ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	**ASSA ABLOY Entrance Systems AB**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20170039-IBA1-EN
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Valid to	28.02.2022

Crawford DL6020T teledock

ASSA ABLOY Entrance Systems AB

Institut Bauen und Umwelt e.V.

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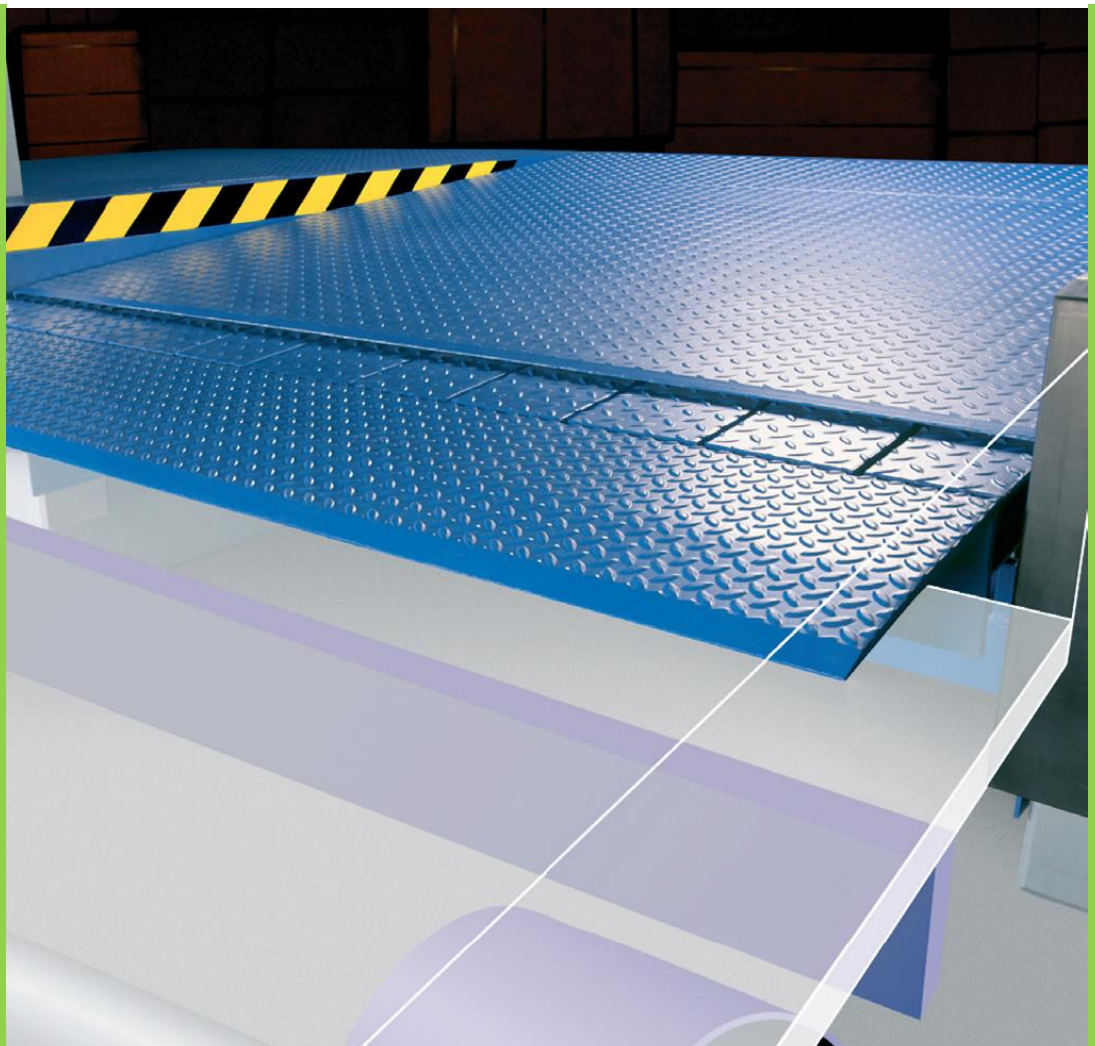

1. General Information

ASSA ABLOY Entrance Systems AB

Programme holder

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

Declaration number

EPD-ASA-20170039-IBA1-EN

This Declaration is based on the Product Category Rules (PCR):

PCR Loading dock and loading dock equipment, 01.2017
(PCR tested and approved by the SVR)

Issue date

01.03.2017

Valid to

28.02.2022

Prof. Dr.-Ing. Horst J. Bossenmayer
(President of Institut Bauen und Umwelt e.V.)

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(Managing Director IBU)

Crawford DL6020T teledock

ASSA ABLOY Entrance Systems AB

Lodjursgatan 10
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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. Product name: Crawford DL6020T teledock.

Scope:

This declaration and its LCA study are relevant to the Crawford DL6020T telescopic-lip dock leveler. The production location is Hunedoara, Romania and components are sourced from international tier one suppliers. Crawford DL6020T 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.

Verification

The CEN Norm /EN 15804/ serves as the core PCR
Independent verification of the declaration according to /ISO 14025/
☐ internally ☒ externally

Dr. Wolfram Trinius
(Independent verifier appointed by SVR)

2. Product

2.1 Product description / Product definition

Product name: Crawford DL6020T 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 no 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 follow 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.

2.2 Application

The Crawford 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 Crawford dock leveler meets the demands of most loading operations, those available in the market.

2.3 Technical Data

The technical specifications of Crawford DL6020T teledock are as below:

Parameter	value	Unit
Normal length	2500	mm
Normal width	2000	mm
Load capacity	60	kN
Vertical working range	Above dock : 0 – 660 mm Below dock : 0 – 440 mm	mm
Length of lip	1000	mm
Material of lip	Steel (in accordance with EN 59220)	
Platform tear-plate thickness	8	mm
Max. point load platform	6.5	N/mm²
Control unit protection class	IP 54	
Temperature range hydraulic oil	Crawford standard hydraulic oil (-20°C - +60°C) Crawford low temperature hydraulic oil (-30°C - +60°C) Crawford bio hydraulic oil (-20°C - + 60°C)	°C
Motor	1.5	kW
Weight	986.46	kg

For the placing on the market in the EU/EFTA (with the exception of Switzerland) the following provisions apply:
2006/42/EC Machinery Directive (MD)
2004/30/EU Electromagnetic Compatibility Directive (EMCD)
Harmonized European standards
EN 1398; EN 61000-6-2; EN 61000-6-3; EN 60204-1
Other standards or technical specifications, which have been applied: EN 349
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.

The Crawford dock leveler has been designed to meet all operational and safety requirements in the European Directives and fully complies with the rules and regulations of the European Standard EN 1398. The basic safety feature 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).
For the application and use the respective national provisions apply.

2.4 Delivery status

Crawford DL6020T 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 Crawford DL6020T teledock is as following:

Component	Percentage in mass (%)
Electronics	0.17
Plastics	1.75
Steel (in accordance with EN 59220)	96.10
Electro mechanics	1.22
Others (Mostly hydraulic oil)	0.76
Total	**100.0**

2.6 Manufacture

The final manufacturing processes occurs 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 9001:2008.

2.7 Environment and health during manufacturing

ASSA ABLOY 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 Gas Emissions, energy, water, waste, VOC, surface treatment and H&S are being routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and to evaluate the effectiveness of the environmental management program.

• Code of Conduct covers human rights, labour practices and decent work. Management of ASSA ABLOY is aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.

• The factory of Hunedoara, Romania has an Environmental Management system certified according to ISO 14001:2004

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 Competent Installer. Competent 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

The complete machine is unpacked. The control box is put into a cardboard box that is placed under the top platform (inside the machine).

The average composition of packaging material for Crawford DL6020T teledock is as following:

Material	Percentage in mass (%)
Wood	23.85
Steel	31.90
Plastics	44.25
Total	**100.0**

2.10 Condition of use

Regular inspections by a trained qualified person is recommended, corresponding to a minimum of one visit per year. The dock leveler 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 and the hydraulic hoses 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

Crawford DL6020T teledock hydraulic dock levelers are rated for 15 years of standard daily use. This reference service life 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.
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2.13 Extraordinary effects

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

Water
Contain no substances that have any impact on water in case of flood. Electric operation of the device would be influenced negatively.

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

2.14 Re-use stage

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.

2.15 Disposal

Waste codes according to European Waste Catalogue and Hazardous Waste List - Valid from 1 January 2002.
Manufacturing
Offcuts and scraps during the manufacturing process are directed to a recycling unit. Waste is sent for destruction. No plastic waste occurs during manufacturing stage since all plastic parts are delivered complete by supplier. No processing of the parts takes place in factory.

EWC 12 01 01 Ferrous metal filings and turnings
EWC 08 02 01 Waste coating powders.

End of life
All materials are directed to either a recycling or an incineration unit to be separated and processed in.
EWC 16 02 13* discarded equipment containing hazardous components (2) other than those mentioned in 16 02 09 to 16 02 12
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

2.16 Further information

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3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of Crawford DL6020T teledock as specified in Part B requirements on the EPD for PCR Loading dock and loading dock equipment

Declared unit

Name	Value	Unit
Declared unit (Teledock leveller)	1	pce.
Conversion factor to 1 kg	0.0010	-

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

The use stage:

- B6 – Operational energy use

End-of-life stage:

- C2 – Transport to waste processing
- C3 – Waste processing
- C4 – Disposal (landfill)

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.

- D –Declaration of all benefits and loads

3.3 Estimates and assumptions

Transportation: Data on mode of transport and distances, as reported by suppliers were used for those materials and parts contributing more than 2% of total product mass. Transport by road over an average distance of 2700 km was assumed.

Use phase: For the use phase, it is assumed that the teledock is used in the European Union, thus a European electricity grid mix is considered within this phase. According to the most representative scenario, the operating hours of the product are accounted for 1584 hours in on mode and 3696 hours in idle mode per year; the power consumption throughout the whole life-cycle is 37857 kWh

EoL: In the End-of-Life stage, for all the materials; which can be recycled, a recycling scenario with 100% collection rate was assumed.

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), thermal energy consumption 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 products, the GaBi 6 Software System for Life Cycle Engineering, developed by thinkstep AG, is used /GaBi 6 2013/. The GaBi-database contains consistent and documented datasets which are documented in the online GaBi-documentation /GaBi 6 2013D/. To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation and auxiliary materials.

3.6 Data quality

The requirements for data quality and background data correspond to the specifications of the /IBU PCR PART A/.
thinkstep performed a variety of tests and checks during the entire project to ensure 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 GaBi 6 software database.

3.7 Period under review

The period under review is 2015/2016 (12-month average).

3.8 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 steel
- Waste incineration of plastics
- 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 GaBi dataset documentation.

3.9 Comparability

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.

4. LCA: Scenarios and additional technical information

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).

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (Steel packaging)	1.09	kg
Output substances following waste treatment on site (Plastics packaging)	1.52	kg
Output substances following waste treatment on site (Wood packaging)	0.82	kg

Operational energy use (B6)

Name	Value	Unit
Electricity consumption*	37857,6	kWh
Days per year in use (for 15 years)	220	d
Hours per day in on mode (Based on being idle for 7 minutes out of 10 minutes)	7.2	h
Hours per day in idle mode (Based on being idle for 7 minutes out of 10 minutes)	16.8	h
Power consumption on mode	1500	W
Power consumption idle mode	40	W

*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 W
- h_active_mode - Operation time in active mode in hours
- W_idle_mode - Energy consumption in idle mode in W
- h_idle_mode - Operation time in idle mode in hours
- W_stand_by_mode - Energy consumption in stand-by mode in W
- 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.

Reference service life

Name	Value	Unit
Reference service life	15	a

End of life (C2-C4)

Name	Value	Unit
Collected separately Steel, Plastics, Electronic and Electro mechanics	986.46	kg
Recycling Steel	947.94	kg
Recycling Electronic	1.63	kg
Recycling Electro mechanic	12	kg
Incineration Plastic Parts	17.32	kg
Landfill construction material	7.58	kg

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

Name	Value	Unit
Collected separately waste type (including packaging)	989.91	kg
Recycling Steel (incl. packaging)	95.88	%
Recycling Electronic	0.16	%
Recycling Electro mechanic	1.21	%
Incineration Plastic Parts (incl. packaging)	1.90	%
Incineration of wood (from A5)	0.08	%
Landfill construction material	0.77	%

5. LCA: Results

Results shown below were calculated using CML 2000 – Apr. 2013 Methodology.

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

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement[1)]	Refurbishment[1)]	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	MND	MND	MND	X	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece of Crawford DL6020T teledock

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	2.92E+03	1.23E+02	1.36E+00	1.80E+04	4.59E+00	2.93E-01	6.01E+01	-1.70E+03
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.47E-07	5.91E-10	5.41E-12	1.23E-05	2.20E-11	2.00E-10	1.81E-10	1.36E-09
AP	Acidification potential of land and water	[kg SO_2-Eq.]	1.52E+01	5.72E-01	1.93E-04	8.48E+01	2.10E-02	1.38E-03	1.56E-02	-6.54E+00
EP	Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	9.24E-01	1.30E-01	2.98E-05	4.77E+00	4.80E-03	7.78E-05	1.28E-03	-5.40E-01
POCP	Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	1.47E+00	-1.81E-01	1.56E-05	5.04E+00	-6.77E-03	8.21E-05	7.73E-04	-9.64E-01
ADPE	Abiotic depletion potential for non-fossil resources	[kg Sb Eq.]	7.75E-03	4.65E-06	1.84E-08	2.49E-03	1.73E-07	4.05E-08	4.27E-06	-8.47E-03
ADPF	Abiotic depletion potential for fossil resources	[MJ]	3.15E+04	1.70E+03	3.02E-01	2.04E+05	6.33E+01	3.33E+00	2.59E+01	-1.60E+04

RESULTS OF THE LCA - RESOURCE USE: One piece of **Crawford DL6020T teledock**

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	2.15E+03	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	2.15E+03	6.69E+01	2.98E-02	5.85E+04	2.49E+00	9.52E-01	1.96E+00	2.56E+02
PENRE	Non-renewable primary energy as energy carrier	[MJ]	3.38E+04	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	3.38E+04	1.71E+03	3.58E-01	3.20E+05	6.35E+01	5.21E+00	2.88E+01	-1.51E+04
SM	Use of secondary material	[kg]	1.61E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	Use of renewable secondary fuels	[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
NRSF	Use of non-renewable secondary fuels	[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
FW	Use of net fresh water	[m^3]	1.13E+01	4.73E-02	3.53E-03	1.44E+02	1.76E-03	2.35E-03	1.50E-01	-1.06E+00

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of **Crawford DL6020T teledock**

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	6.19E-01	3.89E-03	2.51E-05	4.43E+01	1.45E-04	7.22E-04	2.14E-03	1.10E+00
NHWD	Non-hazardous waste disposed	[kg]	3.83E+01	2.14E-01	1.99E-02	1.03E+02	7.99E-03	1.68E-03	5.75E+00	-2.40E+01
RWD	Radioactive waste disposed	[kg]	8.92E-01	2.24E-03	2.22E-05	4.61E+01	8.32E-05	7.51E-04	1.18E-03	3.52E-01
CRU	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
MFR	Materials for recycling	[kg]	0.00E+00	0.00E+00	8.20E-01	0.00E+00	0.00E+00	9.49E+02	0.00E+00	0.00E+00
MER	Materials for energy recovery	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	Exported electrical energy	[MJ]	6.50E+00	0.00E+00	1.59E+00	0.00E+00	0.00E+00	0.00E+00	1.13E+02	0.00E+00
EET	Exported thermal energy	[MJ]	1.78E+01	0.00E+00	4.48E+00	0.00E+00	0.00E+00	0.00E+00	3.09E+02	0.00E+00

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 1% and 23% to the overall results, for all the environmental impact assessment categories hereby considered. Except for the abiotic depletion potential (ADPE), which contribution from the production stage accounts for approx. 76%, this impact category describes the reduction of the global amount of non-renewable raw materials; therefore, as expected, it is mainly related with the extraction of raw materials (A1). As the majority of the product mass is steel, this is in line with this value.

To reflect the use stage (module B6), the energy consumption was included and it has a contribution for all the impact assessment categories considered – between 82% and 99%, with the exception of ADPE (24%). Based on being on idle mode for 7 minutes out of 10 minutes, this is a result of 16.8 hours of operation in idle mode and 7.2 hours of operation in on 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. 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

Institut Bauen und Umwelt
Institut Bauen und Umwelt e.V., Berlin (pub.): Generation of Environmental Product Declarations (EPDs);

General principles
For the EPD range *of Institut Bauen und Umwelt* e.V. (IBU), 2013-04
www.ibu-epd.com

PCR Part A
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. April 2013
www.ibu-epd.com

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: Requirements on the EPD for PCR Loading dock and loading dock equipments.
www.ibu-epd.com

ISO 14025
ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 14001:2009
Environmental management systems - Requirements with guidance for use (ISO 14001:2004 + Cor. 1:2009)

ISO 9001:2008
Quality management systems - Requirements

EN 15804
EN 15804: 2012+A1:2014: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

DIN EN 14846:2008
Building hardware - Locks and latches - Electromechanically operated locks and striking plates - Requirements and test methods

GaBi 6 2013
GaBi 6 2013: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Leinfelden-Echterdingen, 1992-2013.

GaBi 6 2013D
GaBi 6 2013D: Documentation of GaBi 6: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Leinfelden-Echterdingen, 1992-2013. http://documentation.gabi-software.com/

2006/42/EC
Machinery Directive (MD)

2004/30/EU
Electromagnetic Compatibility Directive (EMCD)

EN 1398
Dock levelers - Safety requirements

EN 61000-6-2
Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments (IEC 77/488/CDV:2015)

EN 61000-6-3
Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3:2006 + A1:2010)

EN 60204-1
Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 44/709/CDV:2014)

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

EWC
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 08 02 01
Waste coating powders

EWC 15 01 01
paper and cardboard packaging

EWC 15 01 02
plastic packaging

EWC 15 01 03
wooden packaging

EWC 17 02 03
plastic

EWC 17 04 05
iron and steel

EWC 16 02 13*
discarded equipment containing hazardous components (2) other than those mentioned in 16 02 09 to 16 02 12

EWC 17 02 03
plastic

EWC 17 04 01
copper, bronze, brass

EWC 17 04 02
aluminium

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

9. Annex

Results shown below were calculated using TRACI Methodology.

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

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement[1)]	Refurbishment[1)]	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	MND	MND	MND	X	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: One piece of **Crawford DL6020T teledock**

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	2.92E+03	1.23E+02	1.36E+00	1.80E+04	4.59E+00	2.93E-01	6.01E+01	-1.70E+03
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.57E-07	6.28E-10	5.76E-12	1.31E-05	2.34E-11	2.13E-10	1.92E-10	1.15E-09
AP	Acidification potential of land and water	[kg SO_2-Eq.]	1.46E+01	7.46E-01	2.22E-04	8.03E+01	2.74E-02	1.31E-03	1.83E-02	-6.62E+00
EP	Eutrophication potential	[kg N-eq.]	6.82E-01	5.23E-02	1.22E-05	3.42E+00	1.94E-03	5.57E-05	5.98E-04	-3.94E-01
Smog	Ground-level smog formation potential	[kg O_3-eq.]	1.59E+02	1.53E+01	4.24E-03	7.27E+02	5.65E-01	1.18E-02	1.62E-01	-9.76E+01
Resources	Resources – resources fossil	[MJ]	1.01E+03	2.45E+02	3.50E-02	1.45E+04	9.11E+00	2.37E-01	2.66E+00	1.65E+02

RESULTS OF THE LCA - RESOURCE USE: One piece **of Crawford DL6020T teledock**

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	2.15E+03	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	2.15E+03	6.69E+01	2.98E-02	5.85E+04	2.49E+00	9.52E-01	1.96E+00	2.56E+02
PENRE	Non-renewable primary energy as energy carrier	[MJ]	3.38E+04	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	3.38E+04	1.71E+03	3.58E-01	3.20E+05	6.35E+01	5.21E+00	3E+01	-1.51E+04
SM	Use of secondary material	[kg]	1.61E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	Use of renewable secondary fuels	[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
NRSF	Use of non-renewable secondary fuels	[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
FW	Use of net fresh water	[m^3]	1.13E+01	4.73E-02	3.53E-03	1.44E+02	1.76E-03	2.35E-03	1.50E-01	-1.06E+00

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece **of Crawford DL6020T teledock**

Parameter	Parameter	Unit	A1 - A3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	6.19E-01	3.89E-03	2.51E-05	4.43E+01	1.45E-04	7.22E-04	2.14E-03	1.10E+00
NHWD	Non-hazardous waste disposed	[kg]	3.83E+01	2.14E-01	1.99E-02	1.03E+02	7.99E-03	1.68E-03	5.75E+00	-2.40E+01
RWD	Radioactive waste disposed	[kg]	8.92E-01	2.24E-03	2.22E-05	4.61E+01	8.32E-05	7.51E-04	1.18E-03	3.52E-01
CRU	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	-
MFR	Materials for recycling	[kg]	0.00E+00	0.00E+00	8.20E-01	0.00E+00	0.00E+00	9.49E+02	0.00E+00	-
MER	Materials for energy recovery	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-
EEE	Exported electrical energy	[MJ]	6.50E+00	0.00E+00	1.59E+00	0.00E+00	0.00E+00	0.00E+00	1.13E+02	-
EET	Exported thermal energy	[MJ]	1.78E+01	0.00E+00	4.48E+00	0.00E+00	0.00E+00	0.00E+00	3.09E+02	-

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