機電工程署 Electrical and Mechanical Services Department
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LIFT & ESCALATOR NEWSLETTER 電梯通訊

Feature Article

Destination Control System (DCS) for Lifts

Hong Kong has been leading the ranking of cities with the highest number of skyscrapers (over 150 metres in height) in the world. As at 2023, Hong Kong has 552 skyscrapers, much more than Shenzhen, the second-ranked city, which has 373 skyscrapers and New York, the third-ranked city, which has 314 skyscrapers. This highlights the crucial role of efficient lift services in the operation of Hong Kong's society.

In general, for conventional lifts, passengers have to press the "up" or "down" button at the landings to call the lift. Once inside the lift car, passengers press the floor buttons for their destination floors. If passengers in the lift are going to different floors, the number of intermediate stops during the travel will increase, thereby extending the travel time and reducing the transport efficiency of the lift. This is particularly noticeable in skyscrapers with numerous floors.

Origin of DCS for Lifts

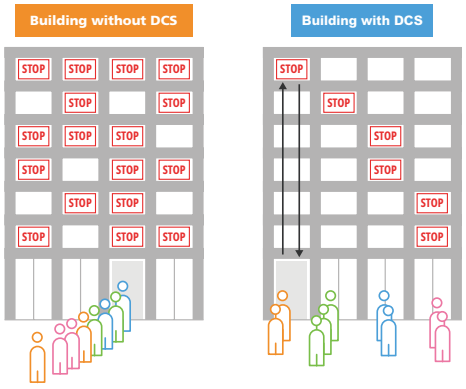
In this regard, lift manufacturers and building designers soon came to realise that for buildings with more than one lift, the transport efficiency can be improved through diverting passengers. In residential buildings with relatively few lifts, a common method of diverting passengers is to set up lifts serving odd- and even-numbered floors. However, in skyscrapers with more lifts, a more effective way to improve transport efficiency is to deploy a Destination Control System (DCS) for lifts.

Since the 1990s, various lift manufacturers have introduced DCS, which is designed to improve transport efficiency by dispatching passengers travelling to the same or nearby floors to the same lift. In buildings equipped with DCS, keypads or touchscreens are installed at landings for passengers to input their destination floors. DCS then calculates the journey time of each lift and dispatches passengers travelling to the same or nearby floors to wait by a designated lift. Upon entering the lift car, passengers will be transported to their destination floors automatically by the lift.

Benefits of Deploying DCS

Compared to conventional lift systems, DCS reduces the number of intermediate stops, which shortens not only the passengers' travelling time but also their waiting time at landings, thus decreasing the number of passengers waiting at each landing. In addition, as DCS reduces the number of starts and stops made by the lifts, it also lowers the energy consumption of lifts and contributes to the goal of achieving carbon neutrality.

A building equipped with DCS



DCS reduces the number of intermediate stops

機電工程署 EMSD

Future Development of DCS

The lift industry has always been proactive in applying advanced technologies to lift systems. In recent years, lift manufacturers have started developing DCS that utilises artificial intelligence to effectively analyse the passenger traffic patterns in a building, such as peak periods and the ratio of passengers travelling to each floor. This enables DCS to adapt to the overall needs of passengers in the building and optimise the allocation to further enhance the transport efficiency.

Under the Long Term Housing Strategy and the Northern Metropolis Development Strategy formulated by the Government, it is expected that the number of high-rise buildings in Hong Kong will significantly increase, leading to a growing demand for efficient lift services. The lift industry will continue to dedicate efforts to apply innovative technologies to DCS and other lift services, in order to provide a more pleasant experience for passengers and clients.

(Contributed by the Lift and Escalator Contractors Association)

News -in- Brief

Work Safety News-in-Brief
Points to Note on the Safety of Lift Shaft Works

Recently, some serious industrial incidents related to confined space works have occurred. Although lift shafts are not in general considered confined spaces as defined under the Factories and Industrial Undertakings (Confined Spaces) Regulation, their structural similarity to confined spaces means that working in lift shafts may pose specified risks associated with confined spaces. Specified risks mean a risk of —

1. serious injury to any person at work arising from a fire or explosion;
2. the loss of consciousness of any person at work arising from an increase in body temperature;
3. the loss of consciousness or asphyxiation of any person at work arising from gas, fume, vapour or the lack of oxygen;
4. the drowning of any person at work arising from an increase in the level of liquid; or
5. the asphyxiation of any person at work arising from a free flowing solid or the inability to reach a respirable environment due to entrapment by a free flowing solid.

A worker working in the lift shaft

Before taking over a new construction site or commencing works inside a lift shaft, contractors should appoint competent safety personnel to carry out risk assessment, identify the relevant specified risks and take necessary mitigation measures, in order to ensure the safety of workers.

News -in- Brief

Development Progress of the Digital Log-books for Lifts and Escalators

The Electrical and Mechanical Services Department (EMSD) has rolled out the Digital Log-books for lifts/escalators (the Digital Log-books) to digitalise the maintenance records of lifts/escalators and replace conventional paperbound log-books. The Digital Log-books enable responsible persons for lifts/escalators (RPs), registered lift/escalator contractors (RCs), trade practitioners and the EMSD to monitor, record, manage and analyse the maintenance records of lifts/escalators in real time through a mobile app or web portal. It facilitates joint monitoring of the relevant works by various stakeholders, thereby uplifting the management and safety standard of lifts/escalators.

Since its official roll-out in November 2022, the Digital Log-books have received high acclaim from the lift/escalator trade, property management sector and RPs, and its adoption rate has been increasing steadily. Currently, more than 30 000 lifts/escalators have adopted the Digital Log-books. Besides, the EMSD added new functions to the Digital Log-books progressively in the second half of 2023 to facilitate users' management of lifts/escalators:

New Function 1 – Advanced Search

An "Advanced Search" function (Figure 1) has been added to the web portal of the Digital Log-books. Using this function, RPs and RCs can filter the search results by selecting multiple criteria, including time and location of the works, type of works, name of contractor etc., so as to gain quick access to works requiring attention and its details for better facility management.

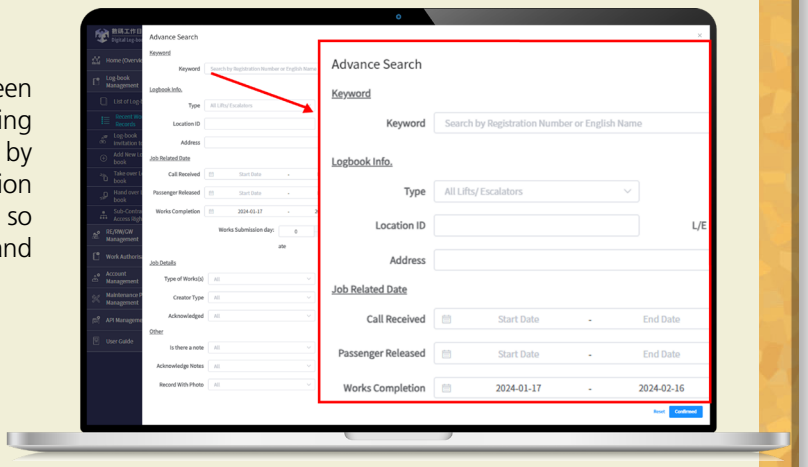


Figure 1 – Advanced Search

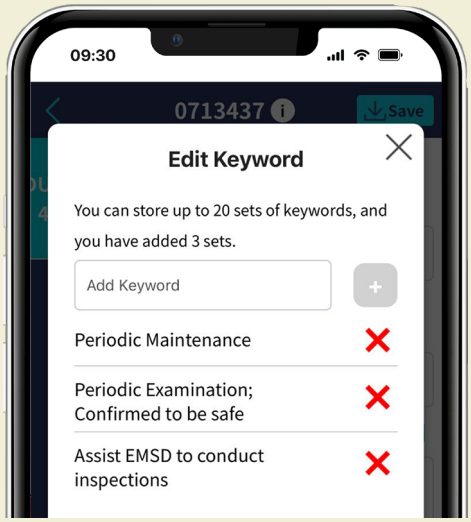


Figure 2 – Edit Keyword

New Function 2 – Edit Keyword

An "Edit Keyword" function (Figure 2) has been added to the mobile app of the Digital Log-books. Using the function, trade practitioners can add custom keywords that are frequently used to their remarks to describe work details in a convenient and efficient way.

To accelerate the transition from using the existing paperbound log-books to the Digital Log-books, RCs are required with effect from 1 December 2023 to adopt the Digital Log-books for all lifts/escalators (i) upon completion of major alteration, and (ii) within one month from change in maintenance responsibility. For details, please refer to Circular No. 5/2023.

Circular No. 5/2023

Activation of the Digital Log-books

The Digital Log-books has been officially launched for use free of charge. For those who are interested in using the Digital Log-books, please complete the online form. Designated staff of the EMSD will contact you and activate the relevant Digital Log-books upon receipt of the form.

Online form

For further details, please call the hotline for the Digital Log-books on 3741 8880 (for enquiries related to information technology) or 9761 6685 (for enquiries related to the operation) between 9am and 6pm from Monday to Friday (except public holidays). Members of the public may also visit the following website to learn more about the various functions and benefits of the Digital Log-books:

Website

News -in- Brief

Type Approval Processing and Authentication System

The Lifts and Escalators Ordinance requires RCs undertaking installation works of lifts/escalators to ensure that they have obtained approval from the Director of Electrical and Mechanical Services for the type of lifts/escalators and their safety components required for the works; otherwise, they shall not commence installation works of the lifts/escalators and their safety components. Applications for type approval have all along been submitted and processed in paper form, but technologies such as cloud computing, artificial intelligence (AI) and optical character recognition (OCR) have become commonplace thanks to the rapid advancement of technology. To make good use of the digital technologies, the EMSD has developed the Type Approval Processing and Authentication System (TAPAS) to replace the paper-based application method that has been used so far.

Functions of TAPAS

RCs can easily fill in and upload the application documents required for type approval of lifts/escalators to the cloud system through TAPAS, where the EMSD can directly assess and approve the applications. RCs can also directly access the system to submit supplementary documents when necessary. TAPAS applies AI and OCR technology to identify text images on type examination certificates and convert them into digital format, thereby saving time on manual input and information verification. TAPAS also provides an asset management system to RCs to facilitate fast checking of information on approved lifts or escalators and their safety components, such as certificate numbers, certificate issuance dates, etc.

Advantages of TAPAS

1. Speeding up the processing of applications for type approval
2. Allowing RCs to quickly check their applications for type approval, as well as information on approved lifts/escalators and their safety components
3. Realising paperless application, thus saving printing and postal costs, as well as helping achieve carbon neutrality
4. Analysing the characteristics of different lift/escalator types with the aid of the lift/escalator database

Development Progress of TAPAS

Development of TAPAS began in mid-2022. The EMSD has consulted different trade groups about this system and conducted tests to ensure that it operates satisfactorily. TAPAS has already been launched for use by RCs in the third quarter of 2023 for free. The EMSD will continue to liaise closely with the trade to make sure that this innovative solution can benefit all stakeholders.

EMSD staff introduced TAPAS to the trade

News -in- Brief

Tips for Responsible Persons on Managing Lifts and Escalators

In Hong Kong, most people use lifts and/or escalators to travel up and down buildings while getting to work or school, or going home. Therefore, it is crucial to ensure the safe operation of lifts and escalators and minimise the occurrence of breakdowns. To achieve this, RPs should take note of the following in the daily management of lifts/escalators:

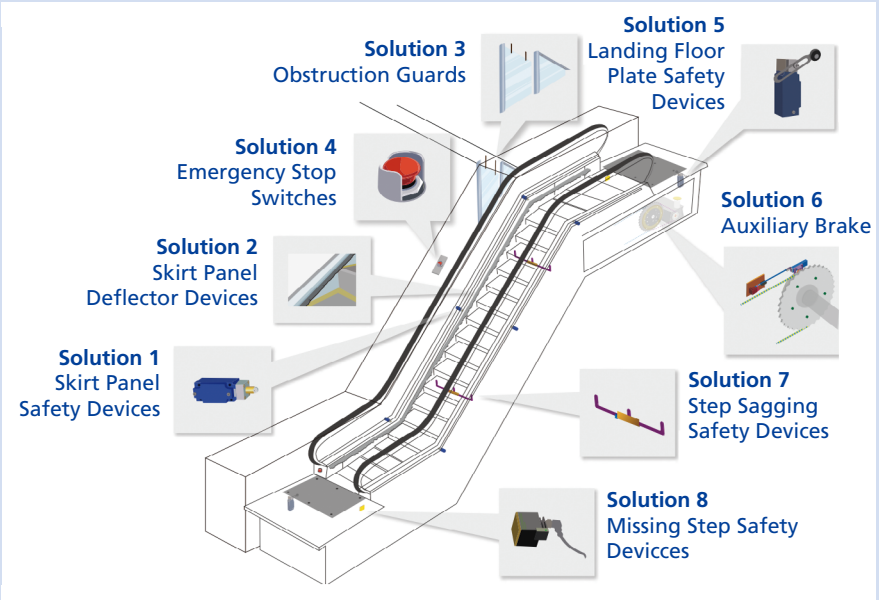
1. Employ suitable building management staff to manage the daily operation, maintenance and examination of lifts/escalators and provide appropriate training for them.
2. Arrange for immediate repair of any damage to the building that affects the operation of lifts/escalators, such as water leakage in machine rooms or concrete spalling. Suspend the operation of the lifts/escalators concerned if necessary.
3. Remind passengers on the safe use of lifts/escalators and display relevant guidance near the lifts/escalators.
4. Check the operating condition of lifts/escalators and their associated equipment daily before commencement of operation (for details of the check items, please refer to the Checklist for Daily Inspection of the Safe Operating Condition of Lifts and the Checklist for Daily Inspection of the Safe Operating Condition of Escalators published by the EMSD).

Checklist of Lifts

Checklist of Escalators

Escalator Modernisation Works

Aged escalators are inferior to their modern counterparts in terms of performance and safety devices, and they are more prone to issues such as ageing parts, long maintenance time and discontinued production of spare parts. Modernisation of aged escalators not only enhances their safety level and minimises the occurrence of breakdowns, but also reduces energy expenses and operating costs. RPs may consult engineering consultants or RCs about the technical feasibility of the relevant modernisation works. The following solutions are available for escalator modernisation:



Solutions for escalator modernisation

Application of Innovative Technologies

In addition, RPs may consider to apply innovative technologies to minimise the occurrence of breakdowns and incidents. For instance, real-time monitoring systems for lifts/escalators measure various lift/escalator operation parameters, such as temperature and vibration, and perform data analytics to effectively identify signs of equipment faults at an early stage, enabling RPs/RCs to take early follow-up actions. RPs may consult engineering consultants or RCs about the application of innovative technologies on lifts/escalators.

Responsible Persons' Corner

RPs may visit the Responsible Persons' Corner on the EMSD website for further information on lift and escalator safety.

Responsible Persons' Corner

News -in- Brief

Recent Prosecution Cases

From 1 January 2023 to 30 September 2023, the EMSD issued a total of 43 summonses to initiate prosecution against 12 persons/companies suspected of having contravened the Lifts and Escalators Ordinance. Below is a summary of some cases:

Case 1

During the investigation of a lift incident that occurred in a housing estate in Fanling in August 2022, the EMSD found that a registered lift worker failed to properly follow the procedures for rescuing the passenger who was trapped in the lift during the incident. The EMSD prosecuted the registered lift worker for failure to ensure that the lift works were carried out properly. The registered lift worker was convicted and fined HK$1,800.

Case 2

During an inspection in a building in Fo Tan in September 2022, the EMSD found that the unintended car movement protection means and safety gear of a lift in the building were not functional. Upon investigation, the EMSD prosecuted the registered lift worker involved for failure to ensure that the lift works were carried out properly. The registered lift worker was convicted and fined HK$2,000.

Case 3

An escalator incident occurred in a shopping mall in Wong Tai Sin in October 2022, in which a woman fell down and was injured as the operation of the handrail and steps of the escalator was not synchronized. Upon investigation, the EMSD prosecuted the registered escalator contractor and the registered escalator worker involved for failure to ensure that the escalator works were carried out properly. The registered escalator contractor was convicted and fined HK$15,000, while the registered escalator worker was also convicted and fined HK$2,500.

News -in- Brief

Take Care of Accompanying Pets When Taking the Lift

There was a recent lift incident involving the tragic death of a dog. In the incident, a domestic helper intended to take the lift with a dog on a leash, but when the domestic helper entered the lift, the dog was still outside of the lift when the lift doors closed. As the lift rose, the dog leash was dragged upwards, causing the dog to be lifted off the ground and strangled by the leash. The dog died as a result.

In general, the safety devices of lift doors may not be able to detect small objects like dog leashes. Therefore, if a passenger does not enter/exit the lift together with his/her leashed dog, the lift's doors will still be able to close and the lift will operate as usual. When the lift car moves, the passenger/dog may be dragged by the dog leash and run into danger. To prevent recurrence of similar incidents, the EMSD advises passengers to pay attention to their accompanying dogs when taking the lift and **ensure that they and their accompanying dogs enter and exit the lift together**. Readers are welcome to pass the above message to their family members and domestic helpers who may take the lift with dogs.

Feedback

Your comments and suggestions, whether on editorial style or contents, are most welcome. Tell us how we can improve and make the Lift and Escalator Newsletter a truly informative and interesting publication for you. The Lift and Escalator Newsletter is available on our website at http://www.emsd.gov.hk .

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