

Environnemental Product Declaration

In accordance with ISO 14025:2006 and
EN 15804:2012+A2:2019 for:

OTIS SKYRISE™ SINGLE DECK ELEVATOR
OTIS ELEVATOR COMPANY



Programme:	The International EPD® System - www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-01943
Publication date:	2022-07-28
Issue date:	2022-07-28
Validity date:	2027-07-28
	<small>An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.</small>
Revision number:	0.0
Geographical scope:	China, Europe, US



Made to move you™

About Otis

Otis gives people freedom to connect and thrive in a taller, faster, smarter world. The global leader in the manufacture, installation and servicing of elevators and escalators, we move 2 billion people a day and maintain approximately 2.1 million customer units worldwide – the industry's largest Service portfolio. You'll find us in the world's most iconic structures, as well as residential and commercial buildings, transportation hubs and everywhere people are on the move.

Headquartered in Connecticut, USA, Otis is 70,000 people strong, including 40,000 field professionals, all committed to meeting the diverse needs of our customers and passengers in more than 200 countries and territories.

To learn more, visit www.otis.com and follow us on LinkedIn, Instagram, Facebook and Twitter @OtisElevatorCo

SkyRise™ high-rise elevator platform

Our most advanced high-rise elevator yet. With the SkyRise elevator, we've taken everything we know and pushed it further, combining cutting-edge science and precision engineering to deliver the solutions you need.

Designed for the most demanding high-rise applications, SkyRise permanent-magnet SkyMotion™ machines are extremely energy-efficient.

Compact, reliable and energy efficient, our state-of-the-art controller employs our patented motion-control algorithm to ensure a smooth ride. Otis pioneered the use of regenerative drives and continues to advance this technology – standard on all SkyRise systems.

To ensure a smooth, quiet ride, we designed our noise-blocking Q-frame cab and aerodynamic shroud using computational fluid dynamics and wind tunnel tests.

Main characteristics of SkyRise Single Deck elevator

Up to 4,500 kg of duty load
Up to 12,5 m/s of speed
Up to 600 m of travel

Results interpretation

The mandatory environmental impact indicators used and the associated impact methods listed in Annex C of EN 15804+A2 (CEN, 2019) (p. 60ff.) are declared. Optional indicators have been calculated and presented in the LCA background report, they are not published in this EPD. The characterization methodology referenced in the EN15804+A2 is used for the calculation.

Long-term emissions (> 100 years) are not accounted for in the impact assessment. The following table shows the mandatory environmental impact indicators declared:

The pattern of results for the SkyRise™ Single Deck elevator is quite comparable to those of the previous product generation of Gen2® elevators.

CORE ENVIRONMENTAL IMPACT INDICATORS	UNIT	REFERENCE
▶ Global Warming Potential total (GWP-total)	▶ kg CO ₂ eq.	▶ IPCC 2013 AR5
▶ Global Warming Potential fossil fuels (GWP-fossil)	▶ kg CO ₂ eq.	▶ IPCC 2013 AR5
▶ Global Warming Potential biogenic (GWP-biogenic)	▶ kg CO ₂ eq.	▶ IPCC 2013 AR5
▶ Global Warming Potential land use and land use change (GWP-luluc)	▶ kg CO ₂ eq.	▶ IPCC 2013 AR5
▶ Depletion potential of the stratospheric ozone layer (ODP)	▶ kg CFC 11 eq.	▶ WMO (2014) + integrations
▶ Acidification potential, Accumulated Exceedance (AP)	▶ mol H ⁺ eq.	▶ Seppälä et al. (2006); Posch et al. (2008)
▶ Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater)	▶ kg PO ₄ eq.	▶ EUTREND model (Struijs et al, 2009b) as implemented in ReCiPe 2008
▶ Eutrophication potential, fraction of nutrients reaching marine end compartment (EP-marine)	▶ kg N eq.	▶ EUTREND model (Struijs et al, 2009b) as implemented in ReCiPe 2008
▶ Eutrophication potential, accumulated Exceedance (EP-terrestrial)	▶ mol N eq.	▶ Seppälä et al. (2006); Posch et al. (2008)
▶ Formation potential of tropospheric ozone (POCP)	▶ kg NMVOC eq.	▶ LOTOS-EUROS model (Van Zelm et al, 2008) as implemented in ReCiPe 2008
▶ Abiotic depletion potential for non-fossil resources (ADP minerals & metals)	▶ kg Sb eq.	▶ van Oers et al. (2002) (based on Guinée et al. 2002)
▶ Abiotic depletion for fossil resources potential (ADP-fossil) ¹	▶ MJ, net calorific value	▶ van Oers et al. (2002)
▶ Water (user) deprivation potential, deprivation-weighted water consumption (WDP) ¹	▶ m ³ world eq. deprived	▶ Available WAtER REmaining (AWARE) Boulay et al. (2016)

For impact categories GWP and ADPF, the life cycle performance of the elevator is dominated by the energy consumption from operation of the elevator (module B6).

Second most relevant – and for most of the indicators, the life cycle performance of the elevator is dominated by the materials manufacturing in the upstream section (modules A1-A3).

In more detail,

USE STAGE– MODULE B6: OPERATIONAL ENERGY USE

The impacts are driven primarily by the electricity consumption during use stage (25 years), creating approximately 50-60% of GWP and ADP of fossil "ADPF", and almost 30% of AP, EP terrestrial-marine and POCP. - Europe scenario. If the studied elevator is installed in China, the GWP for the energy use will increase by 18 % and by 6% for USA. Refer to the graphic results on page 22.

PRODUCT STAGE – MODULES A1-A3: RAW MATERIAL SUPPLY & OTIS MANUFACTURING

The impacts for the SkyRise Single Deck elevator are driven primarily by materials manufacturing of ferrous and electronic components, which created approx. 40% of Climate change "GWP total" and 36% of ADP of fossil "ADPF" and almost 45% of AP, EP terrestrial-marine and POCP. - Europe scenario. If the studied elevator is installed in China, the GWP for product stage will be reduced by 14% and about only 5% for USA. Refer to the graphic results on page 22."

In all impact categories, the manufacturing in Otis factories has a minor contribution to the impact categories. This limited impact from the manufacturing part is widely due to the continuous efforts to reduce its environmental footprint over the year through multi-channel initiatives such as: considering reusable and recyclable package for the components, eliminating the painting and welding operations, having a positive impact on greenhouse gas emissions and wastes.

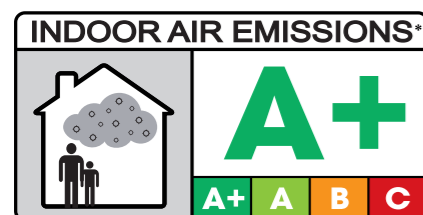
As well, energy consumption has been dramatically decreased by the use of LED lights and more effective boilers in Otis facilities

TRANSPORT A3-A5 – MODULE A4

Last, the importance of the A4 Transport from Manufacturing to building site stage is minor, less than 3% for GWP indicator for the 3 scenarios. In terms of waste production, the amount of hazardous waste disposed is negligible and will occur during materials manufacturing.

Additional information

SUBSTANCES AND EMISSIONS



* Statement on level of emission of volatile substances in indoor air posing a toxic threat during inhaling - on a scale from A+ (very low-emission) to C (high-emission).

During the development phase as well as for the industrialization, there is a high focus on the limited use of chemicals. Our engineers are referring to REACH, RoHS regulations to avoid substances which impact the environment and the human health (i.e. Methylene Chloride (Dichloromethane) use is eliminated at Otis facilities).

Furthermore, the SkyRise Single Deck elevators emit no VOCs or other harmful substances once installed. The car panels are tested for VOC emissions according to the requirements of the French legislation (order of April 2011) concerning the labelling of construction

products or coverings of walls or floors and paint and varnishes on their emissions of volatile pollutants.

Sampling, testing and evaluation are performed according to ISO 16000 (Part 11, 9 and 3) in its latest versions. Our suppliers are delivering the testing reports justifying products VOC emission class.

As an option, the SkyRise Double Deck elevator can offer halogen free traveling cables and wiring.

Hazardous substances are avoided during the design stage, to be in accordance with EU REACH (candidate list) and ROHS requirements. Upon request Otis can provide the information about substances identified by the European Chemical Agency as candidates for Annex XIV of REACH, in a concentration above 0.1% weight by weight in articles.

ENERGY EFFICIENCY ISO25745 CLASSIFICATION OF THE SKYRISE™ SINGLE DECK ELEVATOR

The Use phase is the longest phase in the life cycle of the lift, 25 years for the SkyRise Single Deck elevator, and the B6 Energy Consumption module is one of the most relevant stage impacting the environment. It's therefore important for Otis to continuously improve the energy efficiency of the elevators, and help our customers reduce the amount of the electricity used.

Therefore, our lifts are designed to achieve an A-class energy efficiency classification, according to ISO 25745 standard. The energy consumption per day of the declared SkyRise Single Deck elevator is 43,7kWh, corresponding to A class efficiency from ISO 25745-2 Table 7

ENERGY EFFICIENCY CLASS (ISO25745)	ENERGY CONSUMPTION	
	DAILY	ANNUAL
A	43,7 kWh	11 356 kWh

Table 8: Energy Efficiency Class of the SkyRise Single Deck elevator according to table Table 7 - ISO 25745-2

Product information

THIS ENVIRONMENTAL PRODUCT DECLARATION FOR THE SKYRISE™ SINGLE DECK ELEVATORS RANGE IS DEVELOPED ACCORDING TO THE:

- + ISO 14040/44 & ISO 14025 guidelines
- + And to the calculation rules specified in the new C-PCR for Lifts "C-PCR-008 Lifts (to PCR 2019:14), version 2020-10-30", thereby providing full compliance with the CEN standard EN 15804:2012 + A2:2019 (as the core PCR)
- + As well as the PCR 2019:14 Construction products, version 1.1.

The General Program Instructions of the International EPD System apply for the current EPD development too.

We covered the whole life cycle of the SkyRise Single Deck elevator, manufactured in China Otis facilities, from the preparation of raw materials, its transport to manufacturing site and the manufacturing of the lift's components, through its installation, maintenance and use until each component end-of-life treatment.

As specified in the C-PCR, the mandatory information of the SkyRise Single Deck elevator is presented in the following table. The figures correspond to a typical configuration, being the representative unit of the complete range of the SkyRise Single Deck elevator lifts.

INDEX	VALUES	REPRESENTATIVE VALUES CHOSEN IN CASE OF DECLARATION OF RANGES
COMMERCIAL NAME	SKYRISE SINGLE DECK ELEVATOR	
▷ Segment	▷ Commercial	
▷ Type of installation	▷ New generic lift	
▷ Main purpose	▷ Transport of passengers	
▷ Type of lift	▷ Electric	
▷ Type of drive system	▷ Gearless traction	
▷ Rated load (fixed or range)	▷ 225 to 4.500 kg	▷ 1600 kg
▷ Rated speed (fixed or range)	▷ 1 to 12,5 m/s	▷ 4.0 m/s
▷ Number of stops (fixed or range)	▷ Up to 60	▷ 35
▷ Travelled height (fixed or range)	▷ Up to 600 m	▷ 150 m
▷ Number of operating days per year (fixed or range)	▷ 260	
▷ Applied Usage Category (UC) according to ISO 25745-2	▷ UC1 to UC6	▷ UC4
▷ Designed Reference Service Life (RSL)	▷ 25 years	
▷ Geographic region or intended installation region	▷ China, Europe, US	▷ China, Europe, US
ADDITIONAL INFORMATION		
Recommended application (main market)	▷ Recommended building type in Table A.1, Annex A, ISO25745-2 Mainly dedicated to residential and small scale commercial buildings	
▷ Building rise (typical) ▷ Building type		
▷ Optional equipment	▷ EN 81-20; EN 81-50; EN 81-70; EN 81-72; EN 81-77; EN81-58	

Table 1. The SkyRise Single Deck elevator lifts mandatory information required in the C-PCR

The LCA was conducted for a SkyRise single Deck elevator with a lifetime of 25 years, without considering a modernization, installed in a 35-floors building, having a speed of 4.0 m/s and a travelling distance of 150 m. The number of trips per day for a lift with Usage Category 4 is 750, which was obtained from ISO 25745-2.

The designed reference service life considered for the LCA study is a typical data. Depending on maintenance and modernization activities, the usage phase of a lift can be up to 25-30 years.

EPDs based on the c-PCR shall be based on a functional unit (FU). According to ISO 14040:2006, LCA is a relative approach, which is structured around a FU. The FU is defined as a "quantified performance of a product system for use as a reference unit". All subsequent analyses then refer to that FU, as all inputs and outputs in the life cycle inventory (LCI) and consequently the life cycle impact assessment (LCIA) profile are related to the FU.

This reference is necessary to ensure comparability of LCA results. This is particularly critical when different systems are being assessed, to ensure that such comparisons are made on a common basis.

Comparability between EPDs based on this c-PCR-008 (to PCR 2019:14) is only achievable, if the following performance characteristics are equivalent:

1. Functional Unit (FU)
2. Reference Service Life (RSL)
3. Usage Category (UC)
4. Travel height
5. Number of stops
6. Rated Load
7. Rated speed
8. Geographic Region

In case of comparability, the equivalence of the geographic region is important due to the specifics of the energy mix used. Comparability between EPDs based on this c-PCR-008 (to PCR 2019:14) and EPDs based on PCR 2015:05 is not conceivable and shall be avoided. Any comparability of this kind shall be considered as false and misleading the EPD user.



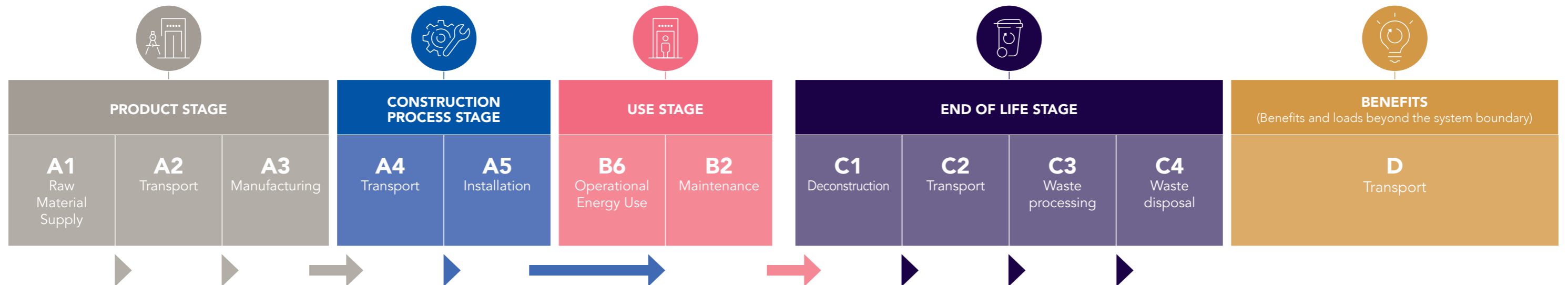
Life cycle approach of Otis SkyRise™ Single Deck elevator

We design our lifts with a life-cycle approach, assuming a 25 years installation (as defined in the LCA requirements) and ensure continual improvements by reducing their potential environmental impacts at each life cycle stage. The study scope is a typical "cradle to grave" assessment, from the raw material needed to build up the lift up to its end of life where the lift is removed and disposed.

THE C-PCR FOCUSES ON FIVE MAIN STAGES

- +** **THE PRODUCT STAGE (A1-A3)** includes the raw material extraction and production, transport to the manufacturing site, and manufacturing and assembly of components, considering the demand of energy, auxiliary and operational materials and packaging. The data collection is from year 2020.
- +** **THE CONSTRUCTION PROCESS STAGE (A4-A5)** includes the transportation to the installation site by mainly truck and the installation, considering the energy demand and auxiliary material.
- +** **THE USE STAGE (B1-B7)** includes the maintenance, considering the transportation of employees to the installation site and auxiliary materials, including preventive maintenance parts production and energy use during operation and standby. All other modules are not relevant and modernization is not part of this stage.
- +** **THE END-OF-LIFE STAGE (C1-C4)** includes the deconstruction, considering the energy demand and auxiliary materials, the transportation by mainly truck to waste processing facilities, the waste processing, considering sorting, and the waste disposal, considering a scenario with recycling, incineration and landfill.
- +** **FINALLY, THE BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES STAGE (D)** includes the potential for recycling by substitution of primary material and energy recovery.

The following picture summarizes the modules covered in the LCA calculation according to c-PCR 008 Lifts requirements. This is a cradle-to-grave assessment plus module D (A+B+C+D), wherein the construction and maintenance of capital equipment and indirect activities are excluded from the system boundary:



Elevator components are either manufactured at Otis owned and operated sites in China and Germany or purchased from a qualified supplier. The SkyRise Single Deck elevator is then assembled by Otis manufacturing sites, packed and sent to installation sites around Europe, China and US.

In Otis sites, it only takes place the manufacturing of components, no pure material production applies. The SkyRise Single Deck elevator can be installed in different locations around Europe, China and US. For this reason, the European grid mix (2017), Chinese grid mix (2017) and US grid mix (2018) have been used to simulate the energy associated to installation and maintenance works as well as for the energy used during the 25 years of service life considered.

In order to consider a general scenario possible for the end-of-life of the lift's components, for the calculation of the results metals have been considered as "recycled" and landfilling or incineration for the rest of the materials.

The GaBi 2019 LCI database provides the life cycle inventory data for several of the raw and process materials obtained from the background system.

LIFE CYCLE STAGE	INFORMATION MODULE	COMMENT	
A1-A3* Product Stage (China)	A1	Raw material supply	X
	A2	Transport	X
	A3	Manufacturing	X
A4-A5 Construction Process (EU 27, China, USA)	A4	Transport	X
	A5	Installation	X
B1-B7 Use Stage (EU 27, China, USA)	B1	Use	ND
	B2	Maintenance	X
	B3	Repair	ND
	B4	Replacement	ND
	B5	Refurbishment	ND
	B6	Operational energy use	X
	B7	Operational water use	ND
C1-C4 End-of-life Stage (EU 27, China, USA)	C1	Deconstruction	X
	C2	Transport	X
	C3	Waste processing	X
	C4	C4 Waste disposal	X
D Benefits and loads beyond the system boundary (EU 27, China, USA)	D	Reuse, recovery, recycling, potential	X

* The share of the GWP-GHG indicator results in A1-A3 (A1-A5 for services) is from product-specific LCI data, ">90%".

ISO Certified Otis factories

Otis sustainable development and environment strategy, leading to more and more energy efficient lifts, incorporates also the production.

Manufacturing plants and facilities in Europe and China have taken their commitment to continuously improve their environmental performance. They are all certified ISO 14001 Environmental Management, in its latest version considering the Life Cycle approach; the design for sustainability is now part of our ISO 14001 certificate. The ISO 9001 Quality Management and more importantly the ISO 50001 Energy management Systems certifications are also part of these greatest achievements contributing to our continuous improvement strategy.

In 2007, the Otis TEDA factory, including the Otis machine factory, was the first Otis factory to be LEED Gold certified (building design and construction). It settled in Tianjin Economic and Technological Development Zone. Otis TEDA factory is one of the first projects in China to be designed and constructed with USGBC (U.S. Green Building Council) and LEED (Leading Energy and Environmental Technology) gold certification standards. It is currently largest manufacturing base

with the most complete product lines for Otis, and the only production manufacturing base for Otis high rise elevators in the world.

Our major customers and as importantly Governments care about how the lifts are manufactured and are becoming more conscious about the energy performance and the environmental protection. All 18 facilities have ISO 14001 (Environment Management Systems) certification and to date, six of our factories across Europe and China are certified to ISO 50001 (Energy Management Systems). On top, our Gien (France) and Madrid (Spain) facilities are also certified OHSAS 18001 (Occupational Health and Safety Management Standard) to ensure our employee's health and safety, which is one of our core values at Otis. With ISO9001, ISO14001, OHSAS18001 and many other quality and environmental safety management system certifications. Otis has clear standards and precise operation requirements for each process from product design, production, inspection to packaging that can allow the quality, stability, and long life of each product.

Madrid factory, Spain



Functional Unit (FU) and Transportation Performance (TP)

The function of a lift is the transportation of persons, freights or both. Based on this, the FU is defined as the transportation of a load over a distance, expressed as one tonne [t] transported over one kilometre [km], i.e. tonne-kilometre [tkm] over a vertical (or inclined) trajectory.

LCA results shall be presented per FU, i.e. per 1 tkm. To do so, first the total amount of tkm (called also transportation performance, TP for short) shall be calculated, followed by division of the respective inputs and outputs by the TP to obtain the LCA results per FU.

TP shall be calculated according to the formulas and predetermined parameters shown below. As also indicated in the C-PCR, most of the predetermined parameters used are defined in ISO 25745-2. This standard is selected as the valid reference at international level for both the estimation of the lifts' energy consumption and for the calculation of TP. It gives tables of parameters for average distance travelled and average weight transported.

According to the underlying C-PCR, for the defined representative unit and a lifetime of 25 years, the TP evaluated for this study is calculated as follows:

The average car load %Q [tonnes] times the distance travelled by the lift during the service life sRSL [km]
 $TP = \%Q \times sRSL$

The average car load was calculated for the SkyRise Single Deck elevator using table 3 in ISO 25745-2:
 $\%Q = Q/1000 \times [\text{Percentage from Table 3 of ISO 25745-2}] = 5,6\%$
 where Q is the lift rated load, 1 600 [kg]

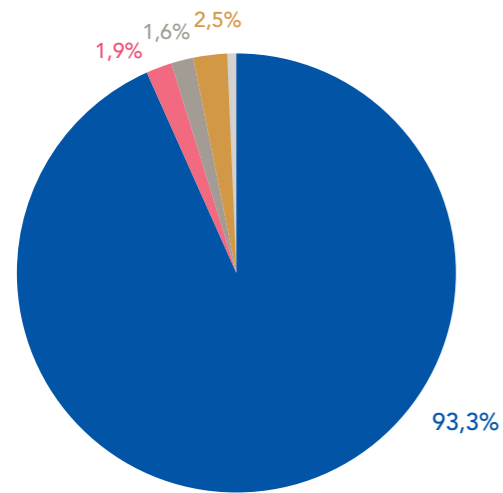
The distance travelled over the designed service life of 25 years (RSL) is:
 $sRSL = sav/1000 \times nd \times dop \times RSL = 321\,750 \text{ [km]}$.

Where sav is the one-way average travel distance, 66 [m], nd is the number of trips per day according to the selected usage category (defined in Table 1 of ISO 25745-2) and dop is the number of operating days per year (see Table 1).

Therefore, calculation of TP for obtaining of the results per FU is 18 018 tkm

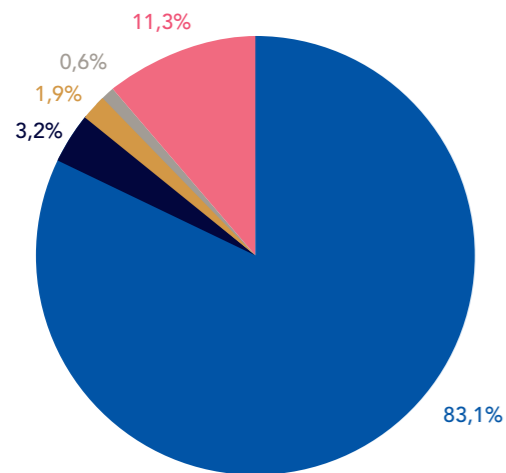
Content declaration

The tables below show a material summary of the SkyRise Single Deck elevator studied and its packaging, as delivered and installed in a building. Data are provided by Otis according to the cut-off rules described in Section 4.5 of the C-PCR.



MATERIAL	MASS (kg)	MASS (%)
Ferrous metals (zinc coated steel, stainless steel, cast iron)	28 031	93,3
Non-ferrous metals (aluminum, copper)	572	1,9
Plastics & rubbers	490	1,6
Inorganic materials (concrete, glass)	745	2,5
Organic materials (paper, wood, cardboard)	0	0
Lubricants (oils, greases), paintings, coatings, adhesives and fillers (glues)	55	0,2
Electric & Electronic Equipment	80	0,3
Batteries & accumulators	8	0
Other materials	59	0,2
Total mass	30 041	100
Mass per 1 tkm	1,7	

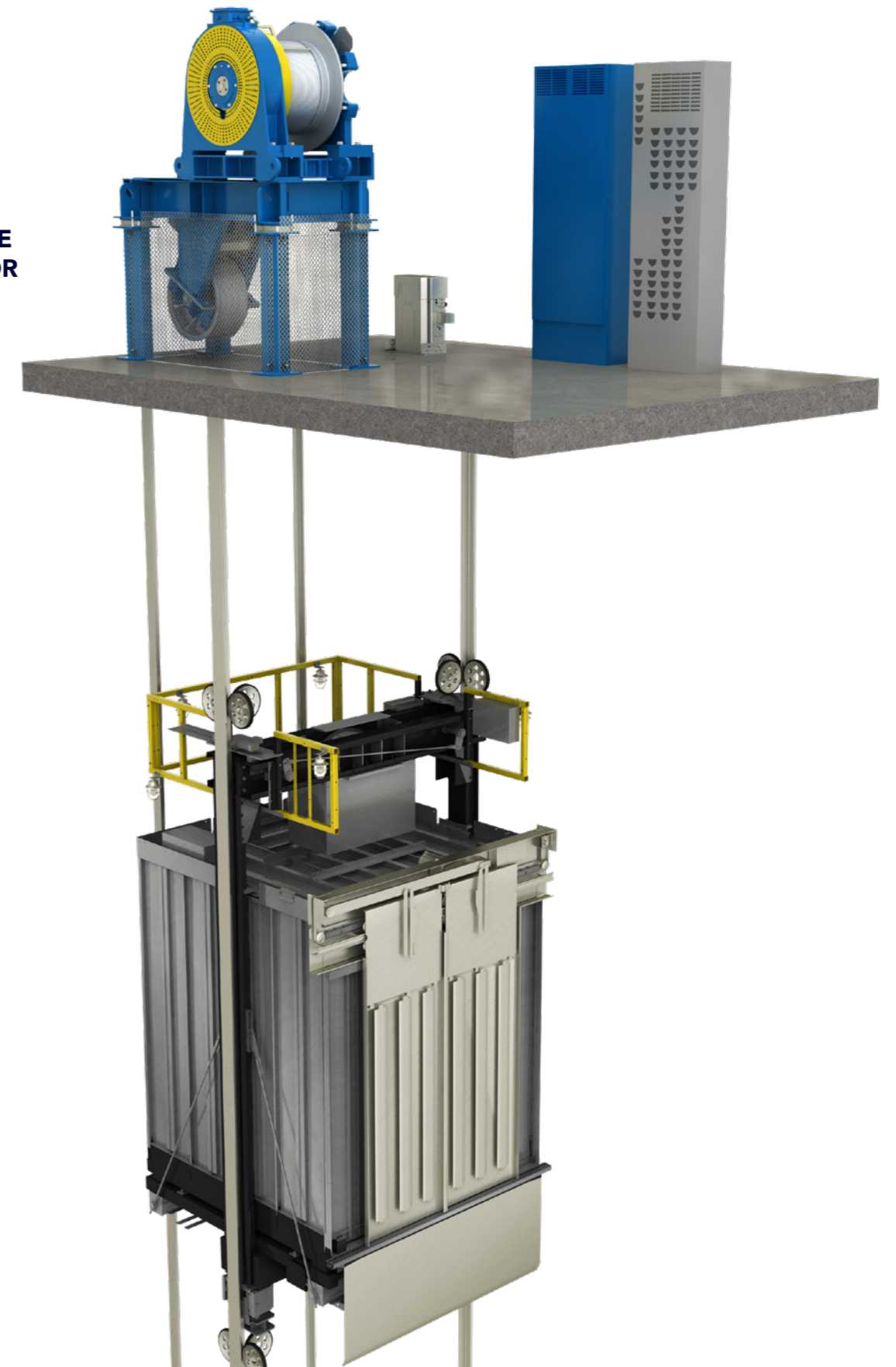
Table 3. Gross weight of the SkyRise Single Deck elevator material as one unit of product



MATERIAL	MASS (kg)	MASS (%)
Wood	3 861	83,1
PVC/PE	86	1,9
Other (desiccants, tape)	28	0,6
Steel (Nails, fixation brackets, bolts and nuts)	523	11,3
Carboard	148	3,2
Total mass	4 646	100
Mass per 1 tkm	0,3	

Table 4. Gross weight of the SkyRise Single Deck elevator packaging material for one unit of product

SKYRISE SINGLE DECK ELEVATOR ILLUSTRATION:



Environmental indicators

ENVIRONMENTAL INDICATORS AND INFORMATION FOR EPD SKYRISE SINGLE DECK ELEVATOR IN ACCORDANCE WITH EN 15804:2012+A2:2019:

- + The results for the complete service lifetime of the SkyRise Single Deck elevator were calculated according to the C-PCR and presented per functional unit (tkm).
- + Assumptions are presented in the verified LCA Background report.
- + The definition of the listed impact categories is given in the Glossary section of this declaration.

EUROPE SCENARIO

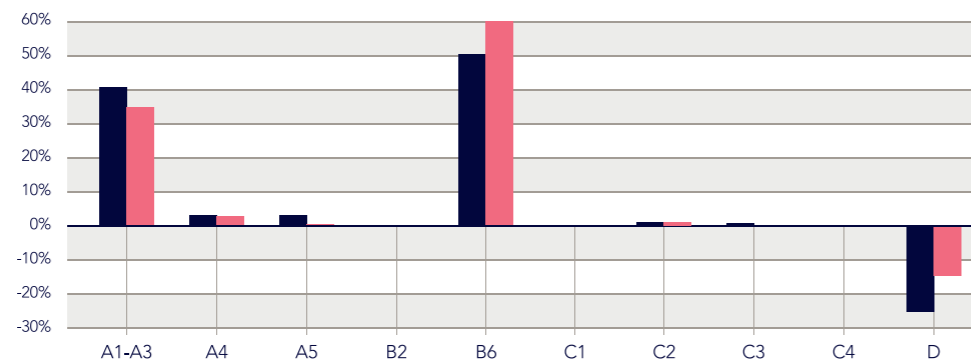
CORE ENVIRONMENTAL IMPACT INDICATORS UC4 PER TKM

IMPACT CATEGORY	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
GWP - total [kg CO2 eq.]	5,25E+00	3,89E-01	3,70E-01	7,77E-03	6,33E+00	1,27E-02	1,28E-01	1,63E-01	6,54E-04	-2,77E+00
GWP - fossil [kg CO2 eq.]	5,53E+00	3,89E-01	7,89E-02	7,96E-03	6,27E+00	1,24E-02	1,23E-01	1,63E-01	6,72E-04	-2,77E+00
GWP - biogenic [kg CO2 eq.]	-2,86E-01	1,67E-04	2,90E-01	-1,99E-04	5,33E-02	2,02E-04	5,71E-03	2,82E-04	-1,95E-05	-8,99E-04
GWP - luluc [kg CO2 eq.]	2,76E-03	1,61E-04	4,23E-04	8,08E-06	8,87E-03	1,03E-04	2,94E-06	5,22E-05	1,97E-06	-1,03E-03
ODP [kg CFC-11 eq.]	5,51E-12	4,87E-17	1,75E-16	1,56E-14	1,50E-13	2,33E-18	1,31E-17	8,14E-16	2,61E-18	-8,10E-15
AP [Mole of H+ eq.]	2,22E-02	1,38E-02	3,10E-04	4,82E-05	1,30E-02	5,78E-05	9,39E-04	1,15E-04	4,78E-06	-6,87E-03
EP - freshwater [kg P eq.]	4,33E-06	9,23E-08	1,79E-07	1,31E-08	1,68E-05	3,87E-08	2,65E-08	9,90E-08	1,13E-09	-1,10E-06
EP - marine [kg N eq.]	3,87E-03	3,65E-03	1,30E-04	6,57E-06	3,10E-03	2,71E-05	4,67E-04	3,84E-05	1,24E-06	-1,12E-03
EP - terrestrial [Mole of N eq.]	4,07E-02	4,00E-02	1,51E-03	7,14E-05	3,25E-02	3,02E-04	5,13E-03	4,47E-04	1,36E-05	-1,15E-02
POCP [kg NMVOC eq.]	1,28E-02	1,02E-02	2,97E-04	2,03E-05	8,41E-03	5,89E-05	8,71E-04	1,02E-04	3,76E-06	-4,44E-03
ADPF [MJ]	6,66E+01	4,91E+00	8,81E-01	1,12E-01	1,11E+02	1,70E-01	1,75E+00	6,20E-01	8,91E-03	-2,94E+01
ADPE [kg Sb eq.]	1,00E-04	1,46E-08	1,65E-08	1,14E-06	1,84E-06	1,03E-09	3,71E-09	9,94E-09	6,34E-11	-5,73E-05
WDP [m³ world equiv.]	1,03E+02	2,52E-03	1,11E-01	2,25E-03	1,01E+00	1,24E-04	2,42E-04	2,60E-02	7,21E-05	-5,96E+00

Caption: GWP - total = global warming potential; GWP - fossil = global warming potential (fossil fuel only); GWP - biogenic = global warming potential (biogenic); GWP - luluc = global warming potential (land use only); ODP = ozone depletion; AP = acidification terrestrial and freshwater; EP - freshwater = eutrophication potential (freshwater); EP - marine = eutrophication potential (marine); EP - terrestrial = eutrophication potential (terrestrial); POCP = photochemical ozone formation; ADPE = abiotic depletion potential (element), ADPF = abiotic depletion potential (fossil) WDP = water scarcity.

GRAPHIC RESULTS FOR GWP AND ADPF INDICATORS

■ SD GWPtot
■ SD ADPF*



INDICATORS DESCRIBING RESOURCE USE UC4 PER TKM

IMPACT CATEGORY	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
PERE [MJ]	4,73E+00	3,23E-02	3,42E+00	2,00E-02	5,14E+01	9,80E-03	5,53E-03	2,69E-01	1,20E-03	-9,92E-01
PERM [MJ]	3,33E+00	0,00E+00	-3,33E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT [MJ]	8,06E+00	3,23E-02	8,96E-02	2,00E-02	5,14E+01	9,80E-03	5,53E-03	2,69E-01	1,20E-03	-9,92E-01
PENRE [MJ]	6,55E+01	4,91E+00	1,16E+00	6,12E-02	1,12E+02	1,70E-01	1,75E+00	1,49E+00	8,92E-03	-2,95E+01
PENRM [MJ]	1,14E+00	0,00E+00	-2,72E-01	5,10E-02	0,00E+00	0,00E+00	0,00E+00	-8,70E-01	0,00E+00	0,00E+00
PENRT [MJ]	6,67E+01	4,91E+00	8,84E-01	1,12E-01	1,12E+02	1,70E-01	1,75E+00	6,20E-01	8,92E-03	-2,95E+01
SM [kg]	1,88E-01	0,00E+00	6,24E-06	1,98E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW [m3]	2,39E+00	7,58E-05	2,64E-03	6,26E-05	5,00E-02	1,14E-05	9,92E-06	7,42E-04	2,20E-06	-1,42E-01

Caption: 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

ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES AND OUTPUT FLOWS

IMPACT CATEGORY	A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	D
HWD [kg]	3,62E-05	3,21E-11	3,16E-08	4,49E-08	2,95E-08	7,87E-09	1,70E-10	1,61E-10	9,47E-13	-1,69E-08
NHWD [kg]	1,87E-01	2,18E-04	8,95E-03	7,19E-04	7,91E-02	2,70E-05	1,79E-04	2,16E-02	4,45E-02	1,82E-01
RWD [kg]	4,96E-04	2,46E-06	1,64E-05	5,00E-06	1,66E-02	3,14E-07	1,88E-06	8,26E-05	9,36E-08	-3,40E-04
CRU [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR [kg]	0,00E+00	0,00E+00	0,00E+00	8,78E-04	0,00E+00	0,00E+00	0,00E+00	1,53E+00	0,00E+00	0,00E+00
MER [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE [MJ]	0,00E+00	0,00E+00	5,38E-01	3,39E-03	0,00E+00	0,00E+00	0,00E+00	2,61E-01	0,00E+00	0,00E+00
EET [MJ]	0,00E+00	0,00E+00	9,69E-01	6,36E-03	0,00E+00	0,00E+00	0,00E+00	5,30E-01	0,00E+00	0,00E+00

Caption: 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

BIOGENIC CARBON CONTENT OF PRODUCT AND PACKAGING

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
BIOG. C IN PACKAGING [KG]	9,14E-02	0,00E+00	0,00E+00	2,27E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BIOG. C IN PRODUCT [KG]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption: Biog. C in packaging = Biogenic carbon content in packaging; Biog. C in product = Biogenic carbon content in product

ADDITIONAL GWP INDICATOR ACCORDING TO PCR FOR CONSTRUCTION PRODUCTS

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
IPCC AR5 GWP100, EXCL BIOGENIC CARBON [KG CO2 EQ.]	5,46E+00	3,88E-01	7,90E-02	7,96E-03	6,30E+00	1,24E-02	1,22E-01	1,63E-01	6,69E-04	-2,72E+00

Environmental indicators

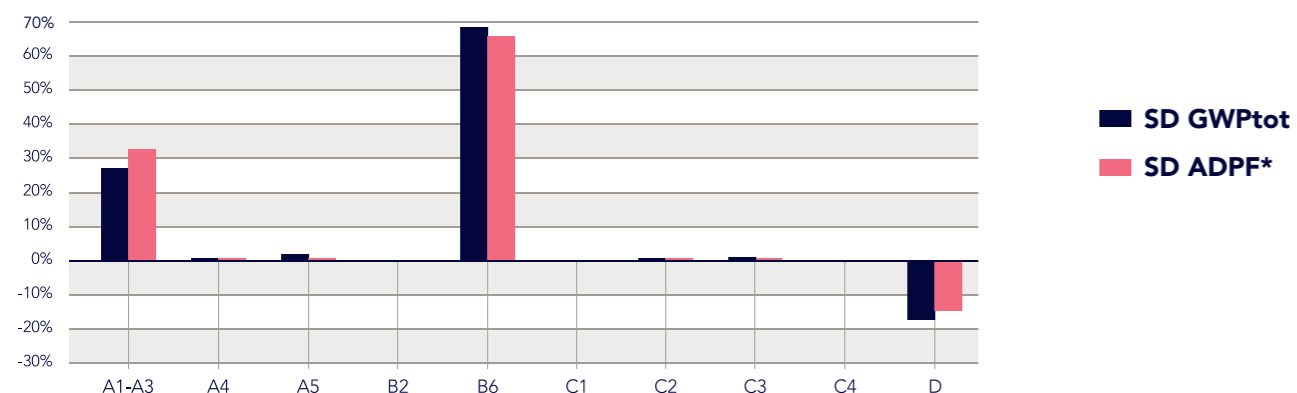
CHINA SCENARIO

CORE ENVIRONMENTAL IMPACT INDICATORS UC4 PER TKM

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
GWP - total [kg CO2 eq.]	5,25E+00	1,46E-01	3,74E-01	9,06E-03	1,30E+01	1,27E-02	1,28E-01	1,95E-01	2,68E-03	-3,07E+00
GWP - fossil [kg CO2 eq.]	5,53E+00	1,40E-01	8,29E-02	9,26E-03	1,30E+01	1,24E-02	1,23E-01	1,95E-01	6,98E-04	-3,07E+00
GWP - biogenic [kg CO2 eq.]	-2,86E-01	5,92E-03	2,90E-01	-2,08E-04	-3,41E-03	2,02E-04	5,33E-03	1,15E-05	1,98E-03	4,92E-05
GWP - luluc [kg CO2 eq.]	2,76E-03	5,74E-06	4,24E-04	8,53E-06	1,13E-02	1,03E-04	4,42E-06	6,37E-05	3,29E-07	-1,07E-03
ODP [kg CFC-11 eq.]	5,51E-12	2,36E-17	1,35E-16	1,55E-14	8,11E-14	2,33E-18	1,59E-17	4,85E-16	2,66E-18	-7,19E-15
AP [Mole of H+ eq.]	2,22E-02	4,70E-04	3,29E-04	5,10E-05	4,52E-02	5,78E-05	9,60E-04	2,68E-04	5,05E-06	-8,69E-03
EP - freshwater [kg P eq.]	4,33E-06	1,75E-08	1,72E-07	1,06E-08	4,56E-06	3,87E-08	1,54E-08	4,04E-08	3,31E-09	-9,56E-07
EP - marine [kg N eq.]	3,87E-03	2,13E-04	1,34E-04	6,94E-06	9,63E-03	2,71E-05	4,73E-04	6,96E-05	1,38E-06	-1,44E-03
EP - terrestrial [Mole of N eq.]	4,07E-02	2,34E-03	1,55E-03	7,56E-05	1,05E-01	3,02E-04	5,20E-03	7,92E-04	1,50E-05	-1,50E-02
POCP [kg NMVOC eq.]	1,28E-02	4,24E-04	3,08E-04	2,17E-05	2,86E-02	5,89E-05	8,87E-04	1,98E-04	4,72E-06	-5,42E-03
ADPF [MJ]	6,66E+01	1,93E+00	8,94E-01	1,16E-01	1,34E+02	1,70E-01	1,73E+00	7,26E-01	8,98E-03	-3,12E+01
ADPE [kg Sb eq.]	1,00E-04	5,42E-09	1,60E-08	1,14E-06	1,07E-06	1,03E-09	4,81E-09	6,22E-09	5,74E-11	-5,73E-05
WDP [m³ world equiv.]	1,02E+02	1,22E-03	1,12E-01	2,87E-03	4,07E+00	1,24E-04	8,33E-04	4,07E-02	7,22E-05	-6,03E+00

Caption: GWP - total = global warming potential; GWP - fossil = global warming potential (fossil fuel only); GWP - biogenic = global warming potential (biogenic); GWP - luluc = global warming potential (land use only); ODP = ozone depletion; AP = acidification terrestrial and freshwater; EP - freshwater = eutrophication potential (freshwater); EP - marine = eutrophication potential (marine); EP - terrestrial = eutrophication potential (terrestrial); POCP = photochemical ozone formation; ADPE = abiotic depletion potential (element), ADPF = abiotic depletion potential (fossil) WDP = water scarcity.

GRAPHIC RESULTS FOR GWP AND ADPF INDICATORS



INDICATORS DESCRIBING RESOURCE USE UC4 PER TKM

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
PERE [MJ]	4,73E+00	1,31E-02	3,41E+00	1,58E-02	3,06E+01	9,80E-03	9,73E-03	1,70E-01	1,07E-03	-1,27E-01
PERM [MJ]	3,33E+00		-3,33E+00				0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT [MJ]	8,06E+00	1,31E-02	7,74E-02	1,58E-02	3,06E+01	9,80E-03	9,73E-03	1,70E-01	1,07E-03	-1,27E-01
PENRE [MJ]	6,55E+01	1,93E+00	1,17E+00	3,38E-02	1,34E+02	1,70E-01	1,73E+00	1,60E+00	8,98E-03	-3,12E+01
PENRM [MJ]	1,14E+00		-2,72E-01	8,21E-02			0,00E+00	-8,70E-01	0,00E+00	0,00E+00
PENRT [MJ]	6,67E+01	1,93E+00	8,97E-01	1,16E-01	1,34E+02	1,70E-01	1,73E+00	7,26E-01	8,98E-03	-3,12E+01
SM [KG]	1,88E-01	0,00E+00	6,24E-06	1,98E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW [m3]	2,39E+00	3,08E-05	2,67E-03	7,21E-05	9,70E-02	1,14E-05	2,13E-05	9,66E-04	2,07E-06	-1,42E-01

Caption: 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

ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES AND OUTPUT FLOWS

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
HWD [KG]	3,62E-05	9,00E-12	3,16E-08	4,49E-08	1,53E-08	7,87E-09	7,08E-12	9,32E-11	8,97E-13	-1,92E-08
NHWD [KG]	1,87E-01	7,77E-05	8,94E-03	7,14E-04	5,74E-02	2,70E-05	6,61E-05	2,15E-02	4,41E-02	1,60E-01
RWD [KG]	4,96E-04	9,94E-07	8,26E-06	2,16E-06	2,59E-03	3,14E-07	7,23E-07	1,56E-05	8,20E-08	-7,65E-05
CRU [KG]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR [KG]	0,00E+00	0,00E+00	0,00E+00	8,78E-04	0,00E+00	0,00E+00	0,00E+00	1,53E+00	0,00E+00	0,00E+00
MER [KG]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE [MJ]	0,00E+00	0,00E+00	5,38E-01	3,39E-03	0,00E+00	0,00E+00	0,00E+00	2,61E-01	0,00E+00	0,00E+00
EET [MJ]	0,00E+00	0,00E+00	9,69E-01	6,36E-03	0,00E+00	0,00E+00	0,00E+00	5,30E-01	0,00E+00	0,00E+00

Caption: 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

BIOGENIC CARBON CONTENT OF PRODUCT AND PACKAGING

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
BIOG. C IN PACKAGING [KG]	9,14E-02	0,00E+00	0,00E+00	2,27E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BIOG. C IN PRODUCT [KG]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption: Biog. C in packaging = Biogenic carbon content in packaging; Biog. C in product = Biogenic carbon content in product

ADDITIONAL GWP INDICATOR ACCORDING TO PCR FOR CONSTRUCTION PRODUCTS

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
IPCC AR5 GWP100, EXCL BIOGENIC CARBON [KG CO2 EQ.]	5,46E+00	1,40E-01	8,28E-02	9,24E-03	1,30E+01	1,24E-02	1,23E-01	1,95E-01	2,53E-03	-3,02E+00

Environmental indicators

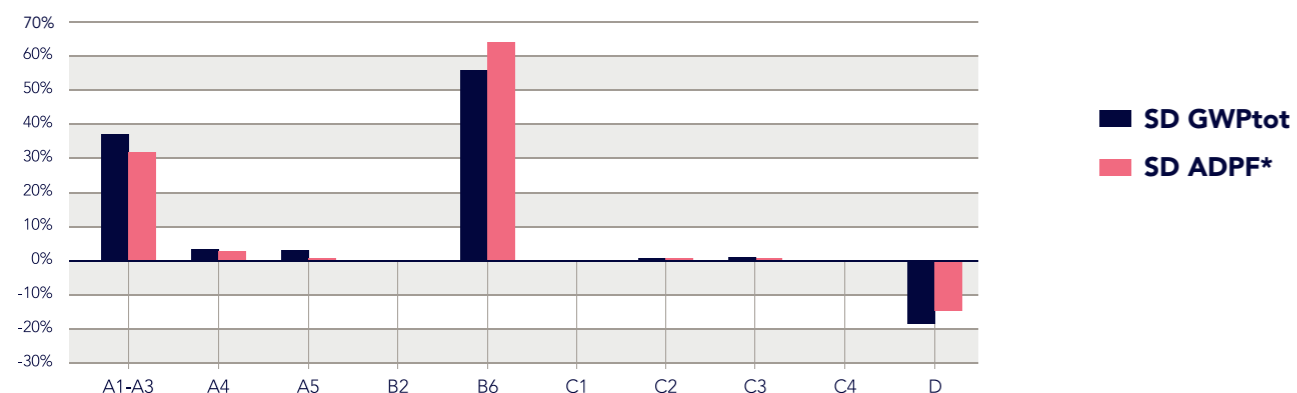
NORTH AMERICA SCENARIO

CORE ENVIRONMENTAL IMPACT INDICATORS UC4 PER TKM

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
GWP - total [kg CO2 eq.]	5,25E+00	4,60E-01	3,73E-01	8,17E-03	8,19E+00	1,27E-02	1,32E-01	1,74E-01	6,54E-04	-2,73E+00
GWP - fossil [kg CO2 eq.]	5,53E+00	4,60E-01	8,25E-02	8,37E-03	8,18E+00	1,24E-02	1,27E-01	1,74E-01	6,72E-04	-2,73E+00
GWP - biogenic [kg CO2 eq.]	-2,86E-01	1,74E-04	2,90E-01	-2,09E-04	4,04E-03	2,02E-04	5,53E-03	4,54E-05	-1,95E-05	1,49E-04
GWP - luluc [kg CO2 eq.]	2,76E-03	2,60E-04	4,16E-04	6,87E-06	2,76E-03	1,03E-04	0,00E+00	2,28E-05	1,97E-06	-9,13E-04
ODP [kg CFC-11 eq.]	5,51E-12	5,83E-17	7,46E-17	1,83E-14	4,25E-14	2,33E-18	3,68E-12	3,06E-16	2,61E-18	-1,47E-10
AP [Mole of H+ eq.]	2,22E-02	1,60E-02	4,61E-04	4,89E-05	1,28E-02	5,78E-05	1,18E-03	1,17E-04	4,78E-06	-7,22E-03
EP - freshwater [kg P eq.]	4,33E-06	1,34E-07	1,67E-07	1,08E-08	5,10E-06	3,87E-08	4,04E-08	4,18E-08	1,13E-09	-9,20E-07
EP - marine [kg N eq.]	3,87E-03	4,25E-03	2,07E-04	6,72E-06	2,87E-03	2,71E-05	5,02E-04	3,77E-05	1,24E-06	-1,12E-03
EP - terrestrial [Mole of N eq.]	4,07E-02	4,66E-02	2,40E-03	7,31E-05	3,08E-02	3,02E-04	5,50E-03	4,43E-04	1,36E-05	-1,16E-02
POCP [kg NMVOC eq.]	1,28E-02	1,18E-02	4,91E-04	2,08E-05	8,18E-03	5,89E-05	1,05E-03	1,02E-04	3,76E-06	-4,52E-03
ADPF [MJ]	6,66E+01	5,82E+00	9,55E-01	1,17E-01	1,36E+02	1,70E-01	1,80E+00	7,54E-01	8,91E-03	-2,85E+01
ADPE [kg Sb eq.]	1,00E-04	1,77E-08	1,85E-08	1,14E-06	1,83E-06	1,03E-09	0,00E+00	9,49E-09	6,34E-11	-5,73E-05
WDP [m³ world equiv.]	1,03E+02	3,00E-03	9,98E-02	2,39E-03	1,70E+00	1,24E-04	0,00E+00	2,99E-02	7,21E-05	-5,95E+00

Caption: GWP - total = global warming potential; GWP - fossil = global warming potential (fossil fuel only); GWP - biogenic = global warming potential (biogenic); GWP - luluc = global warming potential (land use only); ODP = ozone depletion; AP = acidification terrestrial and freshwater; EP - freshwater = eutrophication potential (freshwater); EP - marine = eutrophication potential (marine); EP - terrestrial = eutrophication potential (terrestrial); POCP = photochemical ozone formation; ADPE = abiotic depletion potential (element), ADPF = abiotic depletion potential (fossil) WDP = water scarcity.

GRAPHIC RESULTS FOR GWP AND ADPF INDICATORS



INDICATORS DESCRIBING RESOURCE USE UC4 PER TKM

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
PERE [MJ]	4,73E+00	4,44E-02	3,40E+00	1,45E-02	2,57E+01	9,80E-03	0,00E+00	1,49E-01	1,20E-03	8,23E-02
PERM [MJ]	3,33E+00	0,00E+00	-3,33E+00	2,52E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT [MJ]	8,06E+00	4,44E-02	6,61E-02	1,48E-02	2,57E+01	9,80E-03	0,00E+00	1,49E-01	1,20E-03	8,23E-02
PENRE [MJ]	6,55E+01	5,82E+00	1,23E+00	1,16E-01	1,37E+02	1,70E-01	1,80E+00	1,62E+00	8,92E-03	-2,85E+01
PENRM [MJ]	1,14E+00	0,00E+00	-2,72E-01	1,44E-03	0,00E+00	0,00E+00	0,00E+00	-8,70E-01	0,00E+00	0,00E+00
PENRT [MJ]	6,67E+01	5,82E+00	9,58E-01	1,18E-01	1,37E+02	1,70E-01	1,80E+00	7,54E-01	8,92E-03	-2,85E+01
SM [KG]	1,88E-01	0,00E+00	6,24E-06	1,98E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW [m3]	2,39E+00	9,59E-05	2,37E-03	6,29E-05	5,16E-02	1,14E-05	0,00E+00	7,67E-04	2,20E-06	-1,41E-01

Caption: 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

ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES AND OUTPUT FLOWS

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
HWD [KG]	3,62E-05	4,36E-11	3,15E-08	4,49E-08	1,27E-08	7,87E-09	0,00E+00	7,51E-11	9,47E-13	-1,64E-08
NHWD [KG]	1,87E-01	2,71E-04	5,89E-03	7,11E-04	3,96E-02	2,70E-05	0,00E+00	2,15E-02	4,45E-02	2,23E-01
RWD [KG]	4,96E-04	3,07E-06	1,31E-05	4,18E-06	1,26E-02	3,14E-07	0,00E+00	6,49E-05	9,36E-08	-1,99E-04
CRU [KG]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR [KG]	0,00E+00	0,00E+00	0,00E+00	8,78E-04	0,00E+00	0,00E+00	0,00E+00	1,53E+00	0,00E+00	0,00E+00
MER [KG]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE [MJ]	0,00E+00	0,00E+00	5,82E-01	3,39E-03	0,00E+00	0,00E+00	0,00E+00	2,61E-01	0,00E+00	0,00E+00
EET [MJ]	0,00E+00	0,00E+00	1,19E-01	6,36E-03	0,00E+00	0,00E+00	0,00E+00	5,30E-01	0,00E+00	0,00E+00

Caption: 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

BIOGENIC CARBON CONTENT OF PRODUCT AND PACKAGING

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
BIOG. C IN PACKAGING [KG]	9,14E-02	0,00E+00	0,00E+00	2,27E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BIOG. C IN PRODUCT [KG]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Caption: Biog. C in packaging = Biogenic carbon content in packaging; Biog. C in product = Biogenic carbon content in product

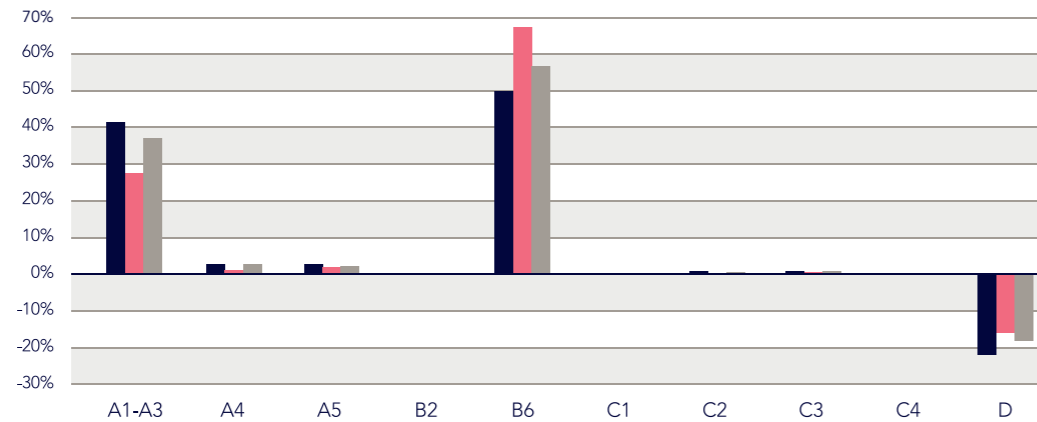
ADDITIONAL GWP INDICATOR ACCORDING TO PCR FOR CONSTRUCTION PRODUCTS

	A1 - A3	A4	A5	B2	B6	C1	C2	C3	C4	D
IPCC AR5 GWP100, EXCL BIOGENIC CARBON [KG CO2 EQ.]	5,46E+00	4,59E-01	8,25E-02	8,36E-03	8,17E+00	1,24E-02	1,26E-01	1,74E-01	6,69E-04	-2,68E+00

Environmental indicators

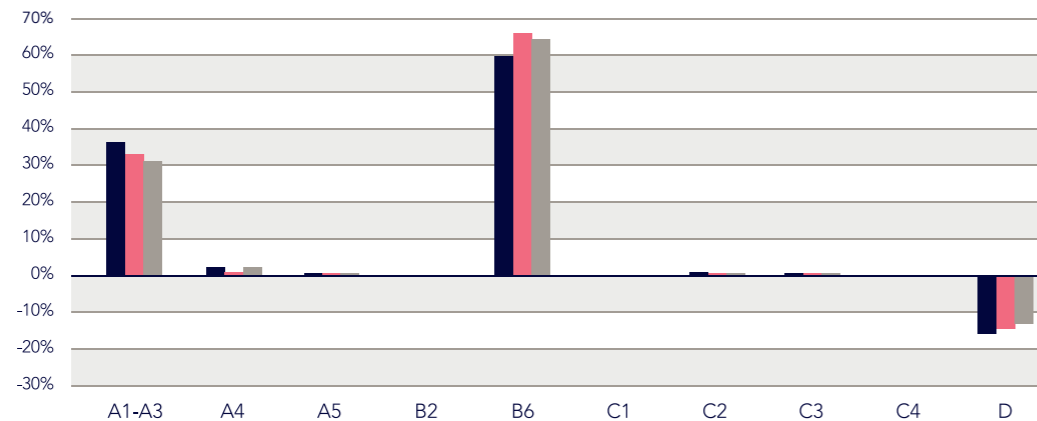
GRAPHIC RESULTS FOR GWP INDICATORS FOR THE THREE SCENARIOS

■ GWP_{tot} SD EU
■ GWP_{tot} SD CN
■ GWP_{tot} SD US



GRAPHIC RESULTS FOR ADPF INDICATORS FOR THE THREE SCENARIOS

■ ADPF SD EU
■ ADPF SD CN
■ ADPF SD US



RECYCLING AND WASTE TREATMENT DECLARATION

The modules considered for the end-of-life scenario includes waste processing (C3) and disposal (C4)

- + The main materials used in the SkyRise Single Deck elevator are metals (mainly steel) and inert materials (mainly concrete).
- + For the inert materials fraction (approx. 3%) landfilling is assumed in this EPD as a realistic and conservative approach.
- + Due to this composition, there is a high potential of recyclability at the lift's end-of life for approximately 95% of recyclable materials (steel and metals). Steel and non-ferrous metals as well as the electronic equipment - contributing approximately to 95% of the lift's composition - can all be recycled.
- + Incineration is considered for the minor proportion (2%) of combustible materials (e.g., plastic parts).
- + For any of these waste treatment plants European average technologies are considered.

Programme related information & verification

Program	The International EPD® System EPD International AB Box 210 60, SE-100 31 Stockholm, Sweden www.environdec.com
EPD registration number	S-P-01943
Published	2022-02-02
Valid until	2027-02-02
Revision number	0.0
Product Category Rules	EN15804 :2012 + A2:2019 as Core PCR PCR 2019 :14 Construction Products, version 1.1 C-PCR-008 Lifts (to PCR 2019:14), version 2020-10-30
Product group classification	Lifts
Reference year for data	2020
Geographical scope	Global/China, Europe, US

The EPD owner has the sole ownership, liability and responsibility of the EPD.
EPDs of construction products may not be comparable if they do not comply with EN 15804+A2:2019

Product category rules (PCR):
PCR 2019:14 Construction Products, version 1.1
C-PCR-008 Lifts (to PCR 2019:14), version 2020-10-30

PCR review was conducted by:
The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members.
Review chair: Claudia A. Peña, University of Concepción, Chile.
The review panel may be contacted via the Secretariat www.environdec.com/contact.

Independent verification of the declaration and data, according to EN ISO 14025:2010:
 External Internal covering
 EPD process certification (internal) EPD verification (external)

Third party verifier:
Yannick Le Guern - ELYS Conseil S.A.S.U

In case of individual verifiers:
Approved by: The International EPD® System Technical Committee, supported by the Secretariat

Procedure for follow-up during EPD validity involves third party verifier:
 Yes No

CONTACT INFORMATION

EPD owner:	LCA author:	Programme operator:
 OTIS Otis Lift Company New Equipment Center Avenue des Montoires 45504, Cedex, Gien, France www.otis.com	 sphera [®] SPHERA Hauptstraße 111-113 70771 Leinfelden-Echterdingen, Germany www.sphera.com	 EPD [®] EPD International AB info@environdec.com

Results presented in this document do not constitute comparative assertions. EPDs within the same product category, but from different programmes may not be comparable.

However, these results can be used to compare with similar products presented in other EPDs that follow the same PCR and are according to the same functional unit and have equivalent performance characteristics (UC, travelled height, stops, load, speed and geographical region).

References

- + EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- + General Programme Instructions of the International EPD® System. Version 2.5.
- + C-PCR-008 (TO PCR 2019 :14) Lifts (Elevators)
- + PCR 2019:14 Construction Products

ISO 14025:2006

Sustainability of construction works – Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

ISO (2006) ISO 14040

Environmental management – Life cycle assessment – Principles and framework.

ISO (2006) ISO 14044

Environmental management – Life cycle assessment – Requirements and guidelines.

ISO (2012) ISO 25745-1

Energy performance of lifts, escalators, and moving walks – Part 1: Energy measurement and verification.

ISO (2014) ISO 25745-2

Energy performance of lifts, escalators, and moving walks – Part 2: Energy calculation and classification for lifts (lifts).

ISO 16000-9:2006

Indoor air quality and VOC emission testing - Determination of the emission of volatile organic compounds from building products and furnishing – Emission test chamber method.

ISO 16000-3:2011

Indoor air quality and VOC emission testing - Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air - Active sampling method.

ISO 16000-11:2006

Indoor air quality and VOC emission testing - Determination of the emission of volatile organic compounds from building products and furnishing - Sampling, storage of samples and preparation of test specimens.

ISO 14001:2004

Environmental management systems - Requirements with guidance for use.

ISO 9001:2015

Quality management systems – Requirements.

OHSAS 18001:2007

Occupational Health and Safety management systems - Requirements.

ISO 50001:2011

Energy management systems - Requirements with guidance for use.

Glossary

ENVIRONMENTAL PRODUCT DECLARATION (EPD)

An EPD is a type III declaration, complying with ISO14025, which provides results about a product's environmental performance and facilitates comparison between different products with the same function (Functional Unit and Lift's characteristics). The results are based on the Life Cycle Analysis done in accordance with ISO 14040.

FUNCTIONAL UNIT (FU)

The quantified performance of a product system for use, as a reference unit. For Lifts the FU corresponds to the transportation of 1 tonne of load over a distance of 1 kilometer, expressed in [tkm]

ISO 25745

ISO 25745-2:2015 specifies a method of estimating energy consumption based on measured values, calculation, or simulation on an annual basis for traction, hydraulic and positive drive lifts on a single-unit basis, and an energy classification system for new, existing, and modernized traction, hydraulic, and positive drive lifts on a single-unit basis.

LIFE CYCLE ASSESSMENT (LCA)

LCA is a method that quantifies the total environment impact of products or activities over their entire life cycle and life cycle thinking. Life cycle assessment is based on ISO 14040 and ISO 14044 standards and comprises four phases: goal and scope definition, inventory data collection and analysis, environmental impact assessment, and interpretation of results. The results of LCA are used in communication and product development purposes, for example.

LIFE CYCLE INVENTORY (LCI)

The phase of life cycle assessment involving the compilation and quantification of inputs and outputs for a product system throughout its life cycle.

LIFE CYCLE IMPACT ASSESSMENT (LCIA)

The phase of life cycle assessment aimed at understanding and evaluating the magnitude and significance of the potential environmental impacts of a product system throughout the life cycle of the product.

PRODUCT CATEGORY RULES (PCR)

Product Category Rules (PCR) defines the rules and requirements for EPDs of a certain product category. They are a key part of ISO 14025 as they enable transparency and comparability between EPDs.

FOREST STEWARDSHIP COUNCIL (FSC)

International not-for-profit, multi-stakeholder organization established in 1993 to promote responsible management of the world's forests

PROGRAM FOR THE ENDORSEMENT OF FOREST CERTIFICATION (PEFC)

International, non-profit, non-governmental organization which promotes sustainable forest management through independent third-party certification

REACH

Registration, Evaluation, Authorisation and restriction of Chemicals – European Union Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 that addresses the production and use of chemical substances, and their potential impacts on both human health and the environment.

ROHS

Restriction of Hazardous Substances Directive - RoHS 1 Directive 2002/95/EC and RoHS 2 Directive 2011/65/EU.

WEEE

Waste Electrical and Electronic Equipment Directive - European Community Directive 2012/19/EU

UC

Usage Category: Defines the intensity of the lift usage by categories, based on average number of trips per day according to ISO 25745-2.

— Otis gives people freedom to connect and thrive in a taller, faster, smarter world. The global leader in the manufacture, installation and servicing of elevators and escalators, we move 2.1 billion people a day and maintain more than 2 million customer units worldwide – the industry's largest Service portfolio. You'll find us in the world's most iconic structures, as well as residential and commercial buildings, transportation hubs and everywhere people are on the move. Headquartered in Connecticut, USA, Otis is 70,000 people strong, including 40,000 field professionals, all committed to meeting the diverse needs of our customers and passengers in more than 200 countries and territories. To learn more, visit www.otis.com and follow us on LinkedIn, Instagram, Facebook and Twitter @OtisElevatorCo.

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