary materials (e.g. lubricants), and electric power consumption - including material and energy flows contributing less than 1 % of mass or energy (if available). In case a specific flow contributing less than 1 % in mass or energy is not available, worst case assumption proxies are selected to represent the respective environmental impacts.

Impacts relating to the production of machines and facilities required during production are out of the scope of this assessment.

3.5 Background data

For life cycle modelling of the considered product, Sphera's Life Cycle Assessment for Expert (LCA FE) software is used. Sphera Managed Lifecycle Content (MLC) modelling database is used as the background database of the study.

3.6 Data quality

The requirements for data quality and background data correspond to the specifications of the IBU PCR Part A. Sphera performed a variety of tests and checks during the entire project to ensure a high quality of the completed project. This obviously includes an extensive review of project-specific LCA models as well as the background data used.
The technological background of the collected data reflects the physical reality of the declared products.
The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.
All relevant background datasets are taken from the Sphera MLC database.

3.7 Period under review

The period under review is 2023 (12-month average).

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Europe

3.9 Allocation

Regarding incineration, the software model for the waste incineration plant (WIP) is adapted according to the material composition and heating value of the combusted material. In this EPD, the following specific life cycle inventories for the WIP are considered for:

- Waste incineration of paper
- Waste incineration of Plastic
- Waste incineration of Wood

Regarding the recycling material of metals, the metal parts in the EoL are declared as end-of-waste status. Thus, these materials are considered in module D. Specific information on allocation within the background data is given in the Sphera MLC dataset documentation.

3.10 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. Sphera's Managed LCA Content i.e. MLC database CUP version 2020.1 (former GaBi) serves as background database for the calculation.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

Packaging material containing biogenic carbon includes wood (0.82 kg)and paper (0.019 kg).

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.42	kg C

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

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel with maximum load (27t payload)	27.5	l/100km
Transport distance by truck (primary target market is EU 28)	2647	km
Capacity utilisation (including empty runs)	61	%
Transport distance by ship	21	km

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (paper/cardboard packaging)	0.019	kg
Output substances following waste treatment on site (steel packaging)	0	kg
Output substances following waste treatment on site (wood packaging)	0.82	kg
Output substances following waste treatment on site (plastic packaging)	0	kg

Reference service life

Name	Value	Unit
Life Span according to the manufacturer	15	a

Operational energy use (B6)

Name	Value	Unit
Electricity consumption per RSL (15 years, 220 days per year)	13491.5	kWh
Hours per day in on mode	2.7	h
Hours per day in stand-by mode	0.00	h
Hours per day in idle mode	21.3	h
Power consumption – on mode	1500	W
Power consumption – stand-by mode	0.00	W
Power consumption – idle mode	1.8	W

For the remaining days (145 days) the power is being switched off.
Total energy consumed during the whole product life was calculated using following formula:

(W_active_mode*h_active_mode+W_idle_mode*h_idle_mode +W_stand_by_mode*h_stand_by_mode)*Life_span*days_year*0.001

Where:

- W_active_mode - Energy consumption in active mode in Watts
- h_active_mode - Operation time in active mode in hours
- W_idle_mode - Energy consumption in idle mode in Watts
- h_idle_mode - Operation time in idle mode in hours
- W_stand_by_mode - Energy consumption in stand-by mode in Watts
- h_stand_by_mode - Operation time in stand-by mode in hours
- Life_span - Reference service life of product
- days_year - Operation days per year
- 0.001 - Conversion factor from Wh to kWh.

End of life (C1-C4)

Name	Value	Unit
Collected separately waste type (aluminium, steel, brass, plastics, stainless steel, copper, electronic, electromechanics etc.)	989.07	kg
Transport to EoL (C2)	100	km
Incineration of plastic parts	1.37	kg
Incineration of paper	0.00	kg
Recycling (aluminium, steel, copper, electronic, electro-mechanics, stainless steel and brass)	964.07	kg
Landfill	23.63	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Name	Value	Unit
Collected separately waste type (including packaging)	966.28	kg
Recycling aluminium	0.00	%
Recycling brass	0.00	%
Recycling copper	0.0002	%
Recycling stainless steel	0.00	%
Recycling steel	98.20	%
Recycling electronic	0.33	%
Recycling electro mechanics	1.21	%
Incineration of plastic parts	0.14	%
Incineration of paper	0.00	%
Incineration of packaging (paper, wood and plastic) (from A5)	0.09	%
Recycling of steel packaging	0.00	%

5. LCA: Results

Results shown are calculated according to EN 15804+A2.

Note:
EP-freshwater: This indicator has been calculated as 'kg P eq' as required in the characterization model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml).

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR 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	MND	MND	MNR	MNR	MNR	X	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: One Piece DL6120T teledock

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	2.64E+03	3.74E+01	1.24E+00	5.46E+03	0	5.97E+00	6.2E+01	0	-1.64E+03
GWP-fossil	kg CO_2 eq	2.63E+03	3.74E+01	6.74E-01	5.43E+03	0	5.92E+00	6.2E+01	0	-1.64E+03
GWP-biogenic	kg CO_2 eq	1.1E+01	4.5E-02	5.59E-01	1.81E+01	0	0	-3.06E-03	0	2.57E+00
GWP-luluc	kg CO_2 eq	1.48E+00	1.08E-02	2.14E-03	7.87E+00	0	4.81E-02	2.17E-03	0	-3.19E-02
ODP	kg CFC11 eq	4.38E-09	3.56E-15	8.62E-12	1.19E-10	0	7.14E-16	1.8E-14	0	-3.76E-12
AP	mol H^+ eq	6.48E+00	1.39E+00	2.58E-03	1.2E+01	0	6.09E-03	8.22E-03	0	-4.49E+00
EP-freshwater	kg P eq	2.73E-03	1.19E-05	1.12E-05	1.45E-02	0	1.8E-05	3.04E-06	0	-3.2E-04
EP-marine	kg N eq	1.39E+00	3.52E-01	7.71E-04	2.66E+00	0	1.77E-03	2.23E-03	0	-9.46E-01
EP-terrestrial	mol N eq	1.49E+01	3.86E+00	7.97E-03	2.8E+01	0	2.14E-02	3.68E-02	0	-1.02E+01
POCP	kg NMVOC eq	4.59E+00	9.88E-01	2.13E-03	7.3E+00	0	4.93E-03	6.38E-03	0	-3.15E+00
ADPE	kg Sb eq	-6.38E-02	1.02E-06	1.85E-07	9.55E+04	0	4.26E-07	2.66E-07	0	1.7E-05
ADPF	MJ	2.82E+04	4.54E+02	7.14E+00	1.57E-03	0	7.9E+01	2.41E+01	0	-1.24E+04
WDP	m^3 world eq deprived	-1.13E+01	7.62E-02	1.82E-01	1.18E+03	0	5.31E-02	6.46E+00	0	2.73E+01

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; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: One Piece DL6120T teledock

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PERE	MJ	4.73E+03	2.37E+00	2.78E+01	4.23E+04	0	4.44E+00	4.9E+00	0	1.21E+03
PERM	MJ	1.59E+01	0	-1.59E+01	0	0	0	0	0	0
PERT	MJ	4.74E+03	2.37E+00	1.19E+01	4.23E+04	0	4.44E+00	4.9E+00	0	1.21E+03
PENRE	MJ	2.8E+04	4.55E+02	7.14E+00	9.55E+04	0	7.91E+01	3.62E+02	0	-1.26E+04
PENRM	MJ	3.37E+02	0	0	0	0	0	-3.37E+02	0	0
PENRT	MJ	2.83E+04	4.55E+02	7.14E+00	9.55E+04	0	7.91E+01	2.41E+01	0	-1.26E+04
SM	kg	4.7E+02	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m^3	1E+01	3.69E-03	7.26E-03	4.89E+01	0	5.14E-03	1.53E-01	0	-1.23E+00

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+A2: One Piece DL6120T teledock

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
HWD	kg	7.25E-05	8.17E-07	1.96E-07	3.95E-05	0	3.68E-06	8.15E-08	0	-1.07E-05
NHWD	kg	4.18E+01	4.74E-02	3.94E-02	6.77E+01	0	1.21E-02	5.98E+00	0	-2.31E+01
RWD	kg	1.05E+00	5.09E-04	2E-04	1.45E+01	0	9.79E-05	9.89E-04	0	1.74E-01
CRU	kg	0	0	0	0	0	0	0	0	0

MFR	kg	0	0	0	0	0	0	9.48E+02	0	0
MER	kg	0	0	1.37E+02	0	0	0	0	0	0
EEE	MJ	0	0	4.11E+00	0	0	0	1.37E+02	0	0
EET	MJ	0	0	5.81E+00	0	0	0	2.47E+02	0	0

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

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: One Piece DL6120T teledock

Parameter	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
PM	Disease incidence	7.93E-05	2.31E-05	1.41E-08	1.01E-04	0	3.63E-08	1.15E-07	0	-5.87E-05
IR	kBq U235 eq	9.62E+01	7.32E-02	2.55E-02	2.38E+03	0	1.42E-02	1.27E-01	0	1.3E+01
ETP-fw	CTUe	7.84E+03	3.21E+02	1.28E+00	4.08E+04	0	5.59E+01	1.74E+01	0	-2.42E+03
HTP-c	CTUh	2.72E-06	6.07E-09	2E-10	1.13E-06	0	1.17E-09	9.35E-10	0	-2.59E-06
HTP-nc	CTUh	3.65E-05	2.9E-07	1.41E-08	4.16E-05	0	6.04E-08	1.01E-07	0	-9.78E-06
SQP	SQP	3.32E+03	6.99E+00	6.33E+00	3.04E+04	0	2.77E+01	5.99E+00	0	7.44E+02

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

6. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories. Stated percentages in the whole interpretation are related to the overall life cycle, excluding credits (module D).

The production stage (modules A1-A3) contributes between 15 % and 35% to the overall results for all the environmental impact assessment categories hereby considered, except for ADPE, for which the contribution from the production stage accounts for approx. 98% - this impact category describes the reduction of the global amount of non-renewable raw materials, therefore, as expected, it is mainly related to the extraction of raw materials (A1). ODP for which the contribution from the production stage accounts for approx. 97 %.
Within the production stage, the main contribution for all the impact categories is the production of steel mainly due to the process energy consumption. Steel accounts for approx. 96% to the overall mass of the product, therefore, the impacts are in line with the mass composition of the product. The environmental impacts for the transport (A2) have a negligible impact within this stage.

The use stage (module B6) is the highest impact on the life cycle impact of the produce. To reflect the use stage (module B6), the energy consumption was included, and it has a major contribution for all the impact assessment categories considered - between 66% and 99%, with the ozone depletion potential (ODP) (2.7%). This is a result of 2.7 hours of operation in on mode and 21.3 hours in idle mode per day and per 220 days in a year.

In the end-of-life stage, there are loads and benefits (module D, negative values) considered. Module D has positive value for the category radioactive waste disposal (RWD) due to the radioactive tailings deposited during the recycling of steel through electric arc furnace (EAF). Furthermore, the benefits are considered beyond the system boundaries and are declared for the recycling potential of the metals and for the credits from the incineration process (energy substitution).

7. Requisite evidence

Not applicable in this EPD.

8. References

Standards

2006/42/EC
European directive on machinery, and amending Directive 95/16/EC (recast)

2004/30/EU
Electromagnetic Compatibility Directive (EMCD)

EN 349 Safety of machinery
— Minimum gaps to avoid crushing of parts of the human body

EN 1398:2009
Dock Levellers Safety Requirements

EN 61000-6-2
EN 61000-6-2:2019, Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments

EN 61000-6-3
EN 61000-6-3:2021: Electromagnetic compatibility (EMC) - Part 6-3: Generic Standards - Emission standard for residential, commercial and light-industrial environments

EN 610204-6-3
EN 60204-1:2019-06: Safety of machinery – Electrical equipment of machines

ISO 9001
ISO 9001:2015, Quality management systems - Requirements

ISO 14001:2015
ISO 14001:2015 Environmental management systems - Requirements with guidance for use

DIN EN ISO 14025
DIN EN ISO 14025:2010, Environmental labels and declarations - Type III environmental declarations - Principles and procedures

EN 15804+A2
EN 15804:2014+A2:2020, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

EWC
European Waste Catalogue established by Commission Decision 2000/532/EC

2011/65/EC
European directive on the restriction of the use of certain hazardous substances in electrical and electronical equipment, and its amendment directives including 2015/863/EC (RoHS directive)

2015/863/EU
European directive amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances

2012/19/EU
European directive on waste electrical and electronic equipment (WEEE)

Further References

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Institut Bauen und Umwelt e.V., Berlin (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. Version 1.3 08-2022
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IBU PCR Part B
IBU PCR Part B: PCR Guidance-Texts for Building-Related Products and Services. From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU). Part B: Part B: PCR for Loading dock and loading dock equipment, Version 4 (10. 2023) www.ibu-epd.com

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