ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

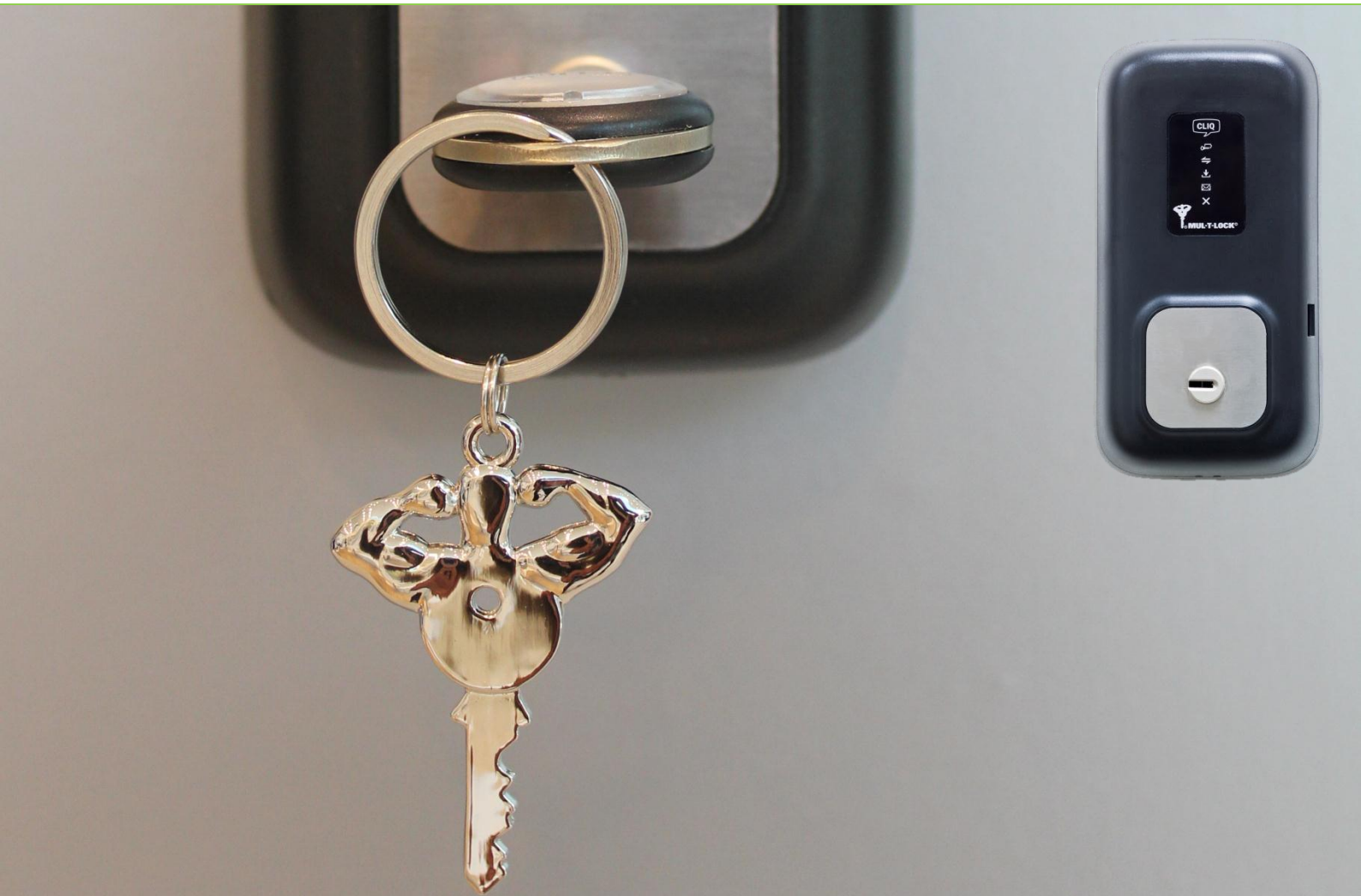
Owner of the Declaration	**Mul-T-Lock Technologies Ltd.**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20150159-IBA1-EN
Issue date	10.06.2015
Valid to	09.06.2020

Access Control Systems – CLIQ Wall Programming Device

Mul-T-Lock Technologies Ltd.

Institut Bauen und Umwelt e.V.

www.bau-umwelt.com / https://epd-online.com



1. General Information

Mul-T-Lock Technologies Ltd.

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

Declaration number
EPD-ASA-20150159-IBA1-EN

This Declaration is based on the Product Category Rules:
IBU: PCR Electronic Access Control Systems, 11-2013 (PCR tested and approved by the independent expert committee (SVA))

Issue date
10.06.2015

Valid to
09.06.2020

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

Dr.-Ing. Burkhart Lehmann
(Managing Director IBU)

CLIQ Wall PD

Owner of the Declaration
Mul-T-Lock Technologies Ltd.
Mul-T-Lock Park P.O.B. 637
Yavne 8110601
Israel

Declared product / Declared unit
This Declaration represents one piece of Mul-T-Lock CLIQ Wall Programming Device (PD), including all custom configurations.

Scope:
The Life Cycle Assessment is based on data collected from the Integrated Micro-Electronics Inc. production facility in Laguna Binan, Philippines.

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 Standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025
☐ internally ☒ externally

Dr. Wolfram Trinius
(Independent verifier appointed by SVA)

2. Product

2.1 Product description
The CLIQ Wall PD, produced by Mul-T-Lock, is a programming device communicating over the internet or other network. The CLIQ remote system allows administrators the ability to manage CLIQ keys and cylinders from anywhere with internet access. CLIQ keys can then be updated and/or reauthorized with timely expirations for enhanced security while retrieving audit data simultaneously remotely with this Wall PD.
The programming device can be configured to support several different CLIQ key types.

2.2 Application
The CLIQ Wall PD is suitable for indoor use only. Common applications include: Commercial buildings, Industrial buildings, Government buildings, Education establishments, Healthcare buildings.

2.3 Technical Data
The table presents the technical properties of CLIQ Wall PD Mul-T-Lock:

Technical data

Name	Value	Unit
Mounting	Indoor wall	-
Power supply	12-24 or PoE 42-57	VDC
Operating Temperature	-40 – 80	°C
Operating Humidity	10 – 95	% (non-condensing)
Power consumption	1.9	W

2.4 Placing on the market / Application rules
For the placing on the market of the products in the EU/EFTA (with the exception of Switzerland) the following harmonization legislation of the European Union applies:
- Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (LVD directive)
- Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States

relating to electromagnetic compatibility and repealing Directive 89/336/EEC (EMC directive)
- Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS directive).

The products are subject to CE marking according to this relevant harmonization legislation.

a. LVD directive : Affixing the CE marking to the products means the compliance of products with the LVD directive.

b. EMC directive: Affixing the CE marking to the products means the compliance of apparatus with the EMC directive.

c. RoHS directive: Affixing the CE marking to the products means the compliance of the products with the EMC directive.

The performance of the products is declared in accordance with the following standards:
:
• EN 61000-6-2:2005/ Information technology equipment - EMC
• /EN 61000-6-3:2007/A1:2011/ Information technology equipment - EMC
• /IEC 60950-1:2005+A1/ Information technology equipment - Safety
• /EN60950-1: 2006 + A11 + A1 + A12/ Information technology equipment - Safety
• /EN 50581:2012/ Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

For the application and use of the products the respective national provisions apply.

2.5 Delivery status
Each programming device is delivered individually packaged with mounting frame and mounting hardware. Package dimensions: 19cm x 12.2cm x 9cm

2.6 Base materials / Ancillary materials
The average composition of CLIQ Wall PD Mul-T-Lock is as following:

Component	Percentage in mass (%)
Plastics	68.2
Electronics	21.8
Steel	4.4
Stainless Steel	4.4
Electro-mechanics	1.2
Total	**100.0**

2.7 Manufacture
The CLIQ Wall PD is assembled at the production facility at Integrated Micro-Electronics, Inc. (IMI) in the Philippines. The injection molded parts are purchased from Plastep Oy, Finland. The electronic components, including PCB, are purchased externally and assembled at IMI. The assembled programming device is then packaged with the mounting plate and hardware for shipment.

2.8 Environment and health during manufacturing
The Management System of Integrated Micro-Electronics, Inc. has assessed and certified as meeting the requirements of ISO 14001:2004 as well as QC080000 (Hazardous Substance Process Management (HSPM)).

2.9 Product processing / Installation
CLIQ programming devices are installed by trained product integrators or installers.

2.10 Packaging
The programming device is packed in a cardboard box to avoid damage. Packaging materials shall be collected separately for recycling.

Material	Value (%)
Cardboard/ Paper	100.0
Total	**100.0**

Packaging components incurred during installation are directed to energy recovery circuits.
• EWC 15 01 01 Paper and cardboard packaging

2.11 Condition of use
No auxiliary or consumable materials are incurred for maintenance and usage of the programming device. No cleaning efforts need to be taken into consideration.

2.12 Environment and health during use
There are no interactions between products, the environment and health.

2.13 Reference service life
The service life of the CLIQ Wall PD is estimated to be 10 years. This number is based on the most conservative Mean Time between Failure (MTBF) data available for the programming device components at elevated operation temperatures. 200 000 key inserts and 50 inserts a day gives ~10 years.

2.14 Extraordinary effects
Fire
The external housing of the Wall PD, is constructed from polycarbonate resin thermoplastic. The housing material, and thus the programming device as a whole unit, has been classified as having a UL94 V0 Flame Rating. A UL94 Flame Rating of V0 specifies: burning stops within 10 seconds on a vertical specimen, drips of particles allowed as long as they are not inflamed.

Water
No substances are used which have a negative impact on ecological water quality on contact by the device with water.

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

2.15 Re-use phase
The following possibilities arise with reference to the material composition of the programming device.
Re-use
During the reference service life the programming

device can be disconnected and dismounted then remounted and attached elsewhere.
Material Recycling
EU Recycling:
Mul-T-Lock distributors act as the importer of the equipment into their member state. Thus the distributor has the legal responsibility to:
• Register as the WEEE producer in their member state.
• Finance arrangements for collection and recycling of WEEE arising from Mul-T-Lock products that the distributor sells in their member state.
In this instance please contact your distributor for recycling information.
For all other regions Mul-T-Lock distributors act as the importer of the equipment and provides arrangements for the collection, treatment, recycling and recovery of the programming device.
Waste codes according to European Waste Catalogue and Hazardous Waste List - Valid from 1 January 2002.
• EWC 16 02 13* discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12
• EWC 16 02 14 Discarded equipment other than those mentioned in 16 02 09 to 16 02 13
• EWC 16 02 16 Components removed from discarded equipment other than those mentioned in 16 02 15
• EWC 17 02 03 plastic
• EWC 17 04 05 iron and steel
• EWC 17 04 11 Cables with the exception of those outlined in 17 04 10

2.16 Disposal of the product is subject to the WEEE Directive within Europe, Directive 2012/19/EU.Disposal

No disposal is foreseen for the product nor for the corresponding packaging.

2.17 Further information

More information on Mul-T-Lock CLIQ Wall PD is available from:

Mul-T-Lock Technologies Ltd.
Mul-T-Lock Park P.O.B. 637
Yavne 8110601
Israel
Tel: +972-8-9424600
Internet: www.mul-t-lock.com

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of CLIQ Wall Programming Device as specified in Part B requirements on the EPD for Electronic Access Control Systems IBU PCR Part B.

Declared unit

Name	Value	Unit
Declared unit	1	piece of CLIQ Wall PD
Mass (without packaging)	0.248	kg
Conversion factor to 1 kg	4.03	-

3.2 System boundary

Type of the EPD: cradle to gate - with options
The following life cycle phases were considered for the programming device:
A1-A3 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 (Energy consumption)

End-of-life stage:

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

These information modules include provision and transport of all materials, products, as well as energy and water provisions, waste processing up to the end-of-waste state or disposal of final residues.

Module D:

- Declaration of all benefits or recycling potential from EoL and A5

3.3 Estimates and assumptions

Use phase:
For the use phase, it is assumed that the programming device is used in European Union, thus an EU electricity grid mix is considered within this stage.

EoL:
In the End-of-Life phase, 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 modeling of the considered products, the GaBi 6 Software System for Life Cycle Engineering, developed by PE INTERNATIONAL 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.
PE INTERNATIONAL 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. The last revision of the used background data has taken place not longer than 10 years ago.

3.7 Period under review

The period under review is 2013/14 (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. Following specific life cycle inventories for the WIP are considered:

- Waste incineration of plastic
- Waste incineration of paper
- Waste incineration of electronic scraps (PWB)

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

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.

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).

Transport to the building site (A4)

Name	Value	Unit
Truck transport		
Litres of fuel diesel with maximum load (27 t payload)	39.4	l/100 km
Transport distance truck	500	km
Capacity utilization (incl. empty runs) of truck	85	%
Ship transport		
Volume of heavy fuel oil with maximum load (27500 DWT)	5.3	m³/100 km
Transport distance ship	10000	km
Gross density of products transported	-	
Capacity utilization volume factor	-	

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site Packaging (paper)	0.142	kg

Reference service life

Name	Value	Unit
Reference service life	10	a

Operational energy use (B6)

Name	Value	Unit
Electricity consumption	166	kWh
Days per year in use	365	d
Hours per day in different modes	24	h
Power consumption per mode in W	1.9	W
Electricity consumption	166	kWh

End of life (C1-C4)

Name	Value	Unit
Collected separately Stainless steel, Steel, electronic, electro mechanics, plastic parts	0.248	kg
Collected as mixed construction waste construction waste for landfilling	0	kg
Reuse plastic	0.169	kg
Recycling Stainless steel, Steel, electronic, electro mechanics	0.079	kg
Landfilling construction waste for landfill	0	kg

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

Name	Value	Unit
Collected separately waste type (without packaging)	0.390	kg
Recycling Steel	2.82	%
Recycling Stainless steel	2.82	%
Recycling/Reuse Electronic	14.62	%
Reuse Plastic parts	43.33	%
Reuse packaging (from Module A5)	36.41	%

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 MTL CLIQ Wall PD

Parameter	Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	1.17E+01	2.06E+00	2.01E-01	7.90E+01	3.00E-03	4.51E-03	4.31E-01	-2.32E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.77E-09	2.66E-12	9.20E-13	5.41E-08	1.39E-12	3.09E-12	1.30E-12	-1.55E-10
AP	Acidification potential of land and water	[kg SO_2-Eq.]	7.32E-02	6.34E-03	4.58E-05	3.73E-01	1.44E-05	2.13E-05	1.12E-04	-2.37E-02
EP	Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	5.94E-03	1.24E-03	8.00E-06	2.10E-02	1.57E-06	1.20E-06	9.21E-06	-1.42E-03
POCP	Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	4.89E-03	5.75E-04	3.25E-06	2.21E-02	-7.30E-07	1.26E-06	5.57E-06	-1.26E-03
ADPE	Abiotic depletion potential for non-fossil resources	[kg Sb Eq.]	1.22E-03	7.05E-08	3.63E-09	1.09E-05	3.35E-10	6.25E-10	3.07E-08	-1.61E-03
ADPF	Abiotic depletion potential for fossil resources	[MJ]	1.53E+02	2.87E+01	5.63E-02	8.98E+02	4.33E-02	5.12E-02	1.86E-01	-2.50E+01

RESULTS OF THE LCA - RESOURCE USE: One piece of MTL CLIQ Wall PD

Parameter	Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	1.24E+01	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	1.24E+01	6.27E-02	5.26E-03	2.57E+02	7.37E-03	1.47E-02	1.41E-02	-1.13E+00
PENRE	Non-renewable primary energy as energy carrier	[MJ]	1.73E+02	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	1.73E+02	2.88E+01	6.60E-02	1.41E+03	5.64E-02	8.03E-02	2.07E-01	-2.67E+01
SM	Use of secondary material	[kg]	5.49E-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]	5.70E-02	2.43E-04	5.85E-04	6.35E-01	1.68E-05	3.62E-05	1.08E-03	-1.35E-02

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of MTL CLIQ Wall PD

Parameter	Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	7.50E-03	6.21E-05	4.54E-06	1.95E-01	5.03E-06	1.11E-05	1.54E-05	-4.26E-04
NHWD	Non-hazardous waste disposed	[kg]	1.87E-01	1.44E-04	5.05E-03	4.54E-01	1.42E-05	2.59E-05	4.33E-02	-1.24E-02
RWD	Radioactive waste disposed	[kg]	7.78E-03	3.20E-05	3.86E-06	2.03E-01	5.21E-06	1.16E-05	8.48E-06	-6.44E-04
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	1.42E-01	0.00E+00	0.00E+00	2.20E-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]	0.00E+00	0.00E+00	2.54E-01	0.00E+00	0.00E+00	0.00E+00	8.08E-01	-
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	7.18E-01	0.00E+00	0.00E+00	0.00E+00	2.21E+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 phase (modules A1-A3) contributes between 3% and 22% to the overall results for all the environmental impact assessment categories hereby considered, except for the abiotic depletion potential (ADPE), for which the contribution from the production phase accounts for app. 99% - 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). Within the production phase, the main contribution for all the impact categories is the production of plastics and steel, with app. 76%, mainly due to the energy consumption on this process. Plastics and electronics account with app. 90% 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.

To reflect the use phase (module B6), the energy consumption was included and it has a major contribution for all the impact assessment categories considered - between 73% and 96%, with the exception of ADPE (1%). This high value is due to the 24 hours per day in different modes as stated in Chapter 4.

In the end-of-life phase, 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.bau-umwelt.de

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.bau-umwelt.de

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: Requirements on the EPD for Electronic Access Control Systems. www.bau-umwelt.com

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

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

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

EMC Directive 2004/108/EC
Electro Magnetic Compatibility Directive

LVD Directive 2006/95/EC
Low Voltage Directive

RoHS Directive 2011/65/EU
Restriction of the use of certain hazardous substances Directive

EN 61000-6-2:2005
Information technology equipment - EMC standards

EN 61000-6-3:2007/A1:2011
Information technology equipment - EMC standards

IEC 60950-1:2005+A1
Information technology equipment - Safety -- Part 1: General requirements, Amendment 1 (International)

EN 60950-1: 2006 + A11 + A1 + A12
Information technology equipment - Safety (CENELEC countries)

EN 50581:2012
RoHS Conformity: EN 50581:2012 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

UL 94 V0
Standard for Safety of Flammability of Plastic Materials

QC080000
Hazardous Substance Process Management (HSPM)

EWC
European Waste Catalog

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

WEEE
Waste Electrical and Electronic Equipment Directive (WEEE Directive), 2012/19/EU

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 MTL CLIQ Wall PD

Parameter	Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	1.17E+01	2.06E+00	2.01E-01	7.90E+01	3.00E-03	4.51E-03	4.31E-01	-2.32E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.91E-09	2.83E-12	9.78E-13	5.75E-08	1.48E-12	3.28E-12	1.38E-12	-2.19E-10
AP	Acidification potential of land and water	[kg SO_2-Eq.]	7.36E-02	7.92E-03	5.56E-05	3.53E-01	1.51E-05	2.01E-05	1.32E-04	-2.28E-02
EP	Eutrophication potential	[kg N-eq.]	5.22E-03	4.28E-04	3.20E-06	1.50E-02	8.35E-07	8.57E-07	4.32E-06	-6.12E-04
Smog	Ground-level smog formation potential	[kg O_3-eq.]	9.80E-01	2.31E-01	1.30E-03	3.19E+00	2.00E-04	1.82E-04	1.17E-03	-2.62E-01
Resources	Resources – resources fossil	[MJ]	1.36E+01	4.13E+00	6.61E-03	6.39E+01	4.57E-03	3.65E-03	1.91E-02	-1.29E+00

RESULTS OF THE LCA - RESOURCE USE: One piece of MTL CLIQ Wall PD

Parameter	Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	1.24E+01	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	1.24E+01	6.27E-02	5.26E-03	2.57E+02	7.37E-03	1.47E-02	1.41E-02	-1.13E+00
PENRE	Non-renewable primary energy as energy carrier	[MJ]	1.73E+02	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0.00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	1.73E+02	2.88E+01	6.60E-02	1.41E+03	5.64E-02	8.03E-02	2.07E-01	-2.67E+01
SM	Use of secondary material	[kg]	5.49E-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]	5.70E-02	2.43E-04	5.85E-04	6.35E-01	1.68E-05	3.62E-05	1.08E-03	-1.35E-02

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: One piece of MTL CLIQ Wall PD

Parameter	Parameter	Unit	A1-3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	7.50E-03	6.21E-05	4.54E-06	1.95E-01	5.03E-06	1.11E-05	1.54E-05	-4.26E-04
NHWD	Non-hazardous waste disposed	[kg]	1.87E-01	1.44E-04	5.05E-03	4.54E-01	1.42E-05	2.59E-05	4.33E-02	-1.24E-02
RWD	Radioactive waste disposed	[kg]	7.78E-03	3.20E-05	3.86E-06	2.03E-01	5.21E-06	1.16E-05	8.48E-06	-6.44E-04
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	1.42E-01	0.00E+00	0.00E+00	2.20E-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]	0.00E+00	0.00E+00	2.54E-01	0.00E+00	0.00E+00	0.00E+00	8.08E-01	-
EET	Exported thermal energy	[MJ]	0.00E+00	0.00E+00	7.18E-01	0.00E+00	0.00E+00	0.00E+00	2.21E+00	-

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