



## STRATEGIC BUSINESS PLAN – ISO/TC 178

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### Executive summary

Lifts, escalators and moving walks are essential elements in providing safe access to buildings. The lift industry stakeholders have been successful worldwide in providing such products and related services for many years.

In the last 20 years, there has been a major geographical shift for the industry as demand for lifts and escalators has grown rapidly in Asia Pacific region. At present, 80% of total global new equipment is installed in that region.

Worldwide, there are more than 18 million lifts and escalators in operation and more than 1 million new units are installed every year.

325 million passenger riding elevators each day around the world.

The long-term outlook for the elevator industry remains optimistic given increasing urbanization, demographic transformations, environmental protection and safety. The global population is estimated to grow to 8.9 billion by 2050, representing an increase of 47% from the 6.1 billion in 2000.

During the next few decades, the number of people aged 65 years and above is estimated to increase by nearly 33%, while increase in people in the age group of above 80 years will be two times the present number. As the average age of the population increases, accessibility becomes the key factor, necessitating all multi-floor buildings to be provided with vertical transportation systems such as escalators, elevators, stair lifts, and platform lifts.

Strong focus will be shed on energy and the environment. Environmental Product Declarations and Life Cycle Assessments are already becoming mandatory for manufacturers. “Green” infrastructure statutory requirements and standards across the globe will spur demand for replacing traditional elevator systems in existing buildings.

Interested parties in the standardization process are all lift, escalator, moving walks manufacturers, but also component manufacturers, public authorities and regulators, inspection bodies, building owners, users and workers.

ISO/TC 178 standards cover safety, accessibility and energy efficiency for lifts, escalators and moving walks. Today, 41 standards have been published and 9 projects are under development or revision.

ISO/TC 178 activities are also focusing on new important topics, as cybersecurity for lifts and escalators as well as new technologies, e.g. BIM (Building Information Modeling) and elevators.

In addition, ISO/TC 178 works very closely with CEN/TC 10 to develop EN ISO standards with global coverage under Vienna Agreement or adopts relevant EN standards as ISO standards whenever possible.

## 1 Introduction

### 1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work program with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the benefits expected from the availability of International Standards, and to ensure adequate resources for projects throughout their development.

### 1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: [ISO](#) (International Organization for Standardization) is responsible for all sectors excluding Electro technical, which is the responsibility of [IEC](#) (International electro technical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of [ITU](#) (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 164 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the [International Standard](#).

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its [Technical Committees](#) are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.

## **2 Business Environment of the ISO/TC**

### **2.1 Description of the Business Environment**

This section establishes a sequential development of thoughts regarding the market for which the ISO/TC 178 aims to fulfil the needs. Details in relation to the market analysis are given in the Guidance document on ISO Business Planning. The sequence of thoughts starts from a description of the current market situation relevant to the product or product grouping under consideration by the ISO/TC, continues on to an analysis of the different factors motivating/influencing the activities of the ISO/TC, to come to clear description of objectives and expected benefits resulting from the work of the ISO/TC, together with an accompanying strategy how to reach those objectives. Finally, a general 'risk analysis' is included highlighting issues that may delay or stop the ISO/TC achieving its set objectives.

### **2.2 Quantitative Indicators of the Business Environment**

Technical Committee ISO/TC 178 is in charge of developing standards for vertical, inclined and horizontal transport equipment for people and goods, such as lifts, service lifts, escalators, moving walks and lifting platforms for handicapped people.

These standards are intended to increase the safety and the comfort in use of such equipment and to standardize their technical characteristics.

The main feature of these products is that they are an integral part of industrial, residential or public buildings. Consequently, they should be adaptable to the technical and architectural constraints of such buildings. They must also meet the capacity requirements imposed by the intended use of the building. These products are considered as means of transport and therefore represent an essential component of the functional life of the buildings in which they are installed. Contrary to most public means of transport, they are intended for free use and operation by their passengers, which makes the integration of safety an essential concern.

The industry has two main areas of activity:

- The production and installation of new equipment in new or existing buildings,
- The maintenance and modernization of the equipment already installed.

As far as new equipment is concerned, world production has been around 1 000 000 units in 2020 including escalators and moving walks with more than 65% in China and about 20% in Europe.

Existing installations number 18 000 000 throughout the world in 2020, with around 36% in Europe, 41% in China, 7% in Japan and Korea, 6% in Asia Pacific, 7% in North America and 3 % in South America.

The annual growth rate of equipment installed remains at about 6% per annum. This includes the phenomenon in Europe where more than 50% of existing lifts are over 20 years old.

### **Benefits expected from the work of the ISO/TC**

Like other industries, the lift business entered the 2020s driven by the trend towards globalization and seeking to design products and components that could be installed anywhere in the world.

The expected benefits lie first of all on safety for passengers. The standards create a baseline for safety in the broadest context and this contribution is immeasurably valuable.

The new prescriptive ISO standards focusing on safety rules for the construction and installation of passenger and goods passenger lifts – based on a worldwide consensus - are of an extremely high quality.

Another benefit lays in developing better quality and safety products with fewer local deviations, using the best that each national standard or regulation can provide.

The ISO standardization process naturally provides the appropriate forum for pursuing the work already engaged and for eliminating all barriers to trade.

### **3 Representation and participation in the ISO/TC**

#### **3.1 Membership**

##### **Countries/ISO member bodies that are P and O members of the ISO committee**

Interested parties in the standardisation process are all lift and escalator companies, component companies, architects, consultants, public authorities (issues relating to fire, rescue operations, maintenance, disabled people, building...), inspection bodies, building-owners and -operators, facility management companies, insurance companies, associations of disabled people, users, workers union.

##### **Structure of the market: Suppliers/Manufacturers**

The major type of organisation of the suppliers is the following:

- a) Complete companies, which assure the design, the production, the installation, the maintenance and the modernisation. This is the case of the international companies operating everywhere in the world.
- b) Component manufacturers and complete elevator manufacturers, large companies dedicated on design and production of major components or complete elements. These companies are generally large or medium international companies.
- c) Local companies dedicated to installation and/or maintenance and modernisation.

##### **Structure of the market: Customers**

For new lifts market, the lifts installed in new buildings are generally ordered by the general constructor. The technical choice is generally made by the architects or by consultants.

Lifts installed in existing buildings are generally ordered by the co-ownership of the building or its representative.

Maintenance in some countries is covered by local regulations. The choice of the maintenance company is made by the owner of the building or its representative.

The modernisation<sup>1</sup> also could be covered by local regulations for retroactive actions to eliminate critical safety risk (e.g. absence of car doors). The rhythm of modernisation is less than 2 % of the portfolio each year. The decision to make modernisation is made by the owner of the building or its representative.

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<sup>1</sup> The modernisation of existing equipment consists of the upgrading of the equipment (in one or several steps) with the aim to improve safety, comfort, aesthetic, performance and rehabilitation.

## **Major factors which may have an impact on the development of the markets**

Lifts and escalators are products that have remained static in their design and technology ever since they were invented. This stability was mainly due to the existence of reference standards defining the technologies that have to be applied when building such products. This was a consequence, so to speak of having an environment where a wealth of product standards was available.

The emergence in 1995 of the “essential safety requirement” principle embodied in European Directive 95/16/EC altered this environment by allowing any technical solution that was able to meet the stated requirements. Such a development cannot obviously be ignored at international level. This evolution will probably lead to new situation where technical innovation will be permitted. The existing equipment is ageing and new equipment is safer and safer, the modernisation rate (2% a year) is not enough to reduce the gap in terms of safety between the old and new elevators. It will be probably necessary to make decision to upgrade the safety level of old existing lifts.

The population is also ageing and the society requires full accessibility for handicapped elderly.

These considerations will probably introduce new requirements in terms of dimensions and performances, like car dimensions, signals and controls, stopping accuracy, in order to make this equipment accessible and usable by handicapped and elderly people.

The globalisation trend will have some influence on the products and on the market.

## **Representation of major players in the ISO/TC**

Since 1990, the Technical Committee has devoted considerable effort to opening up to the American and Asian continents, with its membership growing up to 58 (31 P member and 27 O member), and securing the very active participation of the main countries involved in the production of such equipment.

Manufacturers, inspection bodies, consultants, major principals, safety authorities are represented.

## **4 Objectives of the ISO/TC and strategies for their achievement**

### **4.1 Defined objectives of the ISO/TC**

Based on the considerations above, the ISO/TC proposes the following objectives and strategic directions for its future work:

- a) Faced with the pressing demand for globalization of its product, the Technical Committee has undertaken many new work items in all fields currently governed exclusively by national regulations.

For example, in the field of fire protection, ISO/TC 178 has to face the complete absence of harmonization in firefighting principles around the world (Today, more than 15 different fire tests are required to develop an elevator door than can be used world-wide).

- b) Taking the good example of lift Directive in Europe, the ISO Technical Committee has developed the new approach of global essential safety requirements and global safety parameters, which allow innovation and reinforce globalisation.
- c) ISO/TC 178 aims to reduce times for producing standards in order to fit to market demand with reactivity.

### **4.2 Identified strategies to achieve the ISO/TC's defined objectives**

- a) To address standardisation areas like handicapped people, fire protection, seismic conditions by involving external contributors directly involved in the subject like handicapped persons, fire brigade, and by the way to have strong lever to remove national regulations.
- b) Controlled innovation is only possible if essential safety requirements can be defined worldwide. This is the task of a special working group. This highly innovative approach in the lift business involves the risk analysis methods developed by ISO/TC 178 on the basis of ISO/IEC Guide 51 " Safety aspects — Guidelines for their inclusion in standards". This method (ISO/TR 14798) consists in assessing risk in terms of severity and probability of occurrence.

Full harmonization will be achieved once these requirements have been defined and ISO/TC 178 experts have harmonized the needed safety parameters such as maximum deceleration, impact force of a person, average weight of a passenger, etc.

- c) New working procedures involving continental groups to move the work forward concurrently and reduce the time and costs linked with long-distance travel. Videoconference is used as an essential complement to this new method.

All the market players will be associated in order to develop quality standards that most countries will agree to adopt quickly removing contradiction during the voting procedure.

## **5 Factors affecting completion and implementation of the ISO/TC work program**

Some areas such as electromagnetic compatibility, earthquake resistance design rules and fire protection are covered by a profusion of national standards and regulations, with the consequence that there are as many different products as there are countries and local authorities refused ISO standards to be implemented to protect their national regulations.

Without worldwide political drive in this standardization area, it is difficult to obtain the external participation of firemen and handicapped people, which have not specific funding

The WTO (World Trade Organization) is a real opportunity to promote international Standardization in place and stead of local regulations.

## **6 Structure, current projects and publications of the ISO/TC**

### **Information on ISO online**

The link below is to the TC's page on ISO's website:

[ISO TC 178 on ISO Online](#)

Click on the tabs and links on this page to find the following information:

- About (Secretariat, Committee Manager, Chair, Date of creation, Scope, etc.)
- Contact details
- Structure (Subcommittees and working groups)
- Liaisons
- Meetings
- Tools
- Work program (published standards and standards under development)

### ***Working Group 2 – Guide rails***

Convenor : Mr David McKee (ANSI)

#### **ISO 8100-33:2022**

Lifts for the transport of persons and goods – Part 33 : T-type guide rails for lifts and counterweights

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### ***Working Group 3 – Lifting platforms for handicapped persons***

Convenor : Mr Paul CLIFTON (BSI)

Secretary :

#### **ISO 9386-1:2000**

Power-operated lifting platforms for persons with impaired mobility -- Rules for safety, dimensions and functional operation -- Part 1: Vertical lifting platforms

#### **ISO 9386-2: 2000**

Power-operated lifting platforms for persons with impaired mobility -- Rules for safety, dimensions and functional operation -- Part 2: Powered stairlifts moving in an inclined plane for seated, standing and wheelchair users

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### ***Working Group 4 – Safety requirements and risk assessment***

Convenor : Mr David MCCOLL (SCC)

Secretary : Mr Jeff MENARD

#### **ISO/TR 11071-1:2004**

Comparison of worldwide lift safety standards -- Part 1: Electric lifts (elevators)

#### **ISO/TR 11071-2:2006**

Comparison of worldwide lift safety standards -- Part 2: Hydraulic lifts (elevators)

#### **ISO/TS 14798: 2009**

Lifts, escalators and passenger conveyors – Risk analysis methodology --

#### **ISO 8100-20 : 2018**

Lifts for the transport of persons and goods – Part 20: Global essential safety requirements (GESR's)

#### **ISO TS 8100-21 : 2018**

Lifts for the transport of persons and goods – Part 21: Global safety parameters(GSPs) meeting the Global essential safety requirements (GESR's)

#### **ISO TS 22559-3 : 2011**

Safety requirements for lifts (elevators) – Part 3: Global conformity assesment procedures (GCAP) – Genreal requirements

#### **ISO TS 22559-4 : 2011**

Safety requirements for lifts (elevators) – Part 4 : Global conformity assessment bodies (GCAB).

**ISO 8100-1:2019**

Lifts for the transport of persons and goods — Part 1: Safety rules for the construction and installation of passenger and goods passenger lifts

**ISO 8100-2:2019**

Lifts for the transport of persons and goods — Part 2: Design rules, calculations, examinations and tests of lift components

**ISO/TS 8100-3:2019**

Lifts for the transport of persons and goods — Part 3: Requirements from other Standards (ASME A17.1/CSA B44 and JIS A 4307-1/JIS A 4307-2) not included in ISO 8100-1 or ISO 8100-2

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***Working Group 5 – Escalators and passenger conveyors – Safety standards comparison***

Convenor : Mr Edip KACI (DIN)

**ISO 9589:1994**

Escalators -- Building dimensions

**ISO/TR 14799-1:2022**

Comparison of worldwide escalator and moving walk safety standards - Part 1: Rule by rule comparison

**ISO/TR 14799-2:2015**

Comparison of worldwide escalator and moving walk safety standards - Part 2: Abbreviated comparison and comments

**ISO TS 25740-1 : 2011**

Safety requirements for escalators and moving walks -- Part 1: Global essential safety requirements (GESR)

**ISO TS 8103-6 : 2017**

Escalators and moving walks -- Part 6: Safety parameters meeting the GESRs

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***Working Group 6 - Lift installation***

Convenor : Mr Ari KETONEN (SFS)

Secretary : Mr Eva CONTIVAL

**ISO 8100-30: 2019**

Lifts for the transportation of persons and goods – Part 32 : Class I, II, III and VI lifts

**ISO 4190-2:2001**

Lift (US: Elevator) installation -- Part 2: Class IV lifts

**ISO 4190-3:1982**

Passenger lift installations -- Part 3: Service lifts class V

**ISO 4190-5 : 2006**

Lift (Elevator) installation -- Part 5: Control devices, signals and additional fittings

**ISO 8100-32 :2020**

Lifts for the transportation of persons and goods – Part 32: Planning and selection of passenger lifts to be installed in offices, hotels and residential buildings

**ISO/TR 16765 : 2003**

Comparison of worldwide safety standards on lifts for firefighters

**ISO/TS 18870:2014**

Lifts (elevators) — Requirements for lifts used to assist in building evacuation

**ISO/TR 25741-1:2022**

Lifts and escalators subject to seismic conditions — Compilation report — Part 1: Rule by rule comparison

**ISO/TR 25741-2:2022**

Lifts and escalators subject to seismic conditions — Compilation report — Part 2: Abbreviated comparison and comments

**ISO TR 25742**

Lifts (elevators) -- Study of the methods used for fire testing lift landing doors

**ISO TR 25743**

Lifts (elevators) -- Study into the use of lifts for evacuation during an emergency

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***Working Group 8 – Electrical requirements***

Convenor : Mr Vincent ROBIBERO (ANSI)

Secretary : Mrs Geraldine BURDESHAW

**ISO/TR 16764:2003**

Lifts, escalators and passenger conveyors - Comparison of worldwide standards on electromagnetic interference/electromagnetic compatibility

**ISO 8102-1 2020**

Electrical requirements for lifts, escalators and moving walks – Part 1: Electromagnetic compatibility with regard to emission

**ISO 8102-2:2021**

Electrical requirements for lifts, escalators and moving walks – Part 2: Electromagnetic compatibility with regard to immunity

**ISO 22201-1 : 2017**

Electrical requirements for lifts, escalators and moving walks – Part 5: Programmable electronic systems in safety-related applications for lifts (PESSRAL)

**ISO 8102-6: 2019**

Electrical requirements for lifts, escalators and moving walks - Part 6: Programmable electronic systems in safety related applications on escalators and moving walks (PESSRAE)

**ISO/TR 22201-3:2016**

Electrical requirements for lifts, escalators and moving walks - Part 7: Life cycle guideline for programmable electronic systems in safety related applications on lifts (PESSRAL) and escalators (PESSRAE)

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***Working Group 9 – Measurement of lift ride quality***

Convenor : Mr Chris JONES (SA)

**ISO 8100-34:2021**

Lifts for the transport of persons and goods — Part 34: Measurement of lift ride quality

**ISO 8103-9:2022**

Escalators and moving walks — Part 9: Measurement of ride quality

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***Working Group 10 – Energy efficiency***

Convenor : Mr Roger BEURET (SNV)

**ISO 25745-1:2012**

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

**ISO 25745-2:2015**

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

**ISO 25745-3:2015**

Energy performance of lifts, escalators and moving walks -- Part 3: Energy calculation and classification of escalators and moving walks

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***Working Group 11 – Methodology for the Improvement of safety of existing passenger and goods passenger lifts***

Convenor : Mr Gerhard SCHIFFNER (DIN)

**ISO NP 8104-1**

Improvement of safety on existing lifts and escalators — Part 1: Passengers and goods passenger lifts

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***Working Group 12 – Cybersecurity*** **NEW**

Convenor : Mr Ari KATTAINEN (SFS)

## **ISO/DIS 8102-20**

Electrical requirements for lifts, escalators and moving walks — Part 20: Cybersecurity

ISO 8102-20 specifies cybersecurity requirements for new lifts, escalators and moving walks. It specifies minimum security level for different function domains and strongly refers to industrial automation state-of-the-art cybersecurity standard IEC 62443. ISO 8102-20 is applicable to lifts, escalators and moving walks that are capable of connectivity to external systems such as building networks, cloud services, or service tools.

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**AHG 1 – New technologies**

**NEW**

Convenor : Mr Kari SUIHKONEN

The creation of AHG 1 has been decided by Resolution 018/2019 (Frankfurt) and its mission has been defined as follows:

- Provide a study in the field of new technologies to be used within lifts and escalators and make a proposal to ISO/TC 178 including:
  - How ISO/TC 178 defines its position in this technology
  - Possible work items to be registered
  - Organization structure including possible new WG's to be established

AHG 1 proposes today to create a new WG13 “New technologies” (that will replace AHG1) and to start the work on 2 new TR's respectively on

- BIM and elevators considering ISO 19650-1 (within new WG13)
- Remote software updates for lifts and escalators (within existing WG12)

The creation of WG 13 (including call for convenor, secretariat and experts) as well as the drafting of the 2 new TR's have been approved by ISO/TC 178 member in April 2022 and further actions will be taken accordingly.

## **Reference information**

[Glossary of terms and abbreviations used in ISO/TC Business Plans](#)

[General information on the principles of ISO's technical work](#)