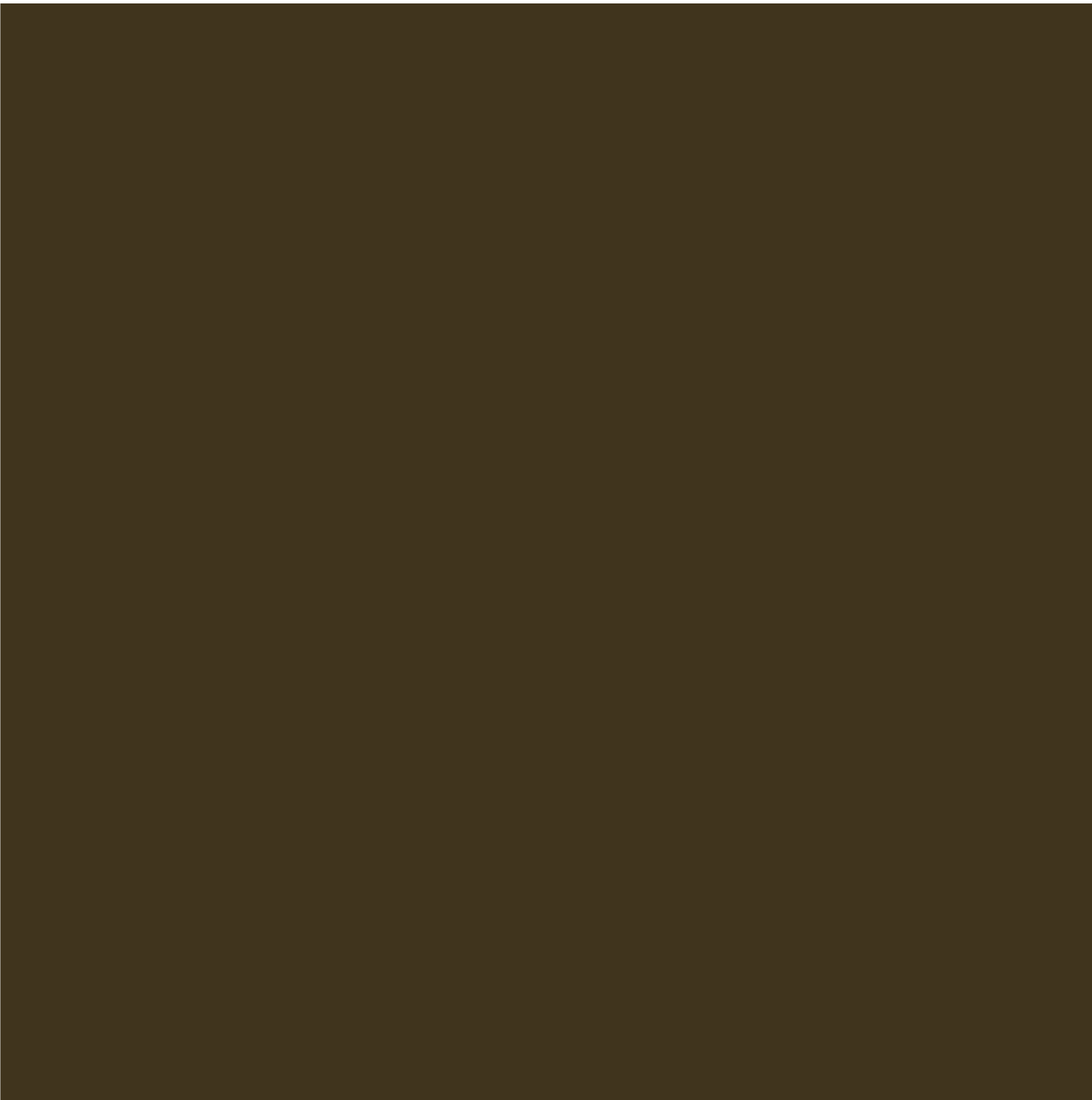




TOSHIBA ELEVATOR

GROUP CONTROL SYSTEMS



Safety Cautions	<ul style="list-style-type: none">• Observance of relevant laws / regulations are required.• Read the entire “Instruction Manual” carefully before use, for important information about safety, handling and operation.
------------------------	--

<div>TOSHIBA</div> <div>Toshiba Elevator and Building Systems Corporation</div> <div>72-34, Horikawa-cho, Saiwai-ku, Kawasaki 212-8585, Japan PHONE: +81-44-331-7057 FAX: +81-44-548-9597</div>	
--	--

• The data given in this catalog are subject to change without notice.
* Revised publication effective Sept. 2019



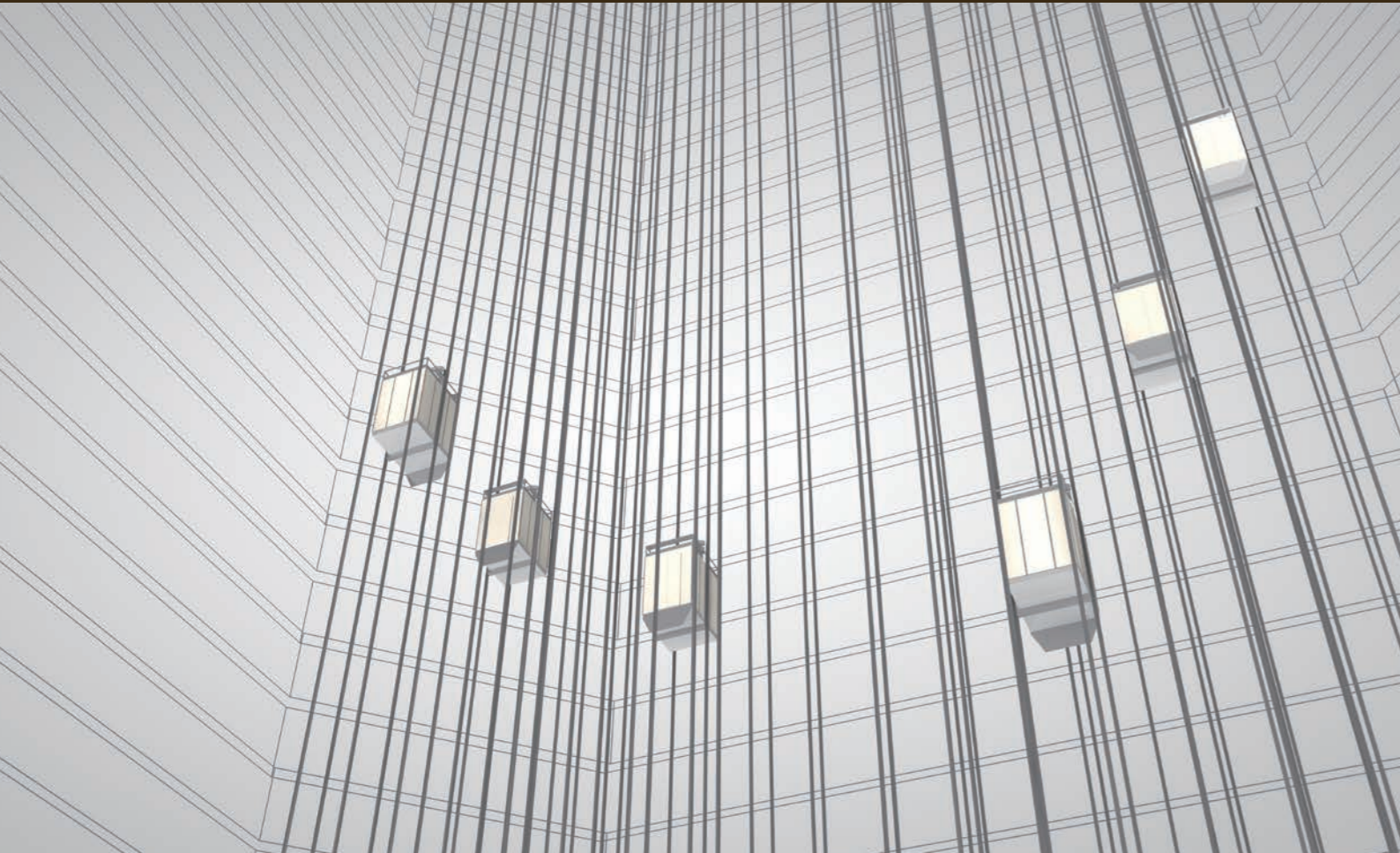
TOSHIBA ELEVATOR AND BUILDING SYSTEMS CORPORATION

THE SOLUTIONS

COMPANY SOLUTIONS

Toshiba Elevator and Building Systems Corporation has built a framework which encompasses all aspects from system development to production, sales to marketing, installation, adjustment, maintenance and services in order to provide clients with the highest quality products and services.

Utilizing the comprehensive technological infrastructure developed by Toshiba Group in more than 140 years since its foundation, we aim to enhance the leading edge technology and quality that we used to develop the ultra high speed elevator, harnessing Toshiba's technological innovations to their fullest extent. To meet clients' expectations and requirements for safe and pleasant elevators as well as constantly pursuing further innovation and improvement. Furthermore, we are aiming to strengthen system development, production, enhancing sales channel and sales partnership to expand in the global market.



TOSHIBA ELEVATOR GROUP CONTROL SYSTEMS

The elevator analyzes the “now” of the building !
We will predict “future traffic conditions within the building” and
provide an optimum elevator.



Real-Time Scheduling System

We will always analyze the very latest elevator operating conditions to predict the future elevator service situation, select the most suitable elevator and deliver it to the point of use.

Toshiba Elevator Group Control System: The Real-Time Scheduling System (RTS) not only shortens the waiting time of the elevator but also allows us to provide various environmentally friendly driving functions such as “Power saving function” and “Power saving allocation function”.

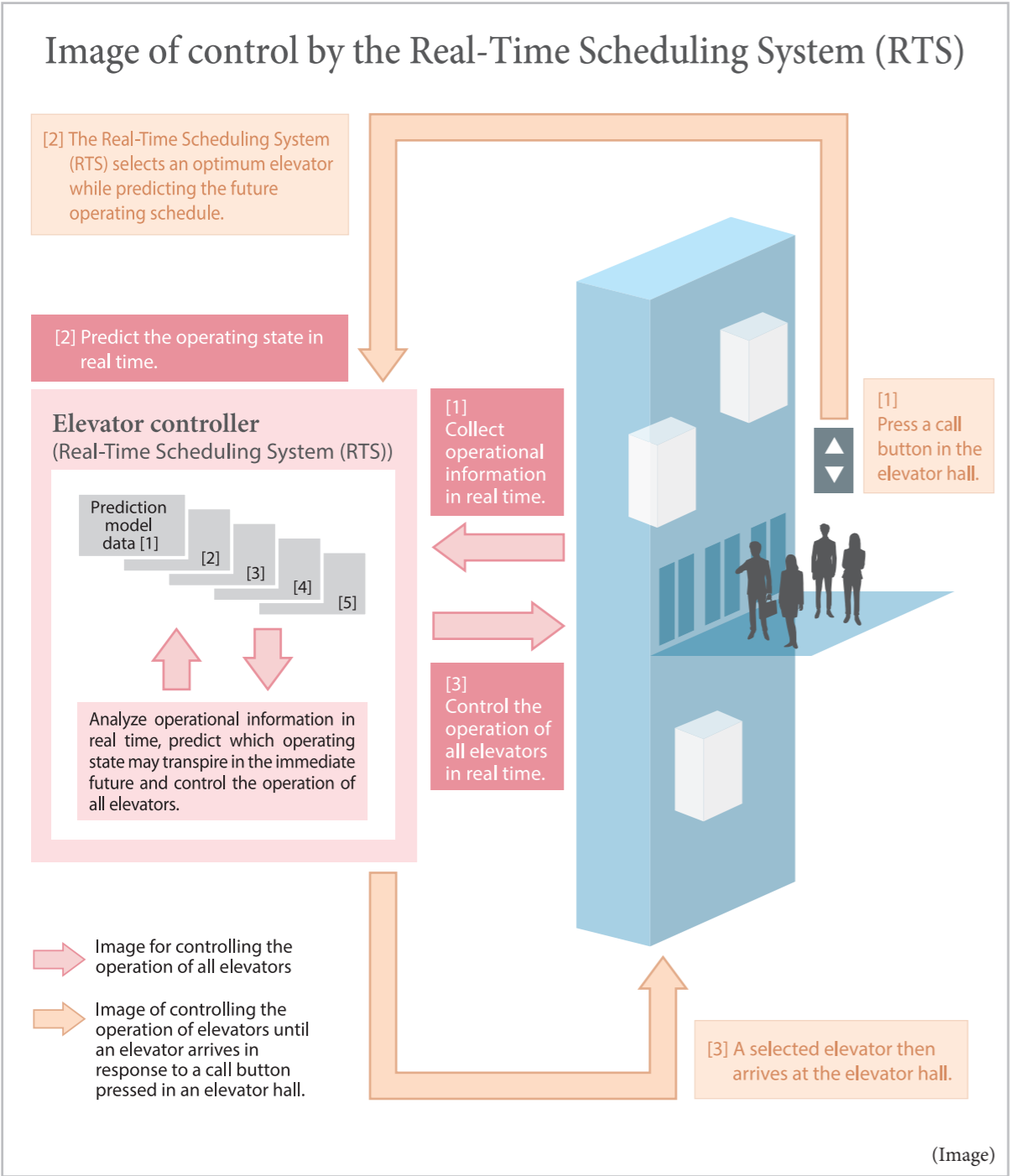
TOSHIBA ELEVATOR GROUP CONTROL SYSTEMS					
○ : STANDARD △ : OPTIONAL × : Inapplicable specifications					
Descriptions	Number of elevator application	Number of the maximum application floors (Note 1)	Model No.		
			GA-2000	GA-200	GA-20
"Real time scheduling system (RTS)" can be applied to 12 elevators maximum with the latest features such as "Power saving function" and "Power saving allocation function". This is a group control system suitable for large and medium sized buildings.	3 to 12 units	128 stops	○		
It is a group control system applicable for medium and small sized buildings capable of up to 6 elevators, taking over the design concept of the top model of the group control systems. We respond with various specifications such as priority service function and peak correspondence functions for specific floors etc.	3 to 6 units	64 stops		○	
This is a group control system for medium and small sized buildings that meet the specifications of basic functions such as "Fuzzy control" and high-sensitivity allocation to shorten elevator latency.	3 and 4 units	40 stops			○

*Note 1 : An express zone is not included. The actual number of applications is based on each elevator models.

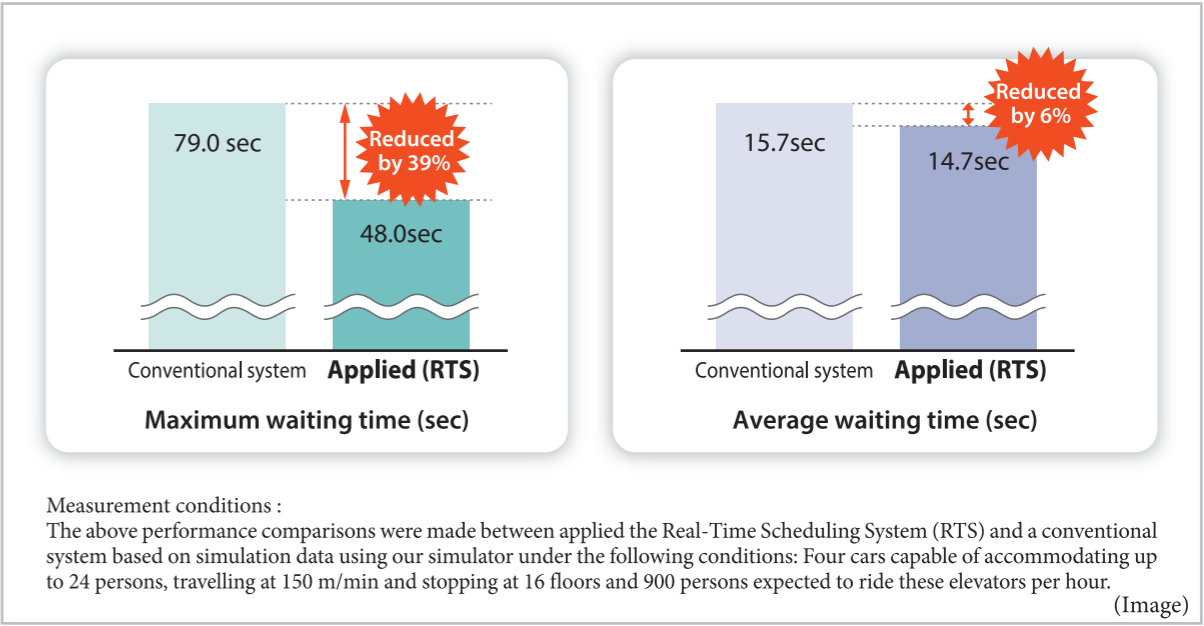
Function	Explanation	Model No.		
		GA-2000	GA-200	GA-20
Real-Time Scheduling System (RTS)	A new hall calls assignment procedure that can assign a car for a hall call efficiently by estimating the arrival of time to each the floor considering the future occurrence of passenger.	○	×	×
Self-learning system	Analyzes and stores traffic demand by time period, and automatically tunes the control parameters used for fuzzy control and similar.	○	×	×
High-sensitivity car assignment (Fuzzy control)	A hall calls assignment procedure using the fuzzy control method.	×	○	○
Expert system	Specialized experience and expertise are coded into rules, and the optimum rules selected to offer service that best meets humans' psychological needs.	○	○	○

Leading edge and high-spec “Elevator Group control systems” is monitor the current building environment and predict the future.

To optimize elevator control, analyzing the movements of elevators in a building real-time and controlling them while predicting what may happen in the immediate future is crucial. Toshiba has developed the Real-Time Scheduling System (RTS) to control elevators properly and included it in elevator group control systems.



The Real-Time Scheduling System (RTS) has successfully reduced maximum and average waiting times by 39 and 6%, respectively, compared to figures for conventional systems.



Real-Time Scheduling System (RTS)

A leading edge elevator group control system that analyzes the ever changing operating state of elevators and predicts the floors to which they will be called, to determine the operating schedule. It evaluates the operation service in real time based on the determined operating schedule to assign an elevator to each floor.

The “High-sensitivity allocation function” to which fuzzy control is applied

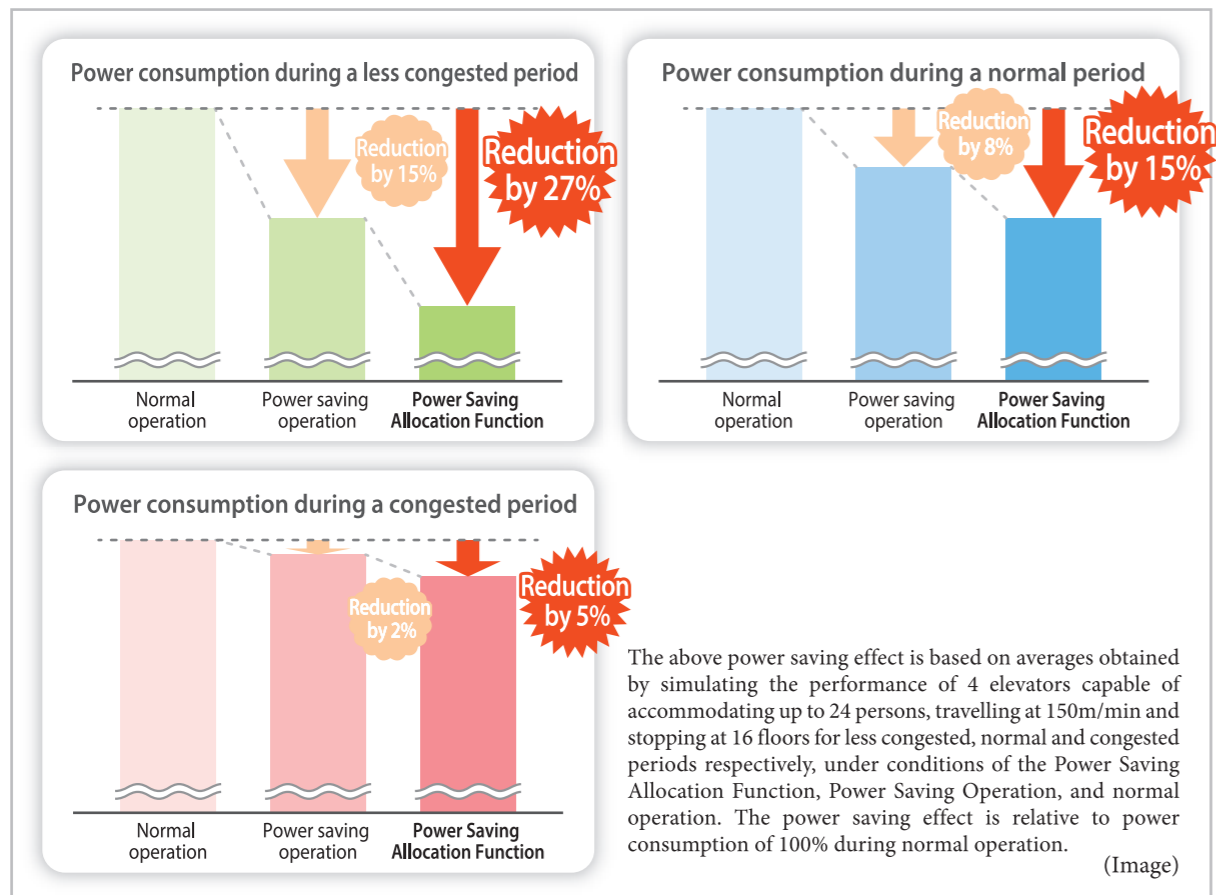
The “High-sensitivity allocation function” involves the application of fuzzy control, which means whenever a call button in the elevator hall is pressed, the system immediately considers which elevator is best placed to move the user comfortably and swiftly.

The “Expert system” with specialized experience and expertise coded into

Optimal elevator control requires control in accordance with the elevator operation rate and congestion level. Elevator experts preliminarily code controlling methods suitable for various situations into the rules. The Expert system provides optimum control in line with the current operating state.

“Power Saving Allocation Function”, a new power saving function of elevator group control system, enables low power operation.

The Real-Time Scheduling System (RTS) analyzes the movement of elevators in a building, while the “Power Saving Allocation Function” selects an optimum schedule with reduced power consumption taking waiting time into consideration, regardless of the demand for traffic.



Power Saving Allocation Function (Optional)

The Power Saving Allocation Function selects an operating schedule involving a reduced number of elevators based on the operating state predicted by the Real-Time Scheduling System (RTS) for ongoing Power Saving Operation. For the normal period, this can reduce power consumption by approximately 15 and 8% compared to normal and Power Saving Operation modes respectively. For less congested periods, savings are approximately 27 and 15% compared to normal and Power Saving Operation modes. (Comparison using our simulator)

Power Saving Operation (Optional)

Reduces the number of operating elevators during less congested periods to reduce power consumption.

- The Power Saving Allocation Function and the Power Saving Operation may increase waiting time compared to normal operation.

This section lists convenient functions for each building type.



Office building

- **Up-peak operation**
During the morning rush, returns cars to the main departure floor and automatically spaces departures.
- **Down-peak operation**
Automatically deploys standby cars to upper floors to respond more efficiently to demand for descending elevators.
- **Up-peak split-zone operation (Optional)**
Splits the group into cars serving upper and lower floors exclusively, limiting the destinations into zones to handle the morning peak volume more efficiently.
- **Lunchtime split-zone operation (Optional)**
Splits the group into cars serving the upper and lower floors exclusively, limiting the destinations in to zones to handle the lunchtime peak volume more efficiently.

- The up-peak split-zone operation and the lunchtime split-zone operation are optional and applicable to the group control of 6 or more elevators.



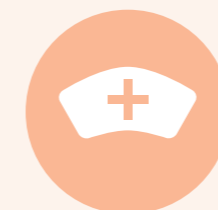
Accommodation, such as hotels

- **Enhances comfortable operation**
The least crowded cars are assigned.
- **Check-in services**
Reserves a standby car with an open door at the front desk floor during check-in hours.
- **Check-out service**
Automatically deploys more standby cars to upper floors to respond more efficiently to demand for descending elevators.
- **Open door waiting on lobby floor (Optional)**
Reserves a standby car with an open door at the lobby floor.
- **Banquet hall floor service (Optional)**
Concentrated service for a banquet hall floor to meet temporary intensive demand.



Collective housing, such as condominium buildings

- **Going-out service**
Sends more cars for standby to the upper floors to respond more efficiently to demand for descending elevators during going-out hours in the morning.
- **Coming-back service**
Sends a car to the entrance floor with an open door during homecoming hours in the evening.



Medical facilities, such as hospitals

- **Morning-peak operation**
In hospitals, many cars are often congested with incoming staff during morning hours. Demand for ascending elevators is effectively responded to, like those in office buildings.
- **Evening-peak operation**
Meets the demand for traffic generated by interviews conducted in the evening.

Specification Table

○ : STANDARD △ : OPTIONAL × : Inapplicable specifications

Function	Explanation	Model No.		
		GA-2000	GA-200	GA-20
Stand by with car spacing	The car goes to the floor where higher traffic demand is estimated when there is no other call to attend.	○	○	○
Stand by with car spacing (By specific floor)	The car goes to the floors specified by the system configuration when there is no other call to attend.	○	○	○
Power saving operation	Automatically reduce the number of cars operating during the low traffic period to conserve energy.	○	○	○
Delayed car cut out	Remove failed cars from the group control, whereupon the group controls operation proceeds on for the remaining cars.	○	○	○
System back-up	When failures are detected in some units, other normal units assume the basic group control functions.	○	○	○
Up peak operation	During the morning rush, returns cars to the main departure floor and automatically spaces departures for optimum volume-handling efficiency.	○	○	○
Up peak split-zone operation	Splits the group into cars serving the upper floors and lower floors exclusively, limiting the destinations into zones to handle the morning peak volume more efficiently.	△	△	×
Next start indication during Up peak operation	At the main floor during Up peak operation, the hall lantern of the next start car is illuminated to show waiting passengers that the car will be the first start car in the next place.	△	△	△
Car door close button effective during Up peak operation	Close the door instantly at the main floor when the passenger presses a door close button in the first start car in the Up peak operation.	○	○	○
Automatic registration of upward call at the main floor during Up peak operation	Turns on the upward hall call at the main floor automatically without pressing a hall call button at the elevator hall in the Up peak operation.	△	△	△
Lunchtime operation	Increase service for passengers going to the restaurant floors during the Lunchtime operation.	△	△	△
Lunchtime split-zone operation	Splits the group into cars serving the upper floors and lower floors exclusively, limiting the destinations into zones to handle the lunchtime peak volume more efficiently.	△	△	×
Group control coordination for wheelchair cars (Wheelchair car : 1/group)	Cars for Wheelchair can operate as a part of the group control. (This function is categorized by the number of wheelchair cars in a group control system ; one or all)	△	△	△
Group control coordination for wheelchair cars (Wheelchair car : all cars)		△	△	△
Down peak operation	Automatically deploys stand by cars to upper floors to respond to evening down peak demand more efficiently.	○	○	○
Specific floor operation	Prioritizes the specified floor when the demand is larger than usual there.	△	△	△
Check-in service	Reserve a car with open door stand by at the front desk floor during check-in hours.	○	○	○
Check-out service	Automatically deploys stand by cars to upper floors to respond more efficiently to the check-out time down peak.	○	○	△
Enhances comfort operation	In hotels where guest comfort is a major priority, least crowded cars are assigned to hall calls in order to avoid the discomfort of overcrowded cars.	○	○	○
Banquet hall floor service	Concentrated service for banquet hall floor in accordance with event schedule.	△	△	×
Open door waiting on lobby floor	Reserve a car with open door stand by at the lobby floor.	△	△	×
Going out service	In residential building, more cars are sent for standby to upper floors to respond more efficiently to the morning down peak demand.	○	○	○
Coming back service	In residential buildings, a car is sent to the entrance floor with an open door for home coming residents.	○	○	△
Morning peak operation	In hospitals, there are many cars that the main floor is congested with incoming staffs during morning hours. Such up peak demands cars are effectively treated like those in office buildings.	○	○	○
Evening peak operation	Traffic demands may rise in the evening during visiting hours in hospitals due to coming visitors and family caretakers. Such peak demands can be effectively treated.	○	○	△
VIP service	When a VIP hall call button is operated, a car is separated from the group control system, then responds to that VIP hall call exclusively.	△	△	△

○ : STANDARD △ : OPTIONAL × : Inapplicable specifications

Function	Explanation	Model No.		
		GA-2000	GA-200	GA-20
Measures against indicator	Apply this function if cars have floor indicators, Moreover, apply this function if passengers in the elevator hall can observe the position of each car. (Observation elevator, atrium, etc.)	×	△	△
Different rated load elevator in a group	Place cars with differing load capacities into a group control system.	○	○	○
Preassignment indicator	Responds to hall button call by lighting a hall lantern at an assigned car 4 to 5 seconds in advance.	○	△	×
Arrival information indicator	Flickering hall lantern and ringing chime twice at an arriving car 4 to 5 seconds in advance.	○	○	○
Auto-announce system (Speech synthesizer)	Automatically announces the floor, direction and door closing by voice synthesis device.	△	△	△
Automatic door open time control	Automatically adjusts the door opening duration according to the call type.	○	○	○
Door open extension button	A button that keeps the door opens for a specified period. Unlike the door open button, the door keeps opens for a specified period after this button is released.	○	○	○
Door reopening	Opens the closing door if the hall call button is pressed.	○	△	△
Nuisance call cancellation	Cancels obvious nuisance floor destination registration, such as when the system computer detects multiple calls made simultaneously by a single passenger.	○	○	○
Independent operation	Removes a car from group control to operate independently in response to calls.	○	○	○
Overload detection	Rings the alarm and keeps the door open while the load in the car exceed the specified weight limit.	○	○	○
Automatic bypass	Full cars automatically pass any hall call in its way.	○	○	○
Every floor stop operation	When a car responds to a destination floor call in the car, it stops at every floor and fully opens the doors until it reaches the destination floor.	○	○	○
Emergency landing on closest floor	In case of system failures or other emergencies, cars are directed to move to the closest floor if it is safe.	○	○	○
Supervisory panel (In house production)	Monitoring and controls the entire elevator system operation.	△	△	△
Supervisory panel (other company production)		△	△	△
Seismic emergency operation with P-wave detection	Forces all cars to move to the closest floors automatically in response to a precautionary alarm from the primary wave seismic detector.	△	△	△
Fire emergency operation	Forces all cars to move to the evacuation floor by key switch.	△	△	△
Fireman's lift operation	When the fireman's switch is activated, the car is cut out from group operations and is immediately sent to the evacuation floor for exclusive use by the firefighting crew.	△	△	△
Power failure emergency operation	In case of black-out, elevator operation continues powered by an emergency generator for as many cars as the generator capacity allows.	△	△	△
Automatic rescue device for power failure	Moves cars to the closest floor and opens the door by using an emergency battery when the power supply is cut off.	△	△	△
Pit flood emergency operation	When the bottom of the hoistway is flooded with water, hall call and car call of the bottom floor are canceled until the water has left the hoistway.	△	△	△
Parking function	Switch to park the car.	○	○	○
Traffic harmonizer	An external terminal unit that can modify the configuration of the group control system, such as up peak operation, service floor cut-off operation, and transport demand of a bank.	△	×	×
Maintenance stop switch	A switch located on maintenance floor that is to cut out the car from the group control system, and to bring the car to the maintenance floor.	△	△	△
Irregular service floor operation	Applies a group control system to the buildings where some cars cannot go to specific floors, such as the highest floor or the lowest floor. To choose an elevator which can serve irregular service floors and to make it answer, a hall call button for handicapped other than a normal hall call button is installed.	○	○	○