New Standard Elevator Featuring Safety, Security, and Comfort

Many societal issues have come to the fore in recent years driven by changing circumstances, not least of which has been the COVID-19 pandemic, and these have also impacted the market requirements for elevators and escalators. The new standard elevator, which exemplifies the "Human Friendly" development concept behind Hitachi's elevator and escalator products and services, was launched in April 2021. The new elevator delivers a novel experience, featuring a simple new design supervised by internationally renowned designer Naoto Fukasawa and incorporating the latest infection risk mitigation solutions, including non-contact hailing and sanitary methods for operating elevators, as well as Lumada solutions such as the BUILLINK dashboard for building owners and managers.

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1. Introduction

Elevator users have both a psychological and physiological expectation for things like smooth and safe operation and a comfortable ride. Focusing on these tacit expectations, Hitachi in 2015 came up with its "Human Friendly for Hitachi Elevators/Escalators" development concept in partnership with Naoto Fukasawa Design Ltd., a design business led by internationally renowned designer Naoto Fukasawa.

Meanwhile, the global spread of COVID-19 from the end of 2019 is driving changes in society and in how people live, giving rise to new societal challenges associated with this "new normal." In the building systems sector, this manifests as new requirements for things like social distancing and the ability to move around without having to touch shared facilities such as elevators in order to reduce infection risk[(1)].

Along with translating its "Human Friendly" development concept into reality, Hitachi has also responded to this societal change by developing the new standard elevator, which sets the benchmark for the provision of safety, security, and comfort in the new normal.

This article describes the design of the elevator and its new functions.

2. Features of New Standard Elevator

The new standard elevator delivers new value to people, buildings, and society while also responding to the needs of the new normal. Features include a new design that realizes the "Human Friendly" concept, infection risk mitigation by means of advanced functions and a range of solutions for interoperation, enhanced resilience to emergencies, and support for the reform of working practices in building administration.

2. 1
Simple Design Supervised by Naoto Fukasawa

Under the supervision of Naoto Fukasawa, one of Japan's leading product designers, the new standard elevator has

been designed for functional elegance in a simple context, including high-visibility buttons and an elevator interior characterized by consistency of color scheme and flat surfaces that minimize bumps and hollows (see **Figure 1**). Two recommended designs are available: the "Clean" option featuring unprecedented simplicity with consistent coloring of the walls, door, ceiling frame, and controls, and the relaxing and spacious "Classic" option with a combined woodgrain and silver finish (see **Figure 2**).

Figure 1 — Views of Elevator Interior Design

The features include a flat control panel with prominent buttons (left), a circular ceiling light (top right), liquid crystal display (LCD) floor indicators with enhanced visibility (bottom center), and a rectangular handrail with a flat profile (bottom right).

Figure 2 — Recommended Interior Designs

The available options are the "Clean" design in which all fittings are finished in the same color (left) and the "Classic" design in a combination of woodgrain and silver (right).

2. 2
Infection Risk Mitigation Solution

Prompted by the spread of COVID-19, the new standard elevator incorporates the latest infection risk mitigation functions for safety, security, and comfort in the new normal, including ventilation inside the elevator, social distancing in both the elevator and lobby, and providing ways to operate elevators without having to touch the buttons directly. The main solutions are as follows.

(1) Elevator car air cleanliness

When a fixed time elapses after an elevator was last used, the doors open automatically and a ventilation fan is operated to replace the air inside for the benefit of subsequent users. The doors close again automatically after this ventilation has been completed and a nanoe X[*1] dispenser operates to keep the air inside clean.

(2) Prevention of close contact

Elevator operation control works by categorizing the extent of crowding into one of three levels based on the elevator load and playing a corresponding audio announcement to remind users of the risk. This helps to maintain social distancing and prevent close contact inside elevators (see **Figure 3**). In buildings with group control of multiple elevators, close contact in the lobby is also minimized by calling another elevator when crowding is detected in an elevator car.

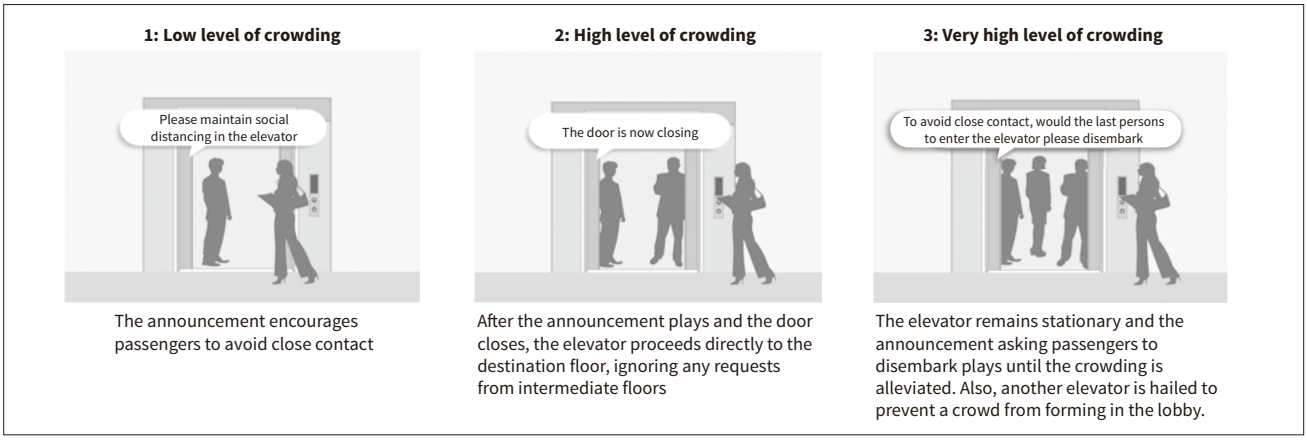
(3) Non-contact controls

The up and down buttons in the lobby and the floor buttons in the elevator are fitted with sensors that can be triggered by placing a hand near the button rather than physically touching it (see **Figure 4**).

*1 nanoe X is a trademark of Panasonic Corporation.

Figure 3 — How Close Contact is Prevented

The audio announcement and elevator operation are different depending on the load.



(4) Interior design panels

The elevator is equipped with protective panels with a stylish textured design (see **Figure 5**). These panels protect against scratching or marking by baby strollers or trolleys and a photocatalyst applied to the surface of the panels breaks down viral material and has a deodorizing effect[(2)], maintaining sanitary conditions inside the elevator.

(5) LINE[*2]-linked touchless elevator calling service

By scanning a QR code[*3] (two-dimensional barcode) displayed in the elevator hall and friending the official LINE account for the elevators of Hitachi Building Systems Co., Ltd., users can hail elevators and specify their destination floor without having to touch any buttons, instead using their own smartphone (see **Figure 6**).

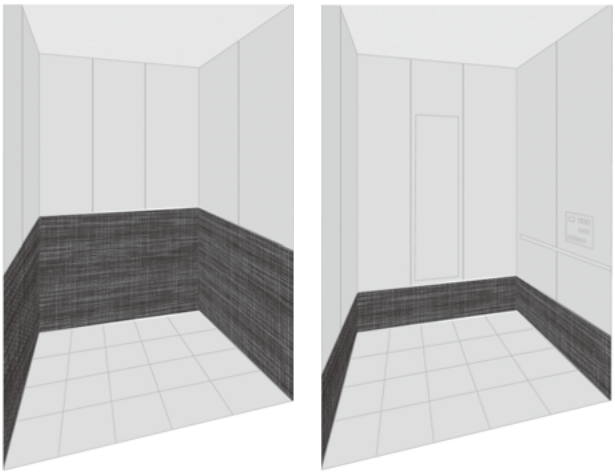
This service is provided as part of the maintenance contract with Hitachi Building Systems and is only available for elevators that are monitored remotely and covered by the contract.

Figure 4 — Operation of Non-contact Controls (Lobby Control Panel)

Waving a hand upward over the sensor hails an upbound elevator and waving downwards hails a downbound elevator.

Figure 5 — Interior Design Panels

Wide (915 mm) (left) and narrow (380 mm) (right) options are available.



2. 3
Functions and Solutions for Enhanced Resilience and Working Practice Reform

Against a background that includes climate change and the COVID-19 pandemic, Hitachi offers a range of functions and solutions that enhance resilience to emergencies and allow for new working practices. The main solutions are as follows.

(1) Super HERIOS[*4] service for remote monitoring and maintenance

Hitachi Building Systems provides its advanced Super HERIOS service for remote monitoring and maintenance in the form of a maintenance contract. The service uses the Internet of Things (IoT) and other digital technologies for the remote and real-time collection and monitoring of a wide variety of operational data, using the results of analyzing this data as a basis for preventive maintenance.

A range of service options are available for maintaining the safety, security, and comfort of elevators and other facilities on a 24-hour/365-day basis, including the HERIOS Drive system for the automatic diagnosis and recovery of elevators in the event of an earthquake and a building-wide monitoring service that utilizes the communication link for elevator monitoring and integrates this with the monitoring of water and sewage, pumps, and other building utilities.

(2) BUILLINK dashboard for building owners and managers

One of the options of the Super HERIOS service is the BUILLINK dashboard for advanced facilities management from a personal computer or smartphone that can be used to check the operational and maintenance status of elevators and other building equipment (see **Figure 7**). Building owners and managers can use BUILLINK to perform a wide variety of management tasks remotely, including getting

*2 LINE is a registered trademark of Line Corporation.
*3 QR code is a registered trademark of Denso Wave Incorporated.
*4 Hitachi equipment remote and intelligent observation system

Figure 6 — LINE-linked Touchless Elevator Calling Service

By scanning a QR code with their smartphone and friending the official LINE account, users can hail elevators from a smartphone.

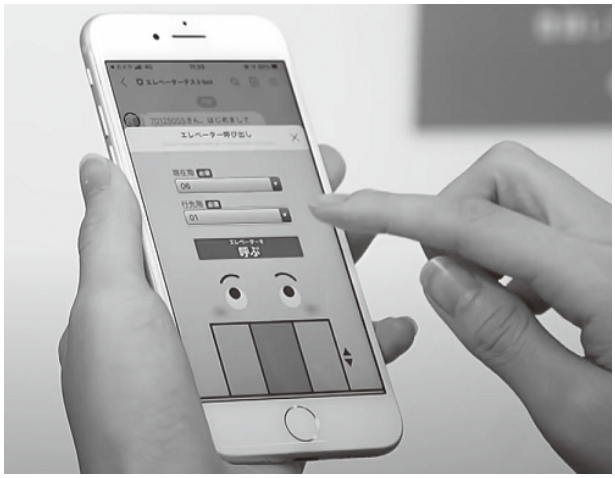


Figure 7 — BUILLINK Screen
BUILLINK provides continuous access from a personal computer or smartphone to information about the elevators or escalators that users own or manage, such as their operational and maintenance status.

information about the elevators that they own or administer, such as assessing progress on getting elevators back in service after an earthquake or other wide-ranging disaster, and performing actions such as repositioning elevators to a higher floor if there is a risk of flooding from an incoming typhoon or other such weather event. Along with improving resilience to emergencies, these capabilities also support new ways of working.

3. Conclusions

This article has described the new standard elevator with its range of infection risk mitigation functions prompted by the COVID-19 pandemic.

Recent years have seen the emergence of a variety of societal challenges driven not only by the pandemic, but also by factors such as environmental change. These challenges have also impacted the market requirements for elevators and escalators.

One example is that flood damage caused by rainstorms in various parts of Japan has prompted customers to ask for elevator hoists and control panels to be installed on higher floors rather than in the basement as has been the practice in the past. In response, Hitachi intends to offer the elevated installation of this equipment as an option for the new standard elevator from September 2021. Given the intense competition, it is becoming more important than ever to identify such changing market needs quickly and to deliver "market-in" products and services in a timely manner.

Hitachi intends to continue supplying products and services that customers want by working in partnership with other relevant divisions and engaging in two-way communication with its branches to continually collect and analyze information such as market trends, customer feedback, and product requirements.

References

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