Guidelines for Modernising Existing Escalators

機電工程署
EMSD

Why Modernising Existing Escalators

Escalator is an important mode of transport that can be found in building complex, shopping malls, railway stations, airports and hotels, etc. They are usually heavily used and wear and tear of the parts is inevitable. It is required by law that the responsible persons (including escalator owners, and those who have the management or control of escalators) should ensure their escalators are properly maintained.

The escalators in Hong Kong are installed in different decades. Although they adopted the level of technology appropriate at the time of installation, there is room for improvement to make them safer, more reliable and comfortable with the rapid technology advancement in recent years. It must however be emphasised that, with proper maintenance and periodic examination, the existing escalators are safe for use.

Purpose of Guidelines

These Guidelines aim to help Responsible Persons (RPs) for escalators implement enhancement and modernisation solutions to make their existing escalators safer, more reliable and comfortable.

RPs for escalators are recommended to adopt the recommended enhancement solutions in these Guidelines. Should you decide to do so, please liaise with your engineering consultants or registered escalator contractors to review the feasibility of modernising your escalators.

Duties of Responsible Persons for Escalators

According to the Lifts and Escalators Ordinance (Cap. 618), RPs shall ensure that escalators are kept in a proper state of repair and in safe working order. For maintenance works, the RPs shall employ a registered escalator contractor to carry out the periodic maintenance for the escalator works at intervals not exceeding one month, and arrange a registered escalator engineer to examine the escalator thoroughly at mtervals not exceeding 6 months.

Where major alteration/modernisation works is necessary, RPs shall employ a registered escalator contractor to carry out the works for their escalators. Upon completion of major alteration/modernisation works, RPs shall arrange a registered escalator engineer to examine the escalators before the escalator resumes normal use and operation.

Tips

The RPs should consider factors such as space availability, technical feasibility and cost implications before deciding on whether to replace major components of existing escalators or install new safety equipment.

RPs could also consider total replacement of existing escalators to bring the escalators up to prevalent safety standards.

Eight Solutions for Enhancement of Existing Escalators

Eight solutions have been identified with the greatest potential benefit for safety enhancement in existing escalators. The applicable solutions for enhancing the safety requirements of existing escalators are elaborated as follows:-

SOLUTION 1

Solution 1: Install Skirt Panel Safety Devices

To prevent serious injury due to trapping between skirting and steps, skirt panel safety devices can be installed to detect any objects being trapped between skirting and steps and stop the escalator automatically.

Apart from installing skirt panel safety devices at the points of upper and lower transition from incline to horizontal, additional skirt panel safety devices shall also be installed along the inclined section.

Escalators installed before 1993 might not have been installed with such devices. RPs should consider installing such system in compliance with the requirements of Code of Practice on the Design and Construction of Lifts and Escalators (2012 Edition) - Clause no. 1.1.5.5(d) of Section E Part 4.

SOLUTION 2

Solution 2: Install Skirt Panel Deflector Devices (Plastic Brush Bristles)

To reduce the risk of trapping between skirting and steps, deflector devices in the form of brush bristles suitably fixed along the skirting can be installed to guard passengers' feet, loose clothing and foreign objects from possible trapping in the gap between steps and skirt panel.

Escalators installed before 1993 might not have been installed with such devices. RPs should consider installing such system in compliance with the requirements of Code of Practice on the Design and Construction of Lifts and Escalators (2012 Edition) - Clause no. 1.1.5.5(c) of Section E Part 4.

SOLUTION 3

Solution 3: Install Obstruction Guards

To reduce the risk of trapping passenger's head or upper limb, obstruction guards can be installed at floor intersections, criss-cross escalators and building obstacles.

In particular, at floor intersections and on criss-cross escalators, a set of fixed guard and suspended guard shall be placed. For vertical building obstacles, fixed guards shall be installed. The position of the obstruction guards shall effectively prevent injuries to the passengers.

Escalators installed before 1993 might not have been installed with such devices. RPs should consider installing such system in compliance with the requirements of Code of Practice on the Design and Construction of Lifts and Escalators (2012 Edition) - Clause no. 1.2.3 of Section E Part 4.

SOLUTION 4

Solution 4: Install Emergency Stop Switches

To stop the escalator in case of emergency, push button type emergency stop switches can be installed.

Apart from placing emergency stop switches in conspicuous and easily accessible positions at or near to the upper and lower landings of the escalator, additional emergency stop switches shall also be installed for escalator with rise above 12m.

Escalators installed before 1993 might not have been installed with such devices. RPs should consider installing such system in compliance with the requirements of Code of Practice on the Design and Construction of Lifts and Escalators (2012 Edition) - Clause no. 10.3.2.3 of Section E Part 4.

SOLUTION 5

Solution 5: Install Landing Floor Plate Safety Devices

To reduce the risk of injury if passenger falls into the machinery space under the landing floor plate due to the dislocation of the plate, a safety device can be installed under the landing floor plate to stop the escalator if there is dislocation of any landing floor plate detected.

Escalators installed before 2012 might not have been installed with such devices. RPs should consider installing such system in compliance with the requirements of Code of Practice on the Design and Construction of Lifts and Escalators (2012 Edition) - Clause no. 1.1.3.7 (Addendum No. DC02) of Section E Part 4.

SOLUTION 6

Solution 6: Install an Auxiliary Brake

To prevent passenger from losing balance due to sudden acceleration or reversal movement of the escalator, an auxiliary brake can be installed to stop the escalator when the following abnormal situations are detected:

- before the speed exceeds a value of 1.4 times of the rated speed;
- by the time the steps change from the preset direction of motion; or
- failure of the coupling of the operational brake and the driving wheels of the steps.

For detecting such abnormalities mentioned above, unintended reversal monitoring switch, overspeed governor, broken step chain safety device and broken drive chain safety device shall also be installed.

Escalators installed before 1993 might not have been installed with such devices. RPs should consider installing such system in compliance with the requirements of Code of Practice on the Design and Construction of Lifts and Escalators (2012 Edition) - Clause no. 8.6 of Section E Part 4.

SOLUTION 7

Solution 7: Install Step Sagging Safety Devices

To reduce the risk of trapping due to step sagging, a monitoring device can be installed underneath the running steps to stop the escalator if any sagging of the step is detected.

Escalators installed before 1993 might not have been installed with such devices. RPs should consider installing such system in compliance with the requirements of Code of Practice on the Design and Construction of Lifts and Escalators (2012 Edition) - Clause no. 4.5 of Section E Part 4.

SOLUTION 8

Solution 8: Install Missing Step Safety Devices

To prevent missing step which could be a serious trapping hazard to passengers, a monitoring device can be installed at each driving and return station to detect any missing step and prevent missing step emerges from the comb plate.

Escalators installed before 2012 might not have been installed with such devices. RPs should consider installing such system in compliance with the requirements of Code of Practice on the Design and Construction of Lifts and Escalators (2012 Edition) - Clause no. 7.1.1 of Section E Part 4.

Summary of Eight Enhancement Items

	Enhancement Items [Clause no. in Section E Part 4 of Code of Practice on the Design and Construction of Lifts and Escalators (2012 Edition)]	Benefits
1	Skirt Panel Safety Devices [1.1.5.5(d)]	To prevent serious injury due to trapping between skirting and steps.
2	Skirt Panel Deflector Devices (Plastic Brush Bristles) [1.1.5.5(c)]	To reduce the risk of trapping between skirting and steps.
3	Obstruction Guards [1.2.3]	To reduce the risk of trapping passenger's head or upper limb at floor intersections and criss-cross area.
4	Emergency Stop Switches [10.3.2.3]	To stop the escalator in case of emergency.
5	Landing Floor Plate Safety Devices [1.1.3.7 – Addendum No. DC02]	To reduce the risk of injury if passenger falls into the machinery space under the landing floor plate due to the dislocation of the plate.
6	Auxiliary Brake [8.6]	To prevent passenger from losing balance due to sudden acceleration or reversal movement of the escalator.
7	Step Sagging Safety Devices [4.5]	To reduce the risk of trapping due to step sagging.
8	Missing Step Safety Devices [7.1.1]	To prevent missing step which could be a serious trapping hazard to passengers.

Next Steps for Responsible Persons for Escalators

RPs are recommended to consult their engineering consultant or registered escalator contractors on the technicalities and feasibility of implementing the safety devices/ equipment, and implement the improvement solutions.

RPs should also note that any equipment, including its components or parts, used to replace the old one during major alteration works shall be in full compliance with the Lifts and Escalators Ordinance (Cap.618) and the Codes of Practice on the Design and Construction of Lifts and Escalators.

For further enquiries, please contact EMSD by phone 2333 3762 or by e-mail (info@emsd.gov.hk).

Benefits of Enhancement

By carrying out enhancement works, RPs of existing escalators will

- Upgrade the existing escalators to a level of technology comparable to today's state-of-the-art standards
- Cause the escalators safer, more reliable and comfortable for riding

General Legislation EMSD

3 Kai Shing Street, Kowloon, Hong Kong
Tel : (852) 1823
Fax : (852) 2504 5970
Website : www.emsd.gov.hk
E-mail : info@emsd.gov.hk