Regulating Lift and Escalator Safety in Hong Kong

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Abstract. Quality and safe lift and escalator services are vital for a densely populated city dominated by high-rise buildings as in Hong Kong. The Electrical and Mechanical Services Department ("EMSD") of the Government of Hong Kong Special Administrative Region ("HKSAR") is responsible for regulating the safety of lifts and escalators in Hong Kong by enforcing the Lifts and Escalators Ordinance (Cap.618) through various means, such as conducting risk-based audit inspections, carrying out prosecution and disciplinary proceedings, implementing codes of practice as well as the registration of contractors, engineers and workers. EMSD has also rolled out various initiatives to facilitate the sustainable development of the lift and escalator trade, including maintenance price survey for lifts, performance ratings of registered contractors, collaboration with the trade and training institutes to recruit new blood etc. In addition, EMSD promotes lift and escalator safety to the public via diversified publicity and education programmes. This paper will examine the ways on how EMSD plays its role as "Facilitator" and "Promoter" in addition to its traditional role as a "Regulator" on regulation of lift and escalator safety in Hong Kong, and the outcomes of its efforts.

1 ENFORCEMENT OF LIFTS AND ESCALATORS ORDINANCE

Hong Kong is the city with the most skyscrapers in the world[1]. There are over 300 skyscrapers which rise taller than 150 meters and over 1,200 high-rise buildings which rise taller than 100 meters in the city. Quality and safe lift and escalator services are vital for such vibrant and vertical city with population density of around 6,830 persons per square kilometer and yearly visitors of more than 58 million[2].

1.1 The old regulatory regime

It takes us back to 1960s when the regulatory control over lift and escalator safety was first implemented in Hong Kong. The Lifts and Escalators (Safety) Ordinance (Cap.327) ("ex-LESO") was enacted in 1960 as the first ordinance to regulate lift and escalator safety in Hong Kong. It provided a legal framework for EMSD to exercise regulatory control over lift and escalator safety in Hong Kong. Since its enactment, the ex-LESO went through various major amendments over the years, but still it was not able to resolve the deep-rooted drawbacks which had hampered enforcement for lift and escalator safety, e.g. ambiguity of responsibilities among owners and property management agents in upkeeping safety of lifts and escalators, lack of a registration system to monitor the quality of frontline workers who carried out lift and escalator works, low penalty level for committing offences, lack of public surveillance on expiry of use permit for lifts and escalators, etc.

1.2 Revamp of the legislative framework

In 2009, the Government of the HKSAR took the initiative to transform the regulatory regime over lift and escalator safety to address the increasing public concerns over lift and escalator safety and to

[1] Top 10 Cities with the Most Skyscrapers in the World, https://wearetop10.com/cities-with-the-most-skyscrapers/

[2] Hong Kong in Figures (2018 Edition), https://www.statistics.gov.hk/pub/B10100062018AN18B0100.pdf

make the regulatory framework capable of coping with market changes and long term development requirements. Following public consultation and the necessary legislative processes, the Lifts and Escalators Ordinance (Cap. 618) ("LEO") was enacted and came into full operation in end 2012 to regulate lift and escalator safety and related matters in Hong Kong.

Major modifications of the legislative requirements in respect of lift and escalator safety in the LEO include:-

- adoption of the "Responsible Person" (RP) concept to replace "owner" – both owners and property management agents have the common objective for upkeeping the safe operation of a lift or an escalator;
- expanding the applicability of regulatory control – all lifts and escalators within the territory, including those belonging to the Government of the HKSAR and the Housing Authority, are now under a unified regulatory system;
- strengthening the registration regime – formalized and upgraded the requirements for registration as contractors and engineers, imposed the need to renew registrations at intervals not exceeding five years, introduced the worker registration system to grant legal status to qualified tradesmen, and required practitioners to complete professional development training for renewal of their registrations;
- stiffening the penalties for offences – the maximum fine for offences is increased to HK$200,000, and there are no changes in imprisonment terms; and
- additional measures to improve operational effectiveness and efficiency – the regulator, i.e. EMSD, is empowered to issue "Improvement Orders" to demand rectification, within a specified period, of non-compliances or defective items of a lift or an escalator; and periodic examinations of a lift or an escalator can be advanced by not more than two months to accommodate use permit processing time.

The changes in the legislative requirements of the LEO as compared with the ex-LESO are significant, in particular in (i) the use of RP to replace "owner" to make more stakeholders subject to regulatory control, and (ii) imposition of the registration renewal requirement under which existing registrants would have to give up the perpetuity of their registration status. Notably, the change would be extremely difficult, if not impossible, without the mutual understanding and concerted efforts of stakeholders acting in common pursuit of better lift and escalator safety.

1.3 Regulator for lift and escalator safety

As the regulator, EMSD regulates lift and escalator safety in Hong Kong under the legislative framework of the LEO by various means:-

- Equipment compliance

  The LEO stipulates that a registered lift/escalator contractor who undertakes the installation of a lift/escalator must ensure that the works are not to be carried out unless the lift/escalator and all its safety components[3] are of a type in respect of which the contractor has obtained approval

[3] In accordance with Schedule 2 of the LEO, the safety components for lifts include safety gear, overspeed governor, door locking device, buffer, ascending car overspeed protection means, unintended car movement protection means and any safety circuit for a lift that contains any electronic component, while those for escalators include step and pallet for an escalator.

from Director of Electrical and Mechanical Services (DEMS). In applying the type approval, the following information should be provided for detailed assessment by EMSD:-

- information of the lift/escalator manufacturer, e.g. name, address, history, organization, size of plant, product range, yearly production, brochure, job references, etc.;
- general specifications of the lift/escalator applying type approval, e.g. type examination certificates, model numbers and their applications, type of major components adopted in the lift/escalator model, confirmation from the manufacturer that the brands/models of lift/escalator are designed and manufactured to the requirements of the "Code of Practice on the Design and Construction of Lifts and Escalators" (Design Code) issued by EMSD, etc.;
- type test certificates and reports for safety components issued by approved independent testing institutes;
- technical information of the lift/escalator applying type approval, e.g. installation, operation and maintenance manuals, typical electric schematic diagrams of the power circuits and safety circuits with explanatory notes, supporting drawings, illustrations and calculations, maintenance schedules issued by manufacturers, etc.;
- quality assurance certificate (e.g. ISO 9001) including manufacturers of lift/escalator model and related safety components; and
- arrangement of training and technical support provided by manufacturers.

- Quality control

  As stipulated by the LEO, only Qualified Persons[4] (QPs) or persons under the direct supervision of a QP at the place at which the works are carried out are allowed to carry out lift and escalator works. QPs are required to be in possession of the necessary qualifications and experience, and have obtained registrations from EMSD. If not registered, the personnel who want to undertake the lift/escalator works have to work under the direct supervision of a QP. Personnel who have registered under the LEO as contractors, engineers, and workers are required to renew their registrations so as to be able to continue to carry out lift/escalator works. The renewal requirement is to ensure that they are fit and proper to continue to perform the legislative duties conferred or imposed on them.

  On the other hand, the LEO imposes restriction on subcontracting lift and escalator works. Except with written approval of EMSD, a registered lift/escalator contractor who undertakes any lift/escalator works (except installation or demolition of a lift/escalator) must not subcontract the works or any part of the works to any other person who is not a registered lift/escalator contractor.

- Setting of standards

[4] Qualified Person is defined under section 2(1) of the LEO. In essence, a Qualified Person can be taken, in relation to lift/escalator works, as a registered lift/escalator worker or registered lift/escalator engineer employed by the registered lift/escalator contractor who has been contracted to carry out the lift/escalator works. An independent registered lift/escalator engineer can also be regarded as a Qualified Person in respect of any lift/escalator examination being carried out.

The LEO empowers DEMS to issue any code of practice that in DEMS's opinion is suitable for providing practical guidance in respect of any matter concerning the safety of lifts or escalators, including providing practical guidance in respect of the design, use and operation of lifts or escalators and providing practical guidance to persons who carry out any lift works or escalator works. In this regards, EMSD has issued two codes of practice, including (i) the "Code of Practice on the Design and Construction of Lifts and Escalators" (Design Code), which sets out technical details, methods, procedures and safety rules for compliance with the requirements of the LEO on the design and construction of a lift and an escalator, or any associated equipment or machinery of a lift or an escalator, and (ii) the "Code of Practice for Lift Works and Escalator Works" (Works Code), which provides guidance to set out the minimum industry standards for satisfying the requirements under the LEO, taking into account the trade skills and risk perception of the general practitioners. In drafting these two codes of practice, references have been made to relevant safety standards of the European Standards Institution as well as local safety requirements derived from previous lift and escalator incidents happened in Hong Kong, and the trade together with relevant stakeholders have been consulted on the contents with their comments suitably incorporated.

There are also other standards set out for the trade under the LEO to ensure lift and escalator safety. As stipulated in the Lifts and Escalators (General) Regulation (Cap.618A) (a regulation made under the LEO), a registered lift/escalator contractor is required to:-

- post a notice in specified form signifying the suspension of service of a lift/escalator within 4 hours if the normal use and operation of the lift/escalator cannot be resumed within 4 hours from the time at which an incident involving the lift/escalator has come to the knowledge of the contractor; and

- attend to the failure of any emergency device of a lift (i.e. alarm system, emergency lighting, intercommunication system and ventilation fan) within 4 hours from the time when it has knowledge of the failure and notify DEMS in the specified form, within 24 hours after it has knowledge of the failure, if it is unlikely that the failure can be rectified before the end of the 24-hour period.

- Prosecution and disciplinary proceedings

The LEO imposes different levels of fine and imprisonment to reflect the seriousness of different offences. In order to have punitive and deterrent effect against contravention, the penalties for offences have been stiffened in LEO – the maximum fine for offences is increased from HK$10,000 to HK$200,000 while the longest imprisonment remains as 12 months.

Apart from prosecution, the LEO also establishes, as further punitive and deterrent measure, disciplinary proceedings to punish the registered persons (i.e. registered contractors, registered engineers or registered workers) on committing disciplinary offences, which include the followings:-

- committing misconduct or neglect in any professional respect;

- convicting an offence under the LEO;

- obtaining registration or renewal of registration under the LEO by fraud or misrepresentation;

- having failed, without reasonable excuse, to attend before a disciplinary board or an appeal board either as a witness or as a person in respect of whom the board is meeting; and

- convicting in Hong Kong or elsewhere of any other offence that may bring their profession into disrepute.

A complaint alleging a disciplinary offence against a registered person may be made by DEMS or by any other person by submitting the complaint in specified form to DEMS. A disciplinary board, consisting members of professional engineers, registered lift/escalator engineers, registered lift/escalator workers, property managers and laypersons having the role of management committee member or lift/escalator owner, will be established to hear the case and to decide on the disciplinary case. If the disciplinary board determines the registered person in concern has committed the disciplinary offence alleged in the complaint, it may order the person be reprimanded and fined a maximum sum of HK$100,000 for registered lift/escalator contractors or HK$10,000 for registered lift/escalator engineers/workers, and order the Registrar to cancel or suspend the registration of the person.

- Registration system

Under the LEO, the registration regime covers registered lift/escalator contractors, engineers and workers, with different qualifications and experience requirements as shown below.

- Registered Contractor (RC)

An individual is eligible for application for registration as a lift/escalator contractor, if he/she:-

- has at least a director, partner or employee who is a corporate member of the Hong Kong Institution of Engineers, or a registered lift engineer and/or a registered escalator engineer;
- has not less than two other employees with one of them being qualified to carry out lift works and / or escalator works independently;
- is in possession of necessary facilities, resources and workforce for carrying out lift works or escalator works; and
- is capable of obtaining technical support from a lift manufacturer or an escalator manufacturer for technological updating, technical training of staff, and sourcing of spare parts.

- Registered Engineer (RE)

An individual is eligible for application for registration as registered lift/escalator engineer, if he/she has the qualifications and experience specified in any of the following routes:-

ROUTE 1	is a registered professional engineer under the Engineers Registration Ordinance (Cap. 409) in mechanical engineering, marine and naval architecture engineering, electrical engineering, electronics engineering, building services engineering, or control, automation and instrumentation engineering; and
	has at least 2 years' relevant working experience and has the necessary practical experience in lift works or escalator works
ROUTE 2	has a bachelor degree in mechanical engineering, marine and naval architecture engineering, electrical engineering, electronic engineering,

	building services engineering, or such equivalent or higher qualification as recognized by the Registrar; and
	has at least 4 years' relevant working experience and has the necessary practical experience in lift works or escalator works

The applicant has to pass in both the written examination and interview organized by EMSD in order to obtain the registration status.

- Registered Worker (RW)

An individual is eligible for application for registration as registered lift/escalator worker, if he/she has the qualifications and experience specified in any of the following routes:-

ROUTE 1	has been an apprentice in trade of lift electrician or lift mechanic or equivalent and completed a craft certificate course recognized by the Registrar; and
	has at least 4 years' relevant working experience, of which at least one year was obtained within the 5-year period immediate before the date of submission of the application; and has necessary practical experience and relevant training.
ROUTE 2	has completed a certificate course in building services engineering, electrical engineering, electronic engineering, marine engineering, mechanical engineering, or such equivalent or higher qualifications as recognized by the Registrar; and
	has at least 4 years' relevant working experience, of which at least one year was obtained within the 5-year period immediate before the date of submission of the application; and has necessary practical experience and relevant training.
ROUTE 3	has passed a trade test for lift works or escalator works recognized by the Registrar; and
	has at least 8 years' relevant working experience, of which at least one year was obtained within the 5-year period immediately before the date of submission of the application; and has the necessary practical experience and relevant training.

To regularly assess the competency of these registered persons, the registration status of all these registered persons has to be renewed by application to the Registrar at intervals not exceeding five years.

- Risk-based audit inspections

The risk-based enforcement approach is adopted for lift and escalator safety regulation. A high level of audit inspections is maintained with a closer focus on lifts and escalators at higher risk and works performed by practitioners with poorer performance track records. In reinforcing the risk-based inspections, reviews are regularly made in respect of different aspects of the regulatory system including:-

- contractors – analyze the level of risk by comparing, for example, the number of complaints against different RCs, tip-off cases, durations and/or frequencies of lifts being put out of services, staff movements, drastic changes in maintenance capacities or workforce level of a RC, etc.;
- lifts/escalators – changeover frequencies of maintenance services providers, age of installations, complexity of installations, number and types of complaints, problematic locations, etc.;
- works – lift works involving major alteration, brand new design or non-standard installation, at unconventional locations, etc.

Currently, the target number of audit inspections for lifts and escalators carried out by EMSD is set at around one in seven lifts/escalators. Despite limited manpower resources, the yearly average number of inspections for lifts and escalators carried out by EMSD has increased from 8,964[5], while the ex-LESO was in force, to 11,207[6], while the LEO was in force, i.e. an increase of about 25%. With such dedication to inspections as well as maintenance and examination works by registered persons, the yearly average of reported incidents[7] due to equipment fault involving per 1,000 nos. of lifts and escalators has decreased from 0.67[8], while the ex-LESO was in force, to 0.15[9], while the LEO was in force, i.e. a decrease of about 78%.

- Shared Responsibility

Under the new regulatory regime of the LEO, the concept of "Shared Responsibility" is adopted. With such concept, different stakeholders, including registered lift and escalator contractors, engineers, workers, RPs[10] for lifts and escalators, the Government of the HKSAR as well as the general public (as users of lifts and escalators), should jointly take part in and share the responsibility for upkeeping lifts and escalators in a proper state of repair and in safe working order. In this connection, EMSD has taken various measures, with the aim of raising stakeholders' awareness (in particularly that of RPs for lifts and escalators and the general public) of the importance of "Shared Responsibility" in assuring high lift/escalator safety standard and quality lift/escalator services:-

- Clear indication of validity period on use permit

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[5] Such figure is the yearly average of inspections for lifts and escalators carried out by EMSD for the years from 2008 to 2012 (i.e. 5 years in total), during which the ex-LESO was in force.

[6] Such figure is the yearly average of inspections for lifts and escalators carried out by EMSD for the years from 2013 to 2017 (i.e. 5 years in total), during which the LEO was in force.

[7] According to the LEO, when there is a lift/escalator incident belonging to a type as listed in Schedule 7 of the LEO, the Responsible Person for the lift/escalator must inform EMSD within 24 hours after the incident comes to the Responsible Person's knowledge.

[8] Such figure is the yearly average of reported incidents due to equipment fault involving per 1,000 lifts and escalators for the years from 2008 to 2012 (i.e. 5 years in total), during which the ex-LESO was in force.

[9] Such figure is the yearly average of reported incidents due to equipment fault involving per 1,000 lifts and escalators for the years from 2013 to 2017 (i.e. 5 years in total), during which the LEO was in force.

[10] Responsible Person for a lift/escalator is defined under section 2(1) of the LEO as a person who owns the lift/escalator or any other person who has the management or control of the lift/escalator (e.g. representative of building or facility management company).

User surveillance is a very effective means to spot non-compliances. A new use permit arrangement has been introduced in the LEO to replace the posting of safety certificates adopted in ex-LESO to facilitate user surveillance. Succinct and key information, i.e. the expiry date, is now shown on the use permits prominently to enable the public to effectively monitor whether a use permit has expired, and whether or not the lift or escalator has been examined by a registered lift or escalator engineer to confirm its safe working status.

Figure 1 Use permit for lift (left) and escalator (right) adopted in LEO

- Incident reporting by Responsible Persons

  The LEO stipulates that, if there is an incident[11] relating to a lift or an escalator, the RP for the lift or escalator must within 24 hours after the incident comes to the person's knowledge, notify EMSD and relevant registered lift or escalator contractors in writing. This could advocate proper management of lifts and escalators among RPs who now have legal obligations to ensure the safe operation of the installations under the LEO.

- Announcement of maintenance price figures for lifts

  EMSD has released the average maintenance price figures on the lifts in private residential and commercial premises (which are both based on statistical analysis on the contract prices collected from independent sampling survey on lifts in Hong Kong) on half-yearly basis for public reference since 2014 and 2015 respectively. The sharing of price information serves as a reference for facilitating RPs for lifts to choose among registered lift contractors for provision of lift maintenance services.

- Registered lift and escalator Contractors' Performance Rating System

[11] Incident is defined under Schedule 7 of the LEO. Lift/escalator incidents to be reported to EMSD include, for instance, death or injury of person involving a lift or any associated equipment or machinery of a lift/an escalator, and, failure of main drive system, safety component and safety equipment of a lift/an escalator.

EMSD has launched the registered lift and escalator Contractors' Performance Rating (CPR) System since 2009. Under the system, EMSD posts on its website the rating indices of RCs in regard of their performance in lift and escalator maintenance services (based on non-compliances identified by EMSD during audit inspections), warning letters issued to RCs, number of reported major incidents, etc. The release of such information for the public's reference injected greater objectivity and transparency into the control process. The information enables RPs for lifts and escalators to make an informed choice in the selection of RCs for the provision of lift and escalator maintenance services and, at the same time, impressed on RCs the need for improving their services so that they can achieve a better performance rating and popular reputation.

2 FACILITATION OF THE SUSTAINABLE DEVELOPMENT OF THE LIFT AND ESCALATOR TRADE

2.1 Understanding the trade

EMSD is not only the regulator, but also the "Facilitator" for the lift and escalator trade in Hong Kong. It keeps its finger on the pulses of the trade through conducting Trade Survey so that necessary assistance can be timely provided to help the sustainable development of the trade. The bi-annual Trade Survey is for:-

- collecting information for analysis of the salary trend for past years and salary structure of workforce (including registered engineers, registered workers and general workers) in the lift and escalator trade;
- canvassing information on the working conditions and working pattern of the workforce (including registered engineers, registered workers and general workers) in the lift and escalator trade; and
- seeking views of various groups of practitioners in the lift and escalator trade regarding the difficulties and problems encountered, ways to attract new employees, issues in the trade which hinder the provision of quality services to the public and how to improve the situation.

It is glad to note from the 2016 Trade Survey results that the satisfaction level of trade practitioners, for both REs and RWs, have been going up and their salaries have increased by around 6.5% a year. This betterment could partially be attributed to EMSD's series of administrative measures to nurture the healthy trade environment that is conducive to enhance lift and escalator safety, including the CPR System, maintenance price survey for lifts in private and commercial premises, the pro forma maintenance contract for use by RPs, etc. With these information announced periodically and publicly, RPs can readily make reference to them when selecting a competent RC to deliver quality services at a fair and reasonable market price.

Apart from the Trade Survey, EMSD also holds regular liaison meetings with trade associations and sets up a "Lift and Escalator Maintenance Working Group" in collaboration with the trade practitioners. On the other hand, a permanent non-statutory body "The Lift and Escalator Safety Advisory Committee (LESAC)" has also been established since 2013 to advise EMSD on matters relating to the administration and enforcement of the LEO and other matters relating to lift and escalator safety referred by EMSD. The establishment of LESAC provides a forum, with a wide participation[12] to facilitate discussions and exchange of views in a broader perspective on matters

[12] The LESAC involves committee members from professional bodies, lift and escalator trade, training institutions, property & facility management sector, general community and the government of the HKSAR.

relating to lift and escalator safety. It has also enhanced community participation which at the same time brought in expertise and experience in related matters for better formulation and implementation of policy by EMSD.

2.2 Attraction of new blood to the industry

Having said of the betterment of the trade, there is a sustained concern of the trade on its aging workforce, with the average age of REs and RWs at 50.2 and 46.7 respectively. To this end, there has been close collaboration between the trade and EMSD in the past years to attract more new blood to join the industry. Starting from 2014, the government and the industries introduced the "Earn & Learn" Scheme to provide cash allowance, guaranteed salary, as well as structured training programme for attracting young people to enter the trade as apprentices. Since then, the number of new apprentice has significantly increased from about 70 a year to over 250 a year in 2016, and such enrolment has been sustained in the current school year. On the other hand, EMSD has also taken the initiative to establish partnership with the trade to launch the "Pilot Cooperative Apprentice Training Scheme (PCATS)" since 2016 to attract more new blood to join the lift and escalator trade. Technician trainees under the Scheme are trained in both RCs and EMSD; and on completion of their 4-year training, will acquire sufficient experience for registration as RW to work independently in RCs.

Apart from recruitment of apprentice, the number of new trainees taking graduate engineer training scheme in RCs has also increased substantially from the usual annual intake of about 5 a year to 15 in 2017. Since it has been planned to ultimately uplift the registration qualification for RE to registered professional engineer, EMSD has been actively encouraging RCs to provide Graduate Scheme "A" Training programme, accredited by the Hong Kong Institution of Engineers, to more graduate engineers.

2.3 Cultivation of innovation and technology

EMSD holds regular seminars to promote new lift and escalator technology. Trade practitioners and professionals will be invited to share their latest products and research results with a view to promoting their use in the trade. These seminars provide a forum, with participation of practitioners from the lift and escalator trade as well as property and facility management, to facilitate discussions and exchange of views on the latest development of lift and escalator technologies.

In view of the tight manpower of the industry, the better and wider use of technology for relieving the manpower is certainly welcome. EMSD has conducted a pilot project on adopting Remote Monitoring System (RMS) for lifts in 2015. As reflected from the pilot project, RMS could effectively reduce 20% of system breakdown and 45% of maintenance suspension time. With the fruitful outcome, EMSD has already extended the implementation of RMS to other government premises and liaised with RCs to adopt RMS for lift and escalator maintenance services in government premises.

Furthermore, in line with the directive of 2017 Policy Address on development of Innovation and Technology (I&T) in Hong Kong, EMSD has launched "E&M InnoPortal"[13]. It is a platform for a public list of the technology needed by various government departments, public bodies and the Electrical & Mechanical (E&M) trade, and it invites the I&T collaboration from innovators in the private sector to solve the problems. On the other hand, universities and start-ups etc. are also welcomed to put on the platform their E&M related innovation and new technologies, including those related to lifts and escalators (e.g. new products developed for enhancing efficiency and safety of lifts

[13] Website of "E&M InnoPortal": https://www.emsd.gov.hk/minisites/inno/index.html

and escalators), to match the market needs. EMSD will provide venues for trial of suitable projects, conduct prototype testing and pilot projects in a collaborative way, and upload validated performance reports of trial cases to the platform for sharing with the public with a view to jointly promoting and driving the research and development and application of E&M related innovation and technology.

2.4 Promotion of occupational health and safety

EMSD has been devoting continued efforts in promoting the safety of lifts and escalators. Over the years, different types of competitions, e.g. lift and escalator safety quiz, and lift and escalator work safety improvement competition, have been held to enhance the safety of lifts and escalators in the industry and related organizations, thereby reducing accidents and enhancing the trade practitioners' awareness of work safety. EMSD also jointly organizes regular seminars with the Construction Industry Council to promote lift and escalator work safety. On the other hand, issues relating to lift and escalator work safety will be discussed in the regular LESAC meetings, liaison meetings with trade associations and meetings of the Lift and Escalator Maintenance Working Group.

3 PROMOTION OF LIFT AND ESCALATOR SAFETY TO THE PUBLIC

EMSD also acts as a "Promotor" for lift and escalator safety in Hong Kong by implementation of various public education and publicity activities to enhance the public's awareness of the safe use of lifts and escalators and the importance of proper maintenance for these installations.

3.1 Public education on lift and escalator safety

Over the years, EMSD has been carrying out public education on lift and escalator safety by various means. Below are some of major activities of public education:-

- conducting seminars on lift and escalator safety for the general public emphasizing relevant legal requirements under LEO and proper and safe use of lifts and escalators;
- implementing Safety Ambassador Outreach Programme – in 2017, over 400 sessions of outreach talks were conducted for kindergartens, youth centres and elderly centres, reaching over 19,000 participants to promote the proper and safe use of lifts and escalators.
- producing TV Announcements in the Public Interests, leaflets, guidelines, posters, stickers, newsletters, promotional videos, etc. on lift and escalator safety;
- carrying out various publicity activities to promote lift and escalator safety, e.g. carnival, competition, symposium, etc. – in 2017, EMSD has jointly organized the "Building Management Week 2017", which was well received by participating organizations and the public, with Water Supplies Department, Buildings Department, Fire Services Department, Food and Environmental Hygiene Department and Home Affairs Department to promote good practices in quality building management; and
- setting up "Responsible Persons' Corner"[14] at EMSD website to provide one-stop information on lift and escalator safety for reference by RPs.

[14] Website of "Responsible Persons' Corner:
https://www.emsd.gov.hk/en/lifts_and_escalators_safety/responsible_persons_corner/index.html

3.2 Quality Lift Service Recognition Scheme

EMSD has launched the "Quality Lift Service Recognition Scheme" (QLSRS) as a pilot scheme in 2015. It is a voluntary lift service recognition scheme targeting at RPs for lifts of private buildings, with the following objectives:-

- to encourage RPs to enhance the safety level of their lifts and to make the operation of the lifts more effective, reliable and comfortable through implementation of modernisation works; and
- to improve the lift management services of RPs of private buildings to meet the users' increasing demand for quality lift services.

The target participants of the QLSRS are RPs for lifts of private buildings, which include private residential buildings, office buildings, industrial buildings, shopping malls and hotels.

Applicants of the QLSRS are assessed in the following areas:-

- status of implementation of the seven lift modernisation solutions;
- lift management performance of the RP; and
- lift suspension time due to equipment failure.

Qualified RPs who achieved the specified standards will be presented with certificates with relevant ratings (Gold, Silver and Bronze Awards) in recognition of their achievements in implementation of lift modernization works as well as their dedication to continuous provision of quality lift management service. The QLSRS in 2015 has received 94 no. of applications, covering 1,230 no. of lifts, 254 no. of premises and 39 no. of Incorporated Owners / property management companies. 3 Gold Awards, 26 Silver Awards and 16 Bronze Awards were issued. With the support from applicants and the trade, the QLSRS has driven a positive effect in promoting the industry to continuously enhance the quality of lift services. Full implementation of the QLSRS is being planned for launching in late 2018.

3.3 Promotion of lift and escalator modernisation

Lifts and escalators in Hong Kong were 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 technological advancement in recent years. In this connection, EMSD has issued the "Guidelines for Modernising Existing Lifts"[15] and "Guidelines for Modernising Existing Escalators"[16] in 2012 and 2016 respectively to encourage RPs to carry out modernization works for their aged lifts and escalators through the recommended solutions.

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[15] "Guidelines for Modernising Existing Lifts": https://www.emsd.gov.hk/filemanager/en/content_803/Guidelines%20for%20Modernising%20Existing%20Lifts%20(E).pdf

[16] "Guidelines for Modernising Existing Escalators": https://www.emsd.gov.hk/filemanager/en/content_803/Guidelines%20for%20Modernising%20Existing%20Escalators%20(E).pdf

As a further step-up promotion for lift modernisation, EMSD has set up the "Lift Modernisation Resource Corner"[17] at EMSD website in 2017 to provide one-stop information to RPs regarding lift modernisation. EMSD has also been issuing letters to RPs of aged lifts since 2017 for reminding them of the modernisation solutions applicable to their lifts and encourage them to implement the appropriate recommended solutions as soon as possible.

4 WAY FORWARD TO ENHANCE THE SAFETY OF LIFTS AND ESCALATORS IN HONG KONG

Acting expeditiously on important and emerging issues in the best interests of the public, EMSD will continue to deploy resources effectively to focus attention on where the potential risks are comparatively higher. Looking forward, EMSD will step up regulatory efforts in causing RPs for lifts and escalators to implement modernisation works for aged lifts and escalators to enhance public safety. In particular, EMSD will formulate checklists for assessing the risk level of lifts and require registered lift engineers to use the checklist for risk assessment during annual examination of lifts. If, after assessment, the risk of the lift is identified high, EMSD will consider issuing an Improvement Order requiring the RP to implement modernisation works for the concerned lift within a reasonable time limit. Study will also be conducted to assess whether it is necessary to mandate RPs to modernise their aged lifts. In this regard, EMSD will make reference to the relevant experience of overseas countries, including the implementation status of relevant legislation, consider the feasibility of dedicated supporting measures to RPs for assisting them to comply with the requirements, and conduct regulatory impact assessment and timely consultation with the public and the industry on the proposed initiative.

On the other hand, efforts will be focused on the harmonisation of the Design Code with new EN standards. With EN81:1/2:1998+A3:2009 superseded by EN81-20:2014 and EN81-50:2014 in September 2017, different milestones requiring type-examination certificates complying with the new EN standards have been set for the type approval for new and existing models of lifts as well as safety components. Furthermore, the Design Code is currently under review to incorporate the requirements under the new EN standards. With harmonisation of the Design Code with the new EN standards, the trade could reduce the effort on assessing the compliance of models of lifts on conforming to the requirements for installation in Hong Kong.

Moreover, EMSD will continue to encourage RPs to engage independent REs to resolve occasional disputes between RPs and their appointed RCs, which may arise from the poor performance of the concerned RCs, queries on the needs for repairing/improvement works suggested by the RCs, occurrence of incidents etc., by carrying out independent audit inspections of the concerned lifts and escalators and provision of professional advice accordingly.

Finally and yet importantly, EMSD will continue to act as a "Facilitator" and "Promotor" in encouraging wider use of new technologies in the industry. Promotion of adopting new technologies will not only be confined in lift and escalator maintenance works, but will also be extended to apprentice and safety training in the lift and escalator trade. With the view of achieving quality and safe lift and escalator services, EMSD will continue to collaborate with different stakeholders to explore the possibility of wider use of new technologies in the industry so as to cope with the challenge of increasing demand for manpower resources and make the operation of lifts and escalators more comfortable, safe and reliable.

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[17] "Lift Modernisation Resource Corner": https://www.emsd.gov.hk/en/lifts_and_escalators_safety/responsible_persons_corner/lift_modernisation_resource_corner/index.html

BIOGRAPHICAL DETAILS

Ir Eric Y.H. PANG is a Government Electrical and Mechanical Engineer of the EMSD, Government of the HKSAR. He possesses diversified engineering and managerial experience in the regulation of lift, escalator, amusement ride, aerial ropeway, builders' lift, fuel gas and electrical systems, as well as the provision of one-stop multi-disciplinary engineering services for various specialist engineering systems. He is currently the Assistant Director of the Gas and General Legislation Branch of EMSD, and is responsible for overseeing the Gas Standards Office and the General Legislation Division of the Department. Ir PANG is a Fellow of the Hong Kong Institution of Engineers and a Member of the Institution of Electrical Technology in the United Kingdom.

Ir. Cheung Kim Ching is the Chief Electrical and Mechanical Engineer of the General Legislation Division at EMSD, a regulatory body and law enforcement department with regard to electricity, gas, lift and escalator safety and related E&M areas within the Government of the HKSAR. His duties include management and administration of the regulatory functions related to the safety of lifts and escalators, amusement rides, aerial ropeways and builders' lifts and tower working platforms. Ir. Cheung graduated from the Hong Kong Polytechnic in 1987 and subsequently obtained the Master of Science in Electrical Engineering from The Hong Kong Polytechnic University in 1997. He is a Chartered Engineer and Corporate Member of the Hong Kong Institution of Engineers, the Chartered Institution of Building Services Engineers and the Institution of Engineering and Technology in the United Kingdom.

Ir Alex C.F. LAI is a Senior Electronics Engineer of the EMSD, Government of the HKSAR and responsible for enforcement of the Lifts and Escalators Ordinance (Cap. 618) in Hong Kong. He also possesses with diversified engineering experience in electronics, control, automation and information systems. Ir LAI is a Corporate Member of the Hong Kong Institution of Engineers and a Chartered Engineer of the Institution of Engineering and Technology in the United Kingdom.

LUI Graham is an Electrical and Mechanical Engineer of the Government of the HKSAR with engineering experience in building services design, operation and maintenance as well as regulatory enforcement on lift and escalator safety in Hong Kong. Currently working as the Engineer of General Legislation Division of EMSD, he is responsible for enforcement of the Lifts and Escalators Ordinance (Cap. 618) in Hong Kong. Mr. LUI is a Chartered Engineer registered with the Engineering Council of the United Kingdom and a Member of the Institution of Mechanical Engineers.