**IN THE UNITED STATES DISTRICT COURT**
**FOR THE WESTERN DISTRICT OF TEXAS**
**AUSTIN DIVISION**

| | |
|---|---|
| MUROLET IP LLC,<br><br>Plaintiff,<br><br>v.<br><br>HYUNDAI ELEVATOR CO., LTD,<br><br>Defendant. | Case No.<br><br>Jury Trial Demanded |

## COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Murolet IP LLC ("Murolet"), by and through its undersigned counsel, files this Complaint against Defendant Hyundai Elevator Co., Ltd. ("Hyundai Elevator") for patent infringement of United States Patent Nos. 8,162,109; 8,172,044; 8,196,711; 8,286,755; and 8,316,997 (collectively, the "patents-in-suit" and attached as Exhibits 1-5 respectively) and alleges as follows:

## NATURE OF THE ACTION

1. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 1 *et seq.*

## THE PARTIES

2. Plaintiff Murolet is a limited liability company organized under the laws of the Commonwealth of Pennsylvania.

3. Murolet's registered agent is BizFilings, located at 8020 Excelsior Dr., Suite 200, Madison, WI 53717.

4. On information and belief, Defendant Hyundai Elevator is a foreign corporation organized and incorporated under the laws of South Korea, with a place of business at 128, Chungjusandan 1-Ro, Chungju, 27329.

5. Defendant Hyundai Elevator may be served with process through its registered agent, CT Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201 or anywhere it may be found.

## JURISDICTION AND VENUE

6. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States, 35 U.S.C. §§ 1 *et seq*.

7. Upon information and belief, Hyundai Elevator researches, creates, designs, and develops the accused infringing products in South Korea, at least at the SAN 136-1 AMIRI, BUBAL-EUP, ICHEON-KUN, KYUNGGI, KOREA. *See* https://www.hyundaielevator.co.kr/en/company/info/place?place=2

8. Upon information and belief, Advance Lift Technologies, LLC is a distributer and a seller of Hyundai Elevator products in the United States.

9. Upon information and belief, Defendant designs, manufactures, sells, offers for sale, imports, distributes, advertises, and/or otherwise promotes the accused infringing products in the United States, the State of Texas, and this judicial district.

*See* https://www.hyundaielevator.co.kr/en/solution/product/elevator/the-el

10. Defendant Hyundai Elevator is subject to this Court's personal

jurisdiction, in accordance with due process and/ or the Texas Long Arm Statute because, in part, it "commits a tort in whole or in part in this state." *See* Tex. Civ. Prac. & Rem. Code § 17.042.

11. This Court has personal jurisdiction over Hyundai Elevator because, *inter alia,* Hyundai Elevator (directly and/ or through its sellers and distributors) have committed and continue to commit acts of infringement in this judicial district in violation of at least 35 U.S.C. § 271(a). In particular, on information and belief, Hyundai Elevator uses, sells, offers for sale, imports, advertises, and/or otherwise promotes infringing products in the United States, the State of Texas, and this judicial district, including installations by Advance Lift Technologies, LLC. *See* http://www.alt-avt.com/.

12. On information and belief, Hyundai Elevator is subject to the Court's jurisdiction because Hyundai Elevator has sufficient minimum contacts with this forum as a result of business conducted within the State of Texas and this judicial district. In particular, this Court has personal jurisdiction over Hyundai Elevator because, *inter alia,* Hyundai Elevator on information and belief, has substantial, continuous, and systematic business contacts in this judicial district, and derives substantial revenues from infringing goods provided to individuals in this judicial district.

13. Defendant Hyundai Elevator has purposefully availed itself of the privileges of conducting business within this judicial district, has established sufficient minimum contacts with this judicial district such that they should

reasonably and fairly anticipate being hauled into court in this judicial district, has purposefully directed activities at residents of this judicial district, and at least a portion of the patent infringement claims alleged in this Complaint arise out of or are related to one or more of the foregoing activities.

14. Venue is proper as to Defendant Hyundai Elevator in the Western District of Texas, which is organized under the laws of South Korea. 28 U.S.C. § 1391(c)(3) provides that "a defendant not resident in the United States may be sued in any judicial district."

**HYUNDAI ELEVATOR SYSTEMS**

15. "Hyundai Elevator H. Solution is an elevator operation system that offers the most effective elevator operation that is suitable for the purpose and characteristics of each building."

*See* https://www.hyundaielevator.com/upload/catalog/H_SOLUTION_en.pdf.

16. Hyundai Elevator makes available elevator systems that include elevators such as "THE EL", as well as digital solutions such as the H. Solution Destination Selection System, which is an advanced group control system featuring improved operation efficiency of elevators (each such combination of elevator(s) and H. Solution, the "Hyundai Elevator System"). The Hyundai Elevator System, *inter alia*, encourages passengers going in the same orientation to board specific arriving elevator cars thereby reducing waiting time and boarding time.

*See* https://www.hyundaielevator.co.kr/en/technology/smart

17. The H. Solution selects the most efficient elevator for a destination floor,

thereby decreasing the waiting time and unnecessary operations. The H. Solution additionally allows for optimal service of elevators, and reduces the number of stops, which reduces the riding time.

*See*

https://www.hyundaielevator.co.kr/en/technology/environment/reservation

**THE ASSERTED PATENTS**

**United States Patent No. 8,162,109**

18. On April 24, 2012, the United States Patent and Trademark Office ("USPTO") duly and legally issued United States Patent No. 8,162,109 ("the '109 patent") entitled "Elevator system which limits the number of destination call registrations to be allocated to the single car" to inventor Masaaki Amano.

19. The '109 patent is presumed valid under 35 U.S.C. § 282.

20. Murolet owns all rights, title, and interest in the '109 patent.

21. Murolet has not granted Hyundai Elevator a license to the rights under the '109 patent.

**United States Patent No. 8,172,044**

22. On May 8, 2012, the United States Patent and Trademark Office ("USPTO") duly and legally issued United States Patent No. 8,172,044 ("the '044 patent") entitled "Elevator system" to inventor Sakurako Tokura.

23. The '044 patent is presumed valid under 35 U.S.C. § 282.

24. Murolet owns all rights, title, and interest in the '044 patent.

25. Murolet has not granted Hyundai Elevator a license to the rights under

the '044 patent.

**United States Patent No. 8,196,711**

26. On June 12, 2012, the USPTO duly and legally issued United States Patent No. 8,196,711 ("the '711 patent") entitled "Elevator system" to inventor Sakurako Tokura.

27. The '711 patent is presumed valid under 35 U.S.C. § 282.

28. Murolet owns all rights, title, and interest in the '711 patent.

29. Murolet has not granted Hyundai Elevator a license to the rights under the '711 patent.

**United States Patent No. 8,286,755**

30. On October 16, 2012, the USPTO duly and legally issued United States Patent No. 8,286,755 ("the '755 patent") entitled "Group management controller of elevator including limit value setting means for setting a limit value for limiting a count of car calls" to inventors Masaharu Eto, et. al.

31. The '755 patent is presumed valid under 35 U.S.C. § 282.

32. Murolet owns all rights, title, and interest in the '755 patent.

33. Murolet has not granted Hyundai Elevator a license to the rights under the '755 patent.

**United States Patent No. 8,316,997**

34. On November 27, 2012, the USPTO duly and legally issued United States Patent No. 8,316,997 ("the '997 patent") entitled "Elevator group control system" to inventors Masayuki Mitsuda, et. al.

35. The '997 patent is presumed valid under 35 U.S.C. § 282.

36. Murolet owns all rights, title, and interest in the '997 patent.

37. Murolet has not granted Hyundai Elevator a license to the rights under the '997 patent.

## CLAIMS FOR RELIEF

### Count I - Infringement of United States Patent No. 8,162,109

38. Murolet repeats, realleges, and incorporates by reference, as if fully set forth here, the allegations of the preceding paragraphs above.

39. On information and belief, Hyundai Elevator (or those acting on its behalf) designs, manufactures, offers for sale, sells, or makes available the Hyundai Elevator System in the United States that infringe (literally and/or under the doctrine of equivalents) at least claim 1 of the '109 patent.

40. On information and belief, the Hyundai Elevator System is an elevator system comprising a plurality of elevator cars as depicted in the image below.


1
2


H

*See* https://www.hyundaielevator.co.kr/en/solution/product/elevator/the-el

41. On information and belief, the Hyundai Elevator System further comprises a plurality of landing destination operating panels on a plurality of stop floors for enabling destination call registration(s).


HYUNDAI
Select your destination.
1
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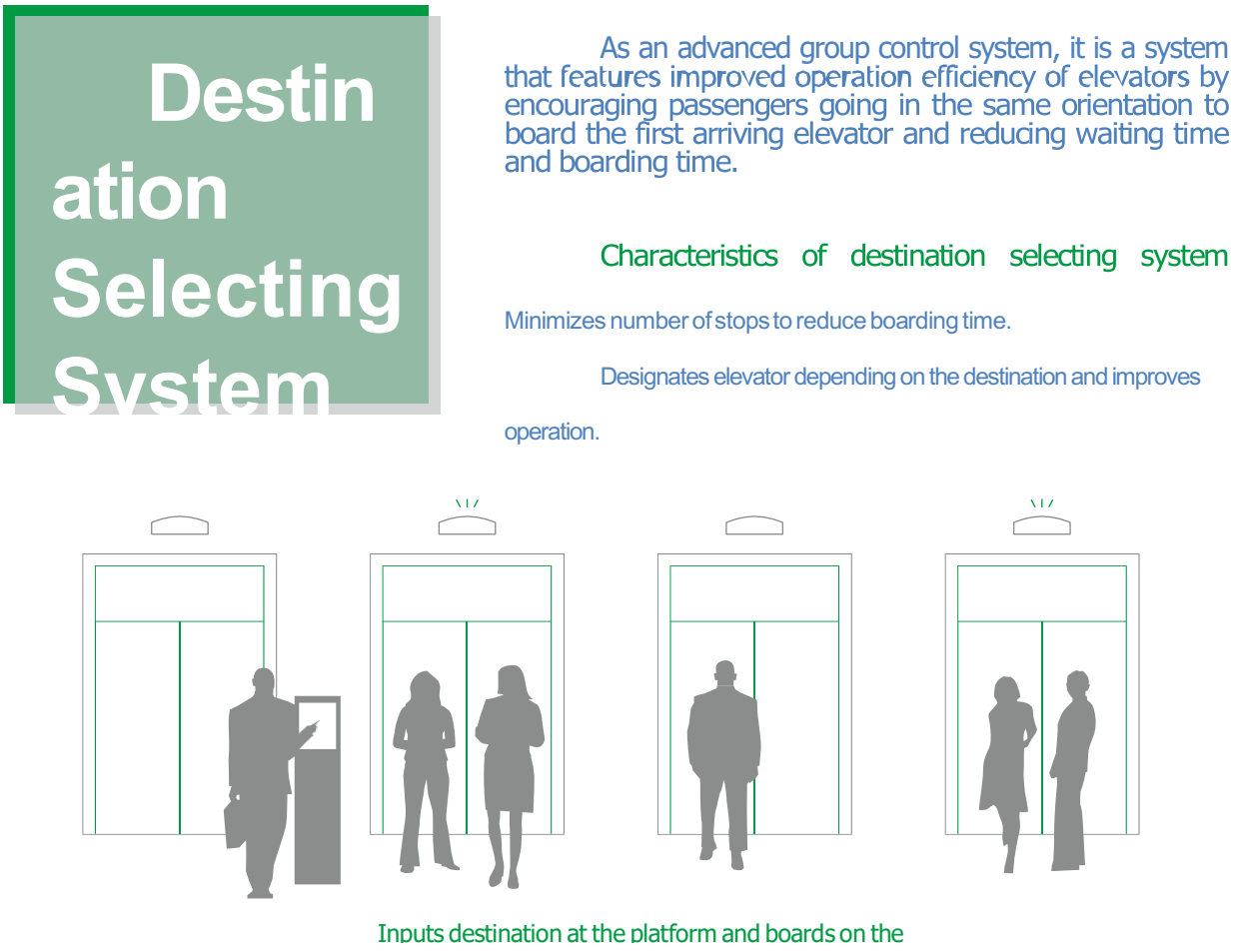



*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

42. On information and belief, the Hyundai Elevator System further comprises a group supervisory control apparatus for selecting the car responding to the destination call registration performed on the landing destination operation panel. For example, H. Solution analyzes destination selections made by passengers on the kiosks to select elevator cars for the passengers and can be controlled or programmed by the H. Solution.

## Items that are added and changed in system upgrade

| Category | Parts | Independent ▶ Group control system | | Group control system ▶ Destination Selecting System | | Remarks |
|---|---|---|---|---|---|---|
| | | HRGC-100 | HRGC-1000 HRGC-3000 | HRGC-100 | HRGC-1000 HRGC-3000 | |
| Components in machine | Main group controller | O | | X (program upgrade is needed) | | |
| | Auxiliary group controller | O (applied when requested by customers) | | O | | Double-calculation back up system |
| | CAN module for destination selecting system | X | | X | O | |
| | Group control communication board for each elevator | O | | X | | |
| | Power supply device for group control board | O | X | X | | DC24V 1.5A |
| | Uninterruptible Power Supply (UPS) | X | O | O | | Adapted when used on touch screen destination selecting system and building information |
| | For ten-key destination selecting system Power supply device | X | | O | | DC24V 13A |
| | Group control communication cable for each elevator | O | | X | | |
| Components within the elevator | Button removal swing panel within the elevator | X | | O | | |
| | LCD to display registered floors | X | | O | | Displays location and building information |
| Components on platform / hoistway | Destination selecting system | X | | O | | |
| | Destination selecting system communication cable | X | | O | | |
| | Elevator lantern | O (applied when requested by customers) | | O | | |
| | Guide sign for elevator | X | | O | | Applied to every floor |

# Destination Selecting System

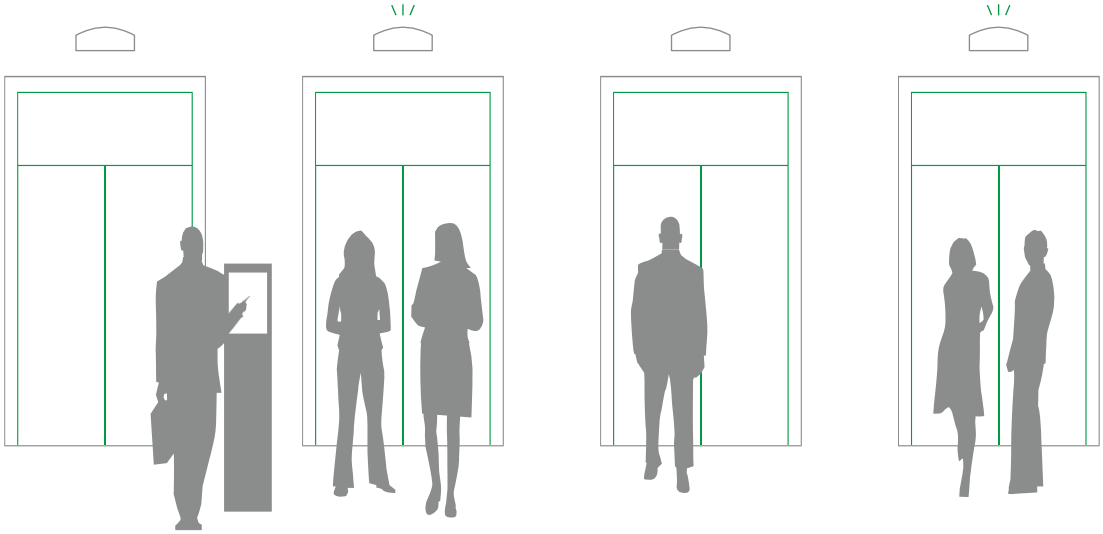
As an advanced group control system, it is a system that features improved operation efficiency of elevators by encouraging passengers going in the same orientation to board the first arriving elevator and reducing waiting time and boarding time.

## Characteristics of destination selecting system

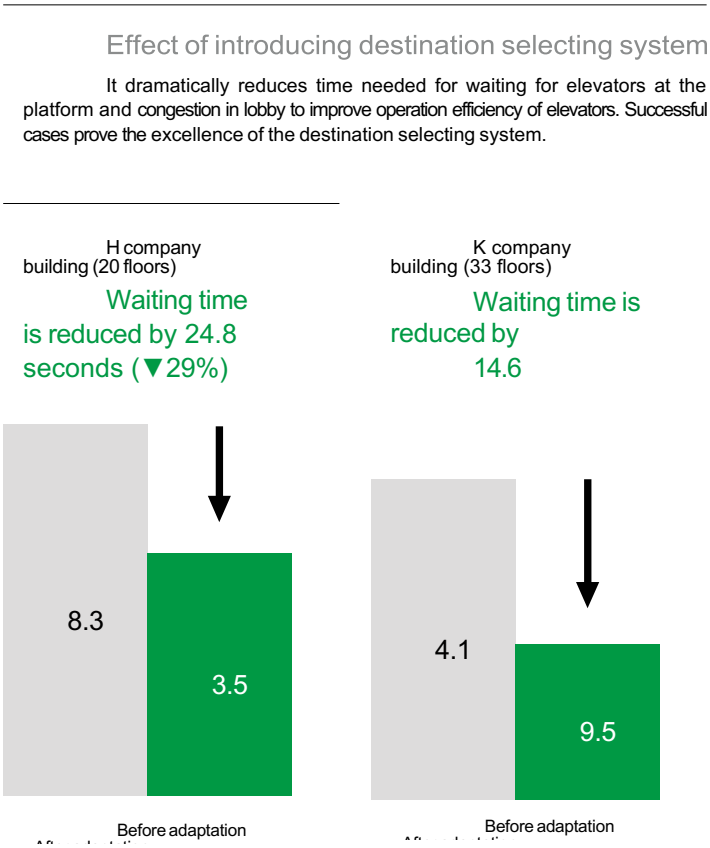
Minimizes number of stops to reduce boarding time.

Designates elevator depending on the destination and improves operation.

Efficiency of elevators by up to 20 - 30% by reducing waiting time and congestion in lobby. Easy to expand additional functions and to be linked to security system in the building. Suitable for places where residents amount to 1,000 or more such as skyscrapers, small and medium-sized offices, and shopping malls.



Inputs destination at the platform and boards on the


※Available type STVF7, FIVF3, FIVF4, T&S, HSVF, WBVF, WBHS, SUVF

*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

43. On information and belief, the Hyundai Elevator System (a) sets a limit value of the number of destination call registrations for the stop floors existing in the same direction from the same stop floor for each of the stop floors and (b) counts the number of destination call registrations for the stop floors existing in the same direction from the same stop floor in response to a destination call registration performed on the landing destination operating panel of the same stop floor, and limits the number of destination call registrations to be allocated to a single car according to the limit value

corresponding to the stop floor. For example, upon information and belief, H. Solution is programmed to limit the number of destination call registrations for a stop floor existing in the same direction from the same stop floor. H. Solution further analyzes and counts the requested destination call registrations and based on the count, can group registrations/passengers that are heading in the same direction or to the same floor while limiting the number of passengers that are allocated to any one car, and can be controlled or programmed by the H. Solution.


*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

The passenger inputs a destination floor, and then the system analyzes the number of passengers, departure and destination to call an optimal elevator.

* Suitable for places where the number of residents or foot traffic amounts to 1,000 or more such as skyscrapers, small and medium-sized office buildings, and shopping malls.


*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

44. On information and belief, Hyundai Elevator directly infringes at least claim 1 of the '109 patent and is in violation of 35 U.S.C. § 271(a) by making, using, offering to sell, and selling Hyundai Elevator Systems.

45. Hyundai Elevator's infringement has damaged Murolet and caused it to suffer and continue to suffer irreparable harm and damages as a result of Hyundai Elevator's infringement.

**Count II - Infringement of United States Patent No. 8,172,044**

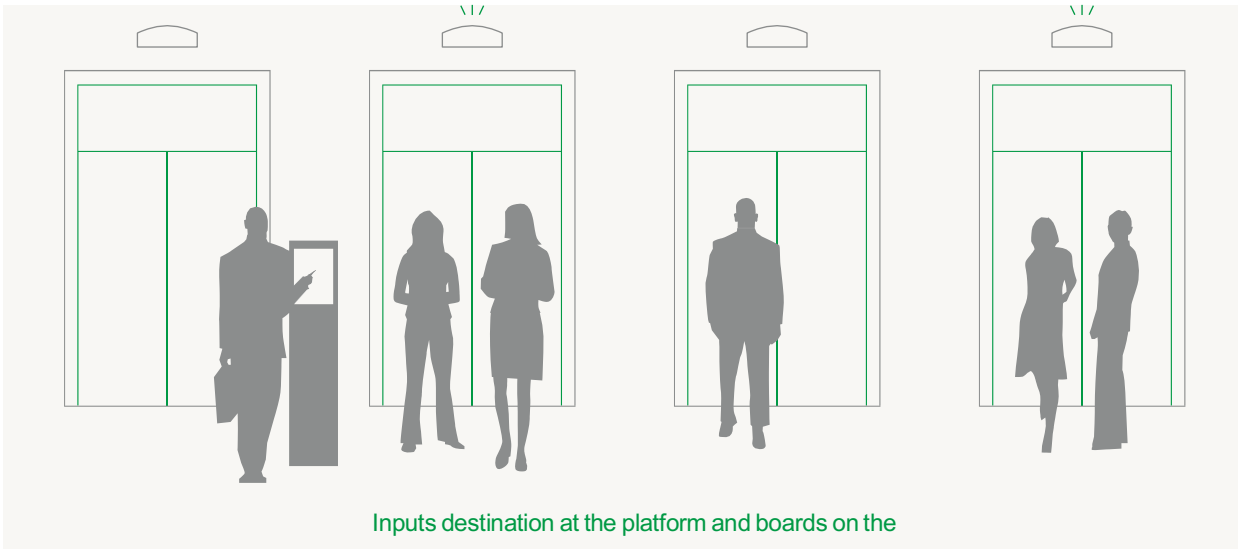
46. Murolet repeats, realleges, and incorporates by reference, as if fully set forth here, the allegations of the preceding paragraphs above.

47. On information and belief, Hyundai Elevator (or those acting on its behalf) designs, manufactures, offer for sale, sells, or makes available the Hyundai Elevator Systems in the United States that infringes (literally and/ or under the doctrine of equivalents) at least claim 1 of the '044 patent.

48. On information and belief, the Hyundai Elevator System is an elevator system that performs group supervisory control of a plurality of elevators as depicted below.

*See* https://www.hyundaielevator.co.kr/en/solution/product/elevator/the-el

49. On information and belief, the Hyundai Elevator System includes a car call registration device which is used by passengers that are entering the elevator area to register their request (a car call) on the unit before riding a car.




*See* https://www.hyundaielevator.co.kr/en/solution/product/elevator/the-el

50. On information and belief, the Hyundai Elevator System includes a building specification data storage section in which building specification data is stored including specifically assigned floor. For example, upon information and belief, H. Solution includes a data storage section, and can be controlled or programmed through H. Solution.

## Items that are added and changed in system upgrade

| Category | Parts | Independent ▶ Group control system | | Group control system ▶ Destination Selecting System | | Remarks |
|---|---|---|---|---|---|---|
| | | HRGC-100 | HRGC-1000 HRGC-3000 | HRGC-100 | HRGC-1000 HRGC-3000 | |
| Components in machine | Main group controller | O | | X (program upgrade is needed) | | |
| | Auxiliary group controller | O (applied when requested by customers) | | O | | Double-calculation back up system |
| | CAN module for destination selecting system | X | | X | O | |
| | Group control communication board for each elevator | O | | X | | |
| | Power supply device for group control board | O | X | X | | DC24V 1.5A |
| | Uninterruptible Power Supply (UPS) | X | O | O | | Adapted when used on touch screen destination selecting system and building information |
| | For ten-key destination selecting system Power supply device | X | | O | | DC24V 13A |
| | Group control communication cable for each elevator | O | | X | | |
| Components within the elevator | Button removal swing panel within the elevator | X | | O | | |
| | LCD to display registered floors | X | | O | | Displays location and building information |
| Components on platform / hoistway | Destination selecting system | X | | O | | |
| | Destination selecting system communication cable | X | | O | | |
| | Elevator lantern | O (applied when requested by customers) | | O | | |
| | Guide sign for elevator | X | | O | | Applied to every floor |

※Available type STVF7, FIVF3, FIVF4, T&S, HSVF, WBVF, WBHS, SUVF

*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

51. On information and belief, Hyundai Elevator System has a specifically-assigned floor judgment section that makes a judgment as to whether or not a departure floor is a specially-assigned floor when a car call has been registered by the car call registration device. For example, upon information and belief, H. Solution includes a specifically-assigned floor judgment section, and can be controlled or programmed through the H. Solution.

# Destination Selecting System

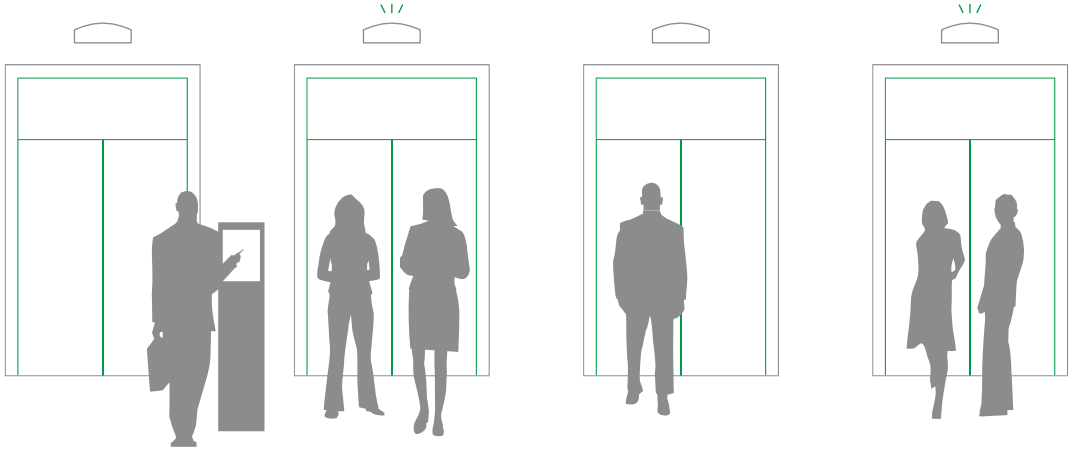
As an advanced group control system, it is a system that features improved operation efficiency of elevators by encouraging passengers going in the same orientation to board the first arriving elevator and reducing waiting time and boarding time.

## Characteristics of destination selecting system

Minimizes number of stops to reduce boarding time.

Designates elevator depending on the destination and improves operation.

Efficiency of elevators by up to 20 - 30% by reducing waiting time and congestion in lobby. Easy to expand additional functions and to be linked to



Inputs destination at the platform and boards on the

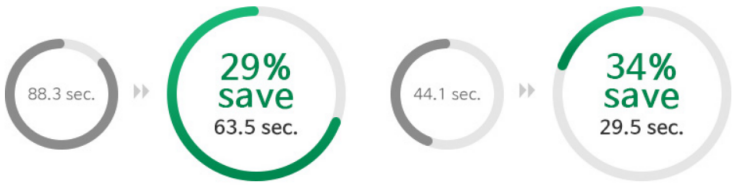
The passenger inputs a destination floor, and then the system analyzes the number of passengers, departure and destination to call an optimal elevator.

* Suitable for places where the number of residents or foot traffic amounts to 1,000 or more such as skyscrapers, small and medium-sized office buildings, and shopping malls.


## Benefits of Destination Selecting System

### 01. Reduced Waiting Time & Fast Arrival at Destination

- The system selects the most efficient elevator for a destination floor, so decreasing the waiting time and unnecessary operations. It allows for optimal service of elevators.
- The number of stops at floors is decreased, which reduces the riding time.




H Company Building (20 floors)
Waiting time reduced by 24.8 sec.

K Company Building (33 floors)
Waiting time reduced by 14.6 sec.

*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

52. On information and belief, the Hyundai Elevator System includes a

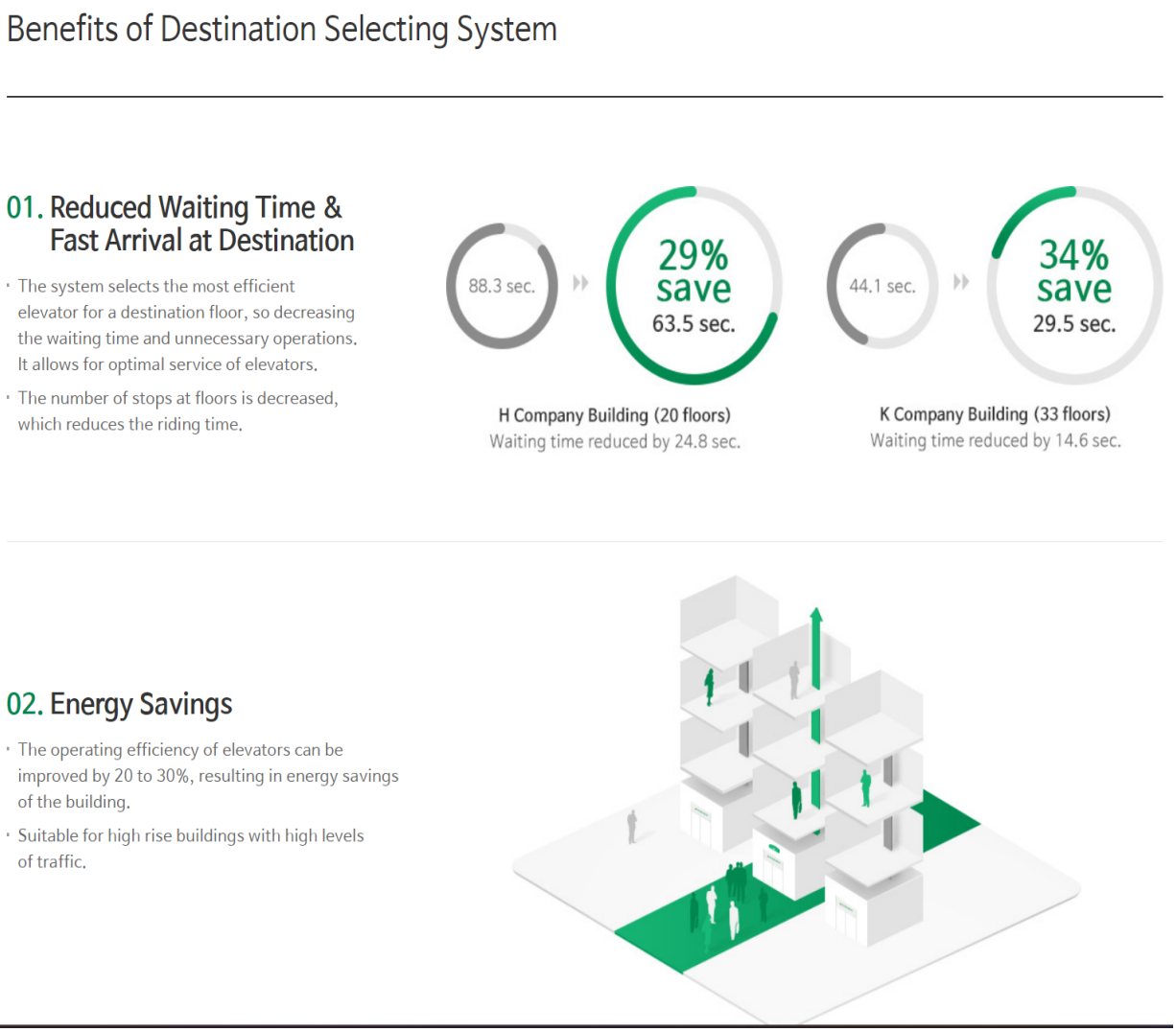
traffic condition judgment section that constantly judges and tracks traffic flow and intensity, identifying journey patterns and peak periods, to respond to passenger demand. For example, upon information and belief, H. Solution includes the traffic condition judgment section and can be controlled or programmed through the H. Solution.

Customizing Service

Customized system that considers characteristics of each building

*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

53. On information and belief, the Hyundai Elevator System has an assignment control section that (i) performs assignment of the car on the basis of results of the traffic condition judgment section when it is judged by the specially-assigned floor judgment section that the departure floor is a specially-assigned floor, and (ii) performs assignment of the car on the basis of a building specification stored in the building specification data storage section when it is judged by the specially-assigned floor judgment section that the departure floor is not a specially-assigned floor. For example, upon information and belief, H. Solution includes an assignment control section that assigns cars on the basis of judgment results from the traffic condition judgment section and assigns the cars on the basis of a building specification stored in a data storage section and can be controlled or programmed through the H. Solution.




*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

54. On information and belief, Hyundai Elevator directly infringes at least claim 1 of the '044 patent and is in violation of 35 U.S.C. § 271(a) by making, using, offering to sell, and selling Hyundai Elevator Systems.

55. Hyundai Elevator's infringement has damaged Murolet and caused it to suffer and continue to suffer irreparable harm and damages as a result of

Hyundai Elevator's infringement.

**Count III - Infringement of United States Patent No. 8,196,711**

56. Murolet repeats, realleges, and incorporates by reference, as if fully set forth here, the allegations of the preceding paragraphs above.

57. On information and belief, Hyundai Elevator (or those acting on its behalf) designs, manufactures, offers for sale, sells, or makes available the Hyundai Elevator System in the United States that infringe (literally and/ or under the doctrine of equivalents) at least claim 1 of the '711 patent.

58. On information and belief, the Hyundai Elevator System is an elevator system that includes (i) a group management control device for a plurality elevators, and (ii) allows a change in the maximum speed or acceleration of the plurality of elevator cars according to car load or moving distance of the cars. For example, upon information and belief, H. Solution includes the assignment control section that assigns cars on the basis of judgment results from the traffic condition judgment section and assigns the cars on the basis of a building specification stored in a data storage section and can be controlled or programmed through H. Solution.


Customizing Service

Customized system that considers characteristics of each building

*See* https://www.hyundaielevator.co.kr/en/solution/product/elevator/the-el

59. On information and belief, the Hyundai Elevator System includes a destination floor registration unit that registers destination floors according to a call into the call registration device at the time of call registration.


*See* https://www.hyundaielevator.co.kr/en/solution/product/elevator/the-el

60. On information and belief, the Hyundai Elevator System includes an assignment control unit that assigns a suitable elevator car in response to a destination call registration request from the call registration device. For example, upon information and belief, H. Solution includes the assignment control unit that assigns a suitable elevator care in response to a destination call registration request and can be controlled or programmed through the H. Solution.

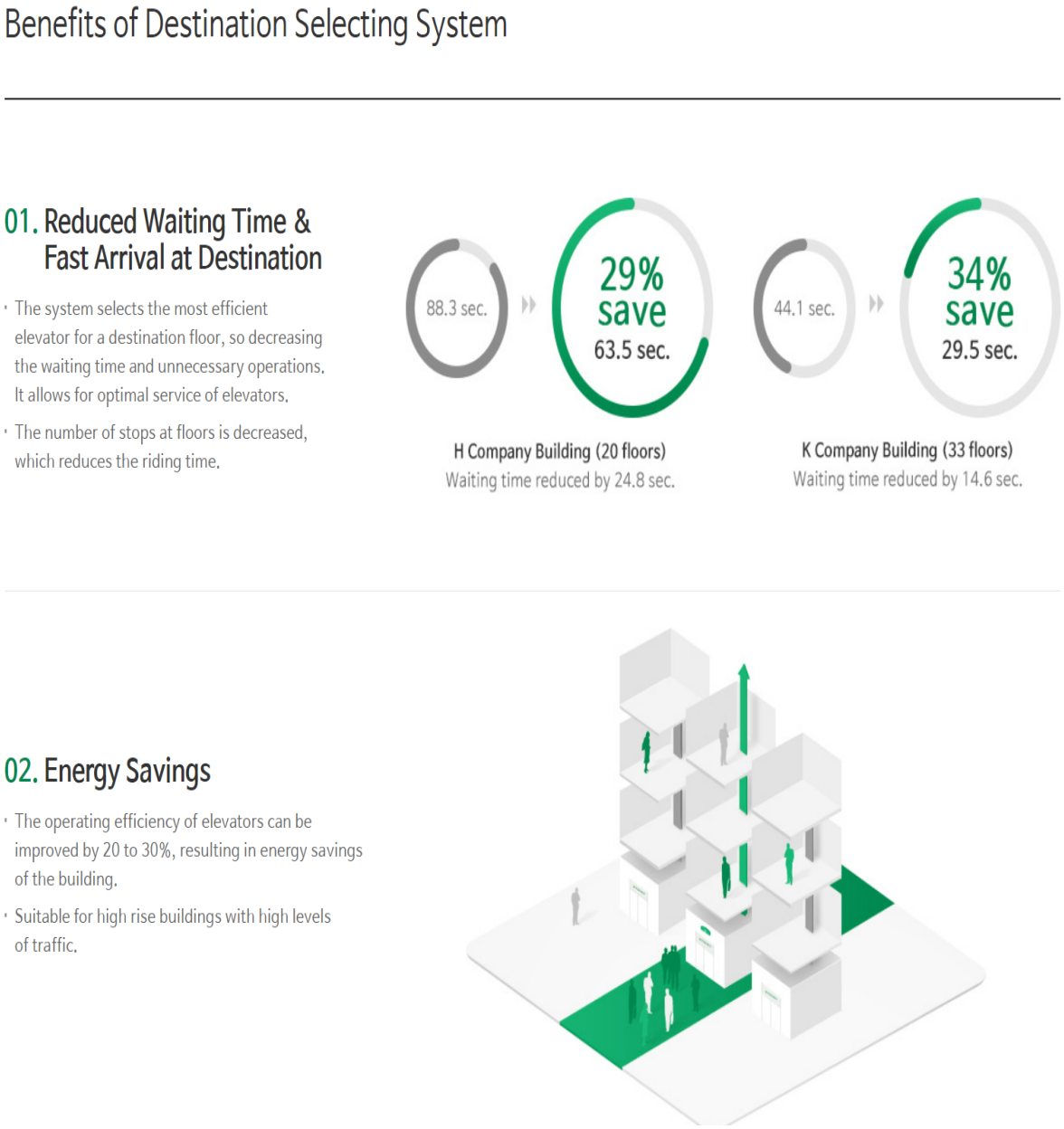
## Items that are added and changed in system upgrade

| Category | Parts | Independent ▶ Group control system | | Group control system ▶ Destination Selecting System | | Remarks |
|---|---|---|---|---|---|---|
| | | HRGC-100 | HRGC-1000 HRGC-3000 | HRGC-100 | HRGC-1000 HRGC-3000 | |
| Components in machine | Main group controller | O | | X (program upgrade is needed) | | |
| | Auxiliary group controller | O (applied when requested by customers) | | O | | Double-calculation back up system |
| | CAN module for destination selecting system | X | | X | O | |
| | Group control communication board for each elevator | O | | X | | |
| | Power supply device for group control board | O | X | X | | DC24V 1.5A |
| | Uninterruptible Power Supply (UPS) | X | O | O | | Adapted when used on touch screen destination selecting system and building information |
| | For ten-key destination selecting system Power supply device | X | | O | | DC24V 13A |
| | Group control communication cable for each elevator | O | | X | | |
| Components within the elevator | Button removal swing panel within the elevator | X | | O | | |
| | LCD to display registered floors | X | | O | | Displays location and building information |
| Components on platform / hoistway | Destination selecting system | X | | O | | |
| | Destination selecting system communication cable | X | | O | | |
| | Elevator lantern | O (applied when requested by customers) | | O | | |
| | Guide sign for elevator | X | | O | | Applied to every floor |

※Available type STVF7, FIVF3, FIVF4, T&S, HSVF, WBVF, WBHS, SUVF

See https://www.hyundaielevator.co.kr/en/technology/environment/reservation

61. On information and belief, the Hyundai Elevator System includes an assignment control unit which includes a prediction time calculation unit. For example, upon information and belief, and as noted above, H. Solution s has an assignment control unit which includes a prediction time calculation unit and can be controlled or programmed through H. Solution.




*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

62. On information and belief, the Hyundai Elevator System's prediction time calculation unit (i) calculates a change of the moving distance of each elevator car after the call assignment based on the destination floor and (ii) calculates each floors arrival prediction time using speed or acceleration of the elevator car according to a calculated value of the change of the moving distance. For example, upon information

and belief, H. Solution allows for programming of the H. Solution software to calculate a change of the moving distance of each elevator car after the call assignment based on the destination floor and to calculate each floors arrival prediction time using speed or acceleration of the elevator car and can be controlled or programmed through H. Solution.

## Functions and options of the H.Solution

△ Limited functions ○ Available ◎ Excellent ※ Provided at cost

| Item | Details | HRGC-100 (general type) | HRGC-1000 (standard type) | HRGC-3000 (premium type) | Option |
|---|---|---|---|---|---|
| AI processing function | Optimal control of building traffic volume through application of the latest AI technology | ※Fuzzy | ※Game Tree | ※Game Tree | |
| Learning function | Improves group control performance by conducting learning by day/ time zone | ※Neural network | ※ANFIS | ※ANFIS | |
| Adaptation of variable speed elevator | Optimal control of elevator where speed varies depending on elevator load | | ○ | ○ | |
| Adaptation of double deck and double + single deck | Optimal control for group control on double deck or double + single deck | | | ○ | |
| Predictive assignment type | Optimal control after conducting comprehensive evaluation on present / future traffic situations | | ○ | ○ | |
| Evaluation on weighted waiting time depending on estimated number of passengers | Reduces congestion in platform by providing service to the floor where it is expected to have many passengers waiting for the elevator | | ○ | ○ | |
| Linkage control of security system in the building | Can control personnel having access to each floor by linking with security system within building (card key, speed gate) (destination selecting system) | △ | ○ | ○ | ※ |
| Hybrid destination selecting system | Installs destination selecting system at the floor where it is frequently congested and general hole button at other floors (used call button in the elevator) | ○ | ○ | ○ | |
| System control by experts | Provides solutions for improving traffic during peak congestion | △ | ○ | ○ | |
| Controls waiting status of the elevator | Controls operation so that at least one elevator can stand by at the floor | ○ | ○ | ○ | |
| Commuting hour service | Controls operation so that several numbers of elevators can stand by at the floor during peak hours | ○ | ○ | ○ | |
| lunch time service | Controls operation so that several numbers of elevators can stand by at the floor during peak hours | ○ | ○ | ○ | ※(Add E/L monitoring panel) |
| Closing hour service | Minimizes waiting time by distributing elevators during peak hours | ○ | ○ | ○ | |
| after-lunch time service | Minimizes waiting time by distributing elevators during peak hours | ○ | ○ | ○ | ※(Add E/L monitoring panel) |
| Off-peak hour service | Reduces power consumption by minimizing unnecessary operations during night time | ○ | ○ | ○ | |
| Distribution service during commuting hours | Distributes elevators into low-floor and high-floor elevators during commuting hours to maximize transportation ability | ○ | ○ | ○ | ※(Add E/L monitoring panel) |
| Centralized service on certain floors | Executes multi-batch in order to solve temporary congestion within a short period of time | △ | ○ | ○ | |
| Multiple objective control evaluation type | Can select certain objectives such as focusing on waiting time, changing operating floors, and designating certain floors | △ | ○ | ○ | |
| Controls stop status on the floor | Every elevator that passes by departure floor stops at the base floor | ○ | ○ | ○ | ※(Add E/L monitoring panel) |
| Power saving service | Executes power saving operation by minimizing number of operating elevators when the number of passengers is reduced | ○ | ○ | ○ | |
| Control for priority assignment | Assigns the elevator that has been called upon from adjacent floor | | ○ | ○ | |
| Estimated control for capacity | Estimates the number of passengers to control capacity in advance and improve operation efficiency | △ | ○ | ○ | |
| Exclusive operation | Operated exclusively by car call separately from operation of group control | ○ | ○ | ○ | |
| Displays arrival alarm | Generates signal that can be recognized visually / audibly at the time when car speed is reduced | ○ | ○ | ○ | |
| Prompt notification function | Generates a signal that can be recognized visually / audibly by selecting the car to be serviced immediately after the call is registered | ○ | ○ | ○ | |
| Displays the selected elevator | Turns on lantern on the elevator that leaves from base floor to provide customers with convenience | ○ | ○ | ○ | |
| Cancel registration | Press the button once more to cancel the registration (only available in group control system) | ○ | ○ | ○ | |

*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

63. On information and belief, Hyundai Elevator directly infringes at least claim 1 of the '711 patent and is in violation of 35 U.S.C. § 271(a) by making, using, offering to sell, and selling Hyundai Elevator Systems.

64. Hyundai Elevator's infringement has damaged Murolet and caused it to suffer and continue to suffer irreparable harm and damages as a result of Hyundai Elevator's infringement.

**Count IV - Infringement of United States Patent No. 8,286,755**

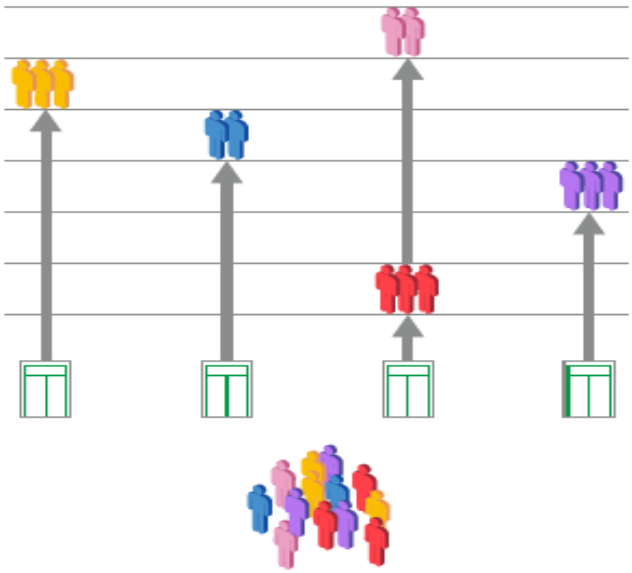
65. Murolet repeats, realleges, and incorporates by reference, as if fully set forth here, the allegations of the preceding paragraphs above.

66. On information and belief, Hyundai Elevator (or those acting on its behalf) designs, manufactures, offers for sale, sells, or makes available the Hyundai Elevator System in the United States that infringe (literally and/or under the doctrine of equivalents) at least claim 1 of the '755 patent.

67. On information and belief, the Hyundai Elevator System is an elevator system that acts as a group supervisory control system for a plurality of elevator units each having a car that can stop at a plurality of floors.


Destination selecting system

It encourages passengers going in the same orientation boarding the elevator and reduces boarding time and waiting time.



*See* https://www.hyundaielevator.co.kr/en/solution/product/elevator/the-el

68. On information and belief, the Hyundai Elevator System, for a plurality of floors, includes hall registration devices that allow for the placement of a plurality of car calls for moving the car to destination floors different from one another.

Hyundai Destination Selecting System keypad (series HTK-B01/04).

Hyundai Destination Selecting System keypad (series HTK-B02).

*See* https://elevation.fandom.com/wiki/Hyundai_Destination_Selecting_System

*See* https://www.hyundaielevator.co.kr/en/solution/product/elevator/the-el

69. On information and belief, the Hyundai Elevator System, for a plurality of floors, includes a display device that displays the car that has been assigned to the plurality of car calls.

Hyundai Destination Selecting System keypad (series HTK-B01/04).

Hyundai Destination Selecting System keypad (series HTK-B02).

## Functions and options of the H.Solution

△ Limited functions ○ Available ◎ Excellent ※ Provided at cost

| Item | Details | HRGC-100 (general type) | HRGC-1000 (standard type) | HRGC-3000 (premium type) | Option |
|---|---|---|---|---|---|
| Automatic operation | Automatic operation of one elevator by separating it from group control operation | ○ | ○ | ○ | |
| VIP operation | Exclusive operation by VIP call signal | ○ | ○ | ○ | |
| NEAR MISS restriction | When high speed elevator is operated in same direction within the same hoistway, occurrence of noise / vibration due to air current is suppressed. | ○ | ○ | ○ | |
| DOOR TIME auto adjustment | Automatically controls door opening / closing time depending on floor, call type, and traffic situation | ○ | ○ | ○ | |
| Function for changing departure base floor | Function that can change departure base floor | ○ | ○ | ○ | |
| Function for changing service floor | Changes service floor by controlling switch or using E/L monitoring panel | ○ | ○ | ○ | |
| System BACKUP function | Uses double-calculation micom configuration to operate group control as assistant group controller in case of failure of main group controller | ○ | ○ | ○ | ※ |
| Device to display platform information | Device for displaying E/L information, building information, and general information on the screen for passengers waiting for elevator | ○ | ○ | ○ | ※ |
| Device for displaying information in the elevator | Device for displaying elevator information such as floor and location and general information in text or video for the passengers in the elevator | ○ | ○ | ○ | ※ |
| Elevator monitoring system | System that monitors elevator operating status, changes operation item on group control, and controls monitoring function using personal computer | ○ | ○ | ○ | ※ |
| Remote monitoring control system | System that uses central computer and communications network installed in the maintenance center to inspect operating status of elevators on a 24-hour basis | ○ | ○ | ○ | ※ |
| Collective function for group control performance | Can display operating status of elevator group control into statistics so that collective function for group control operation can be achieved using computer | ○ | ○ | ○ | ※(Add E/L monitoring panel) |

※HRGC-1000 : Planned to be launched in March, 2018.

*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

70. On information and belief, the Hyundai Elevator System's group supervisory control system includes a limit value setting means for individually setting,

for each of the plurality of floors, a limit value for limiting a count of the plurality of car calls that can be assigned to the same car. For example, upon information and belief, H. Solution limits the number of car calls that can be assigned to the same car, and can be controlled or programmed through the H. Solution.

The destination selecting system for fastest arrival at a destination floor, is a system that features improved operating efficiency of elevators for buildings with high levels of traffic by encouraging passengers going in the same orientation to board the same elevator and reducing waiting time and boarding time.

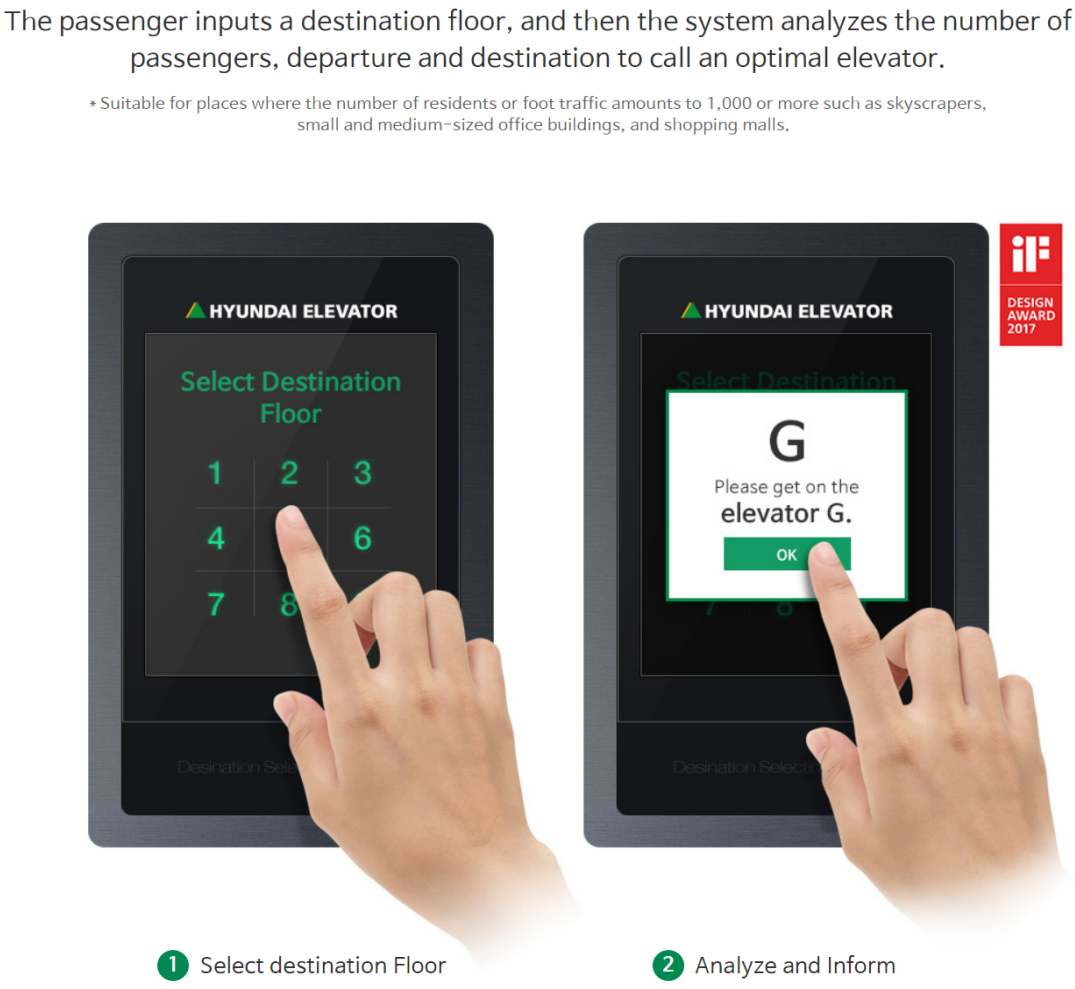
The passenger inputs a destination floor, and then the system analyzes the number of passengers, departure and destination to call an optimal elevator.

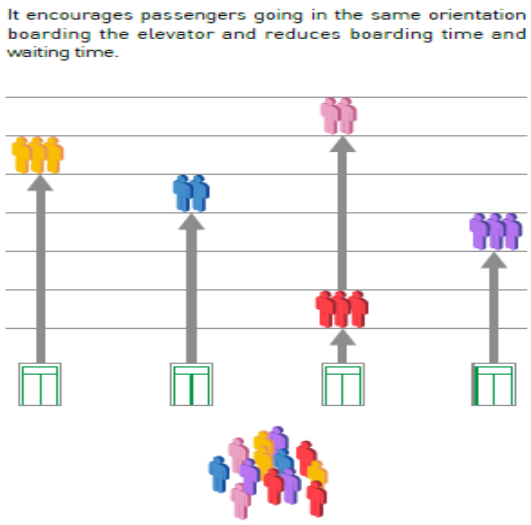
* Suitable for places where the number of residents or foot traffic amounts to 1,000 or more such as skyscrapers, small and medium-sized office buildings, and shopping malls.


1 Select destination Floor 2 Analyze and Inform

*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

71. On information and belief, the Hyundai Elevator System's uses group supervisory control system includes a count-up means for obtaining, when a new car call is made, a call count of each car, based on information about the plurality of car calls that have been assigned to the car. For example, upon information and belief, H. Solution will obtain a count of each call made for each car based on certain information derived from a call and can be controlled or programmed through the H. Solution.






*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

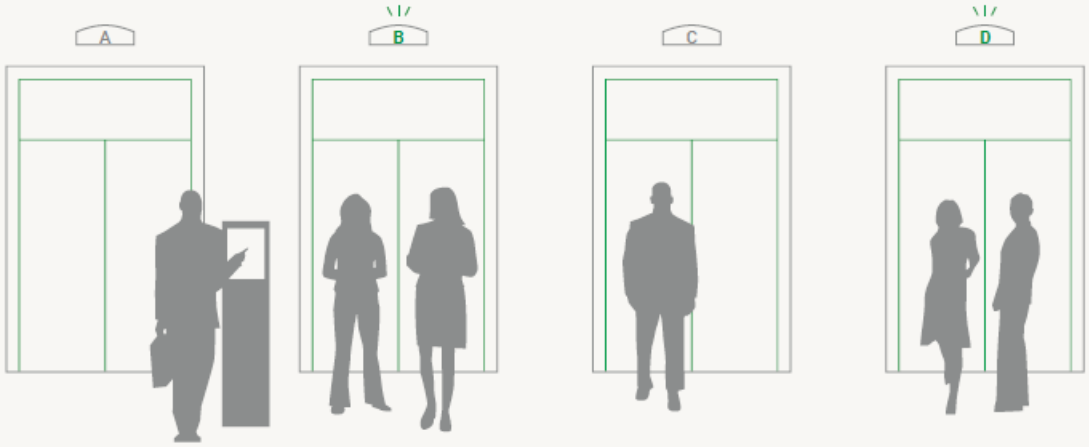
72. On information and belief, the Hyundai Elevator System's group supervisory control system includes a candidate car selecting means for comparing the limit value set to a floor where the new car call is made and the call count of each car, to thereby select, as a candidate car, the car to which the new car call can be assigned from among the cars. For example, upon information and belief, H. Solution will compare the limit value for a floor and the call count of each car to select a candidate car, and can be controlled or programmed through H. Solution.

# Destination Selecting System

**As an advanced group control system, it is a system that features improved operation efficiency of elevators by encouraging passengers going in the same orientation to board the first arriving elevator and reducing waiting time and boarding time.**

## Characteristics of destination selecting system

Minimizes number of stops to reduce boarding time.
Designates elevator depending on the destination and improves operation.
Efficiency of elevators by up to 20 - 30% by reducing waiting time and congestion in lobby
Easy to expand additional functions and to be linked to security system in the building.
Suitable for places where residents amount to 1,000 or more such as skyscrapers, small and medium-sized offices, and shopping malls.



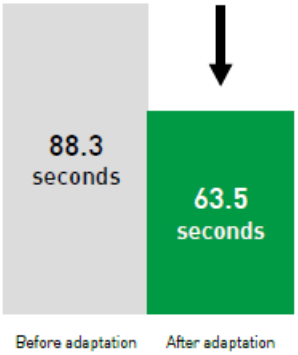

Inputs destination at the platform and boards on the designated elevator


## Effect of introducing destination selecting system

It dramatically reduces time needed for waiting for elevators at the platform and congestion in lobby to improve operation efficiency of elevators. Successful cases prove the excellence of the destination selecting system.

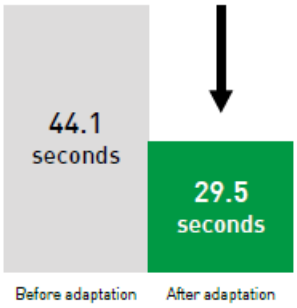
**H company building (20 floors)**

Waiting time is reduced by 24.8 seconds (▼29%)




**K company building (33 floors)**

Waiting time is reduced by 14.6 seconds (▼34%)



## Items that are added and changed in system upgrade

| Category | Parts | Independent ▶ Group control system | | Group control system ▶ Destination Selecting System | | Remarks |
|---|---|---|---|---|---|---|
| | | HRGC-100 | HRGC-1000 HRGC-3000 | HRGC-100 | HRGC-1000 HRGC-3000 | |
| Components in machine | Main group controller | O | | X (program upgrade is needed) | | |
| | Auxiliary group controller | O (applied when requested by customers) | | O | | Double-calculation back up system |
| | CAN module for destination selecting system | X | | X | O | |
| | Group control communication board for each elevator | O | | X | | |
| | Power supply device for group control board | O | X | X | | DC24V 1.5A |
| | Uninterruptible Power Supply (UPS) | X | O | O | | Adapted when used on touch screen destination selecting system and building information |
| | For ten-key destination selecting system Power supply device | X | | O | | DC24V 13A |
| | Group control communication cable for each elevator | O | | X | | |
| Components within the elevator | Button removal swing panel within the elevator | X | | O | | |
| | LCD to display registered floors | X | | O | | Displays location and building information |
| Components on platform / hoistway | Destination selecting system | X | | O | | |
| | Destination selecting system communication cable | X | | O | | |
| | Elevator lantern | O (applied when requested by customers) | | O | | |
| | Guide sign for elevator | X | | O | | Applied to every floor |

※Available type STVF7, FIVF3, FIVF4, T&S, HSVF, WBVF, WBHS, SUVF

*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

73. On information and belief, Hyundai Elevator directly infringes at least claim 1 of the '755 patent and is in violation of 35 U.S.C. § 271(a) by making, using, offering to sell, and selling Hyundai Elevator Systems.

74. Hyundai Elevator's infringement has damaged Murolet and caused it to suffer and continue to suffer irreparable harm and damages as a result of Hyundai Elevator's infringement.

**Count V - Infringement of United States Patent No. 8,316,997**

75. Murolet repeats, realleges, and incorporates by reference, as if fully set forth here, the allegations of the preceding paragraphs above.

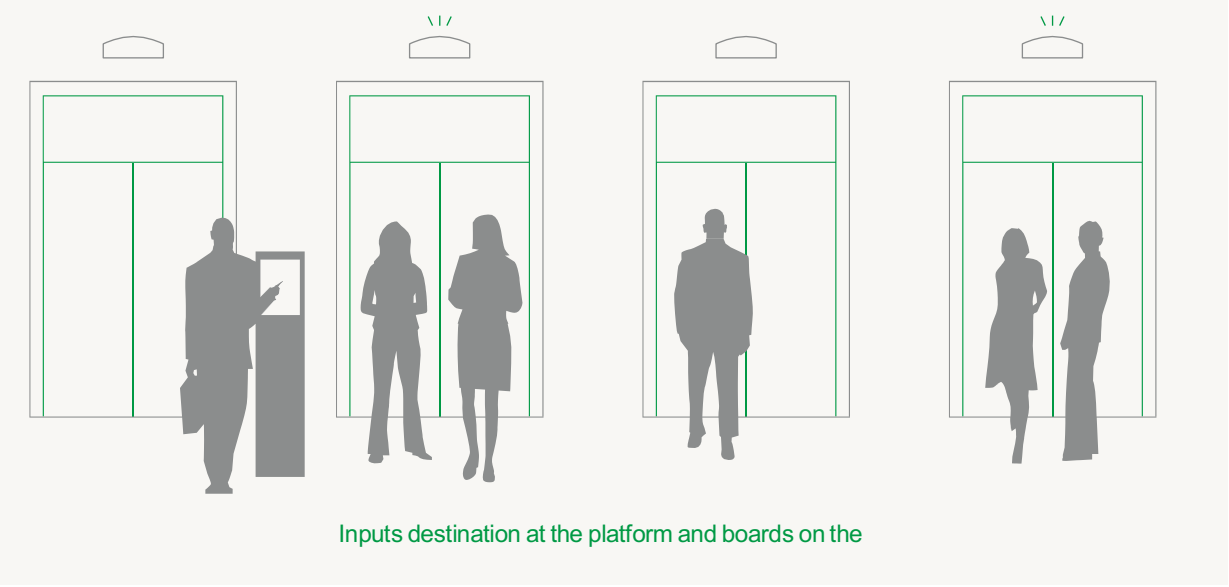
76. On information and belief, Hyundai Elevator (or those acting on its

behalf) designs, manufactures, offers for sale, sells, or makes available the Hyundai Elevator System in the United States that infringes (literally and/or under the doctrine of equivalents) at least claim 1 of the '997 patent.

77. On information and belief, the Hyundai Elevator System includes a group control system that performs group-controls for a plurality of elevators.

*See* https://www.hyundaielevator.co.kr/en/solution/product/elevator/the-el

78. On information and belief, the Hyundai Elevator System includes a destination operating panel provided in an elevator hall and from which users register their destination floors before boarding.




*See* https://www.hyundaielevator.co.kr/en/solution/product/elevator/the-el

79. On information and belief, the Hyundai Elevator System includes a group boarding registering device for registering users that will use an elevator as a group, which is provided in the hall.

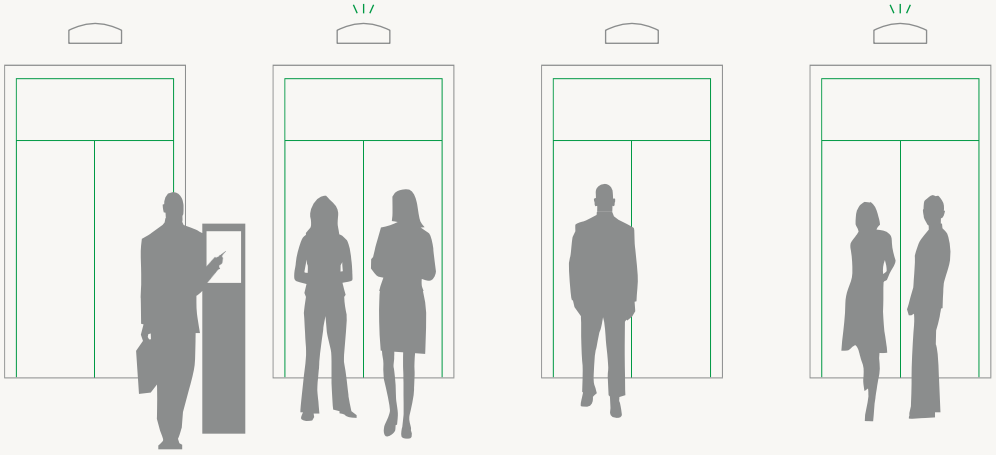
# Destination Selecting

As an advanced group control system, it is a system that features improved operation efficiency of elevators by encouraging passengers going in the same orientation to board the first arriving elevator and reducing waiting time and boarding time.

## Characteristics of destination selecting system

Minimizes number of stops to reduce boarding time.

Designates elevator depending on the destination and improves operation.



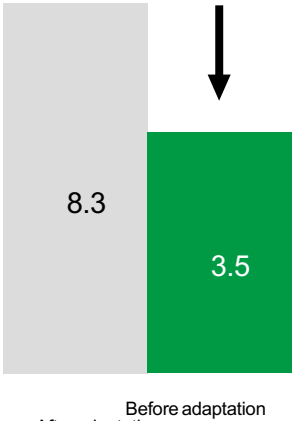
Inputs destination at the platform and boards on


## Effect of introducing destination selecting system

It dramatically reduces time needed for waiting for elevators at the platform and congestion in lobby to improve operation efficiency of elevators. Successful cases prove the excellence of the destination selecting system.

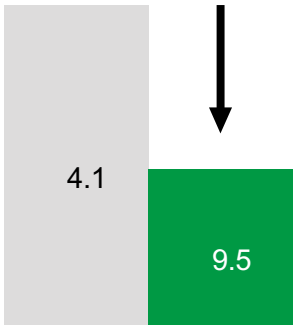
H company building (20 floors)

Waiting time is reduced by 24.8 seconds



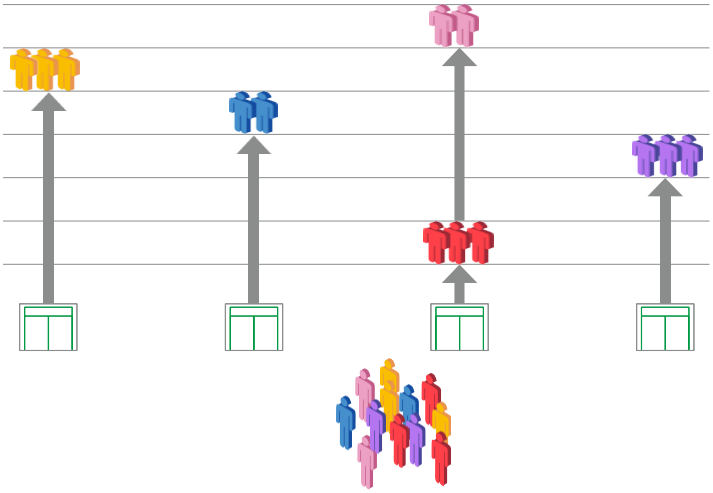

K company building (33 floors)

Waiting time is reduced by 14.6



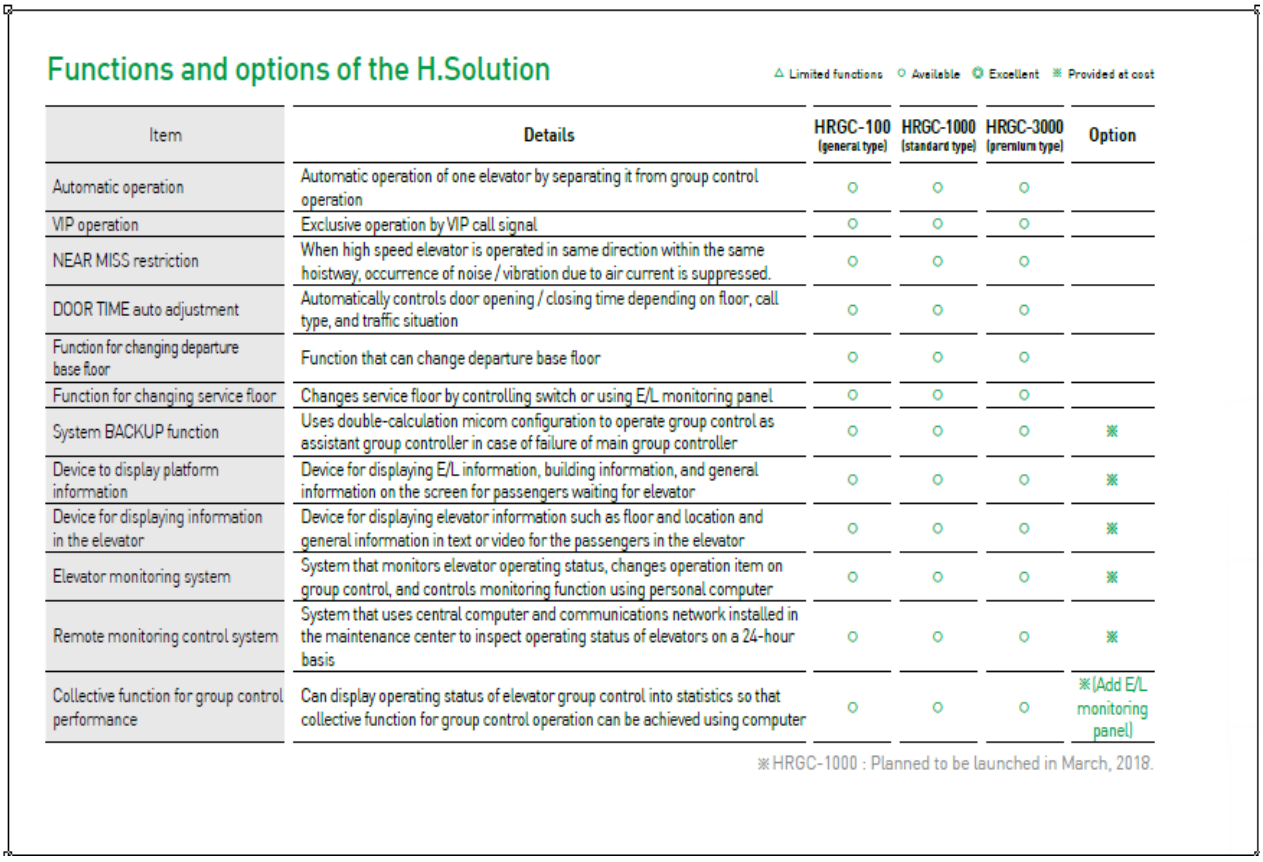

### Destination selecting system

It encourages passengers going in the same orientation boarding the elevator and reduces boarding time and waiting time.



*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

80. On information and belief, the Hyundai Elevator System has a user head count storage section in which the number of users expected when an elevator is used by users as a group is stored beforehand. For example, upon information and belief, H. Solution stores user head counts which contain the expected number of users when using the elevators as a group and can be controlled or programmed through the H. Solution.



**Functions and options of the H.Solution**

△ Limited functions ○ Available ◎ Excellent ※ Provided at cost

| Item | Details | HRGC-100 (general type) | HRGC-1000 (standard type) | HRGC-3000 (premium type) | Option |
|---|---|---|---|---|---|
| Automatic operation | Automatic operation of one elevator by separating it from group control operation | ○ | ○ | ○ | |
| VIP operation | Exclusive operation by VIP call signal | ○ | ○ | ○ | |
| NEAR MISS restriction | When high speed elevator is operated in same direction within the same hoistway, occurrence of noise / vibration due to air current is suppressed. | ○ | ○ | ○ | |
| DOOR TIME auto adjustment | Automatically controls door opening / closing time depending on floor, call type, and traffic situation | ○ | ○ | ○ | |
| Function for changing departure base floor | Function that can change departure base floor | ○ | ○ | ○ | |
| Function for changing service floor | Changes service floor by controlling switch or using E/L monitoring panel | ○ | ○ | ○ | |
| System BACKUP function | Uses double-calculation micom configuration to operate group control as assistant group controller in case of failure of main group controller | ○ | ○ | ○ | ※ |
| Device to display platform information | Device for displaying E/L information, building information, and general information on the screen for passengers waiting for elevator | ○ | ○ | ○ | ※ |
| Device for displaying information in the elevator | Device for displaying elevator information such as floor and location and general information in text or video for the passengers in the elevator | ○ | ○ | ○ | ※ |
| Elevator monitoring system | System that monitors elevator operating status, changes operation item on group control, and controls monitoring function using personal computer | ○ | ○ | ○ | ※ |
| Remote monitoring control system | System that uses central computer and communications network installed in the maintenance center to inspect operating status of elevators on a 24-hour basis | ○ | ○ | ○ | ※ |
| Collective function for group control performance | Can display operating status of elevator group control into statistics so that collective function for group control operation can be achieved using computer | ○ | ○ | ○ | ※(Add E/L monitoring panel) |

※HRGC-1000 : Planned to be launched in March, 2018.

*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

## Items that are added and changed in system upgrade

| Category | Parts | Independent ▶ Group control system | | Group control system ▶ Destination Selecting System | | Remarks |
|---|---|---|---|---|---|---|
| | | HRGC-100 | HRGC-1000 HRGC-3000 | HRGC-100 | HRGC-1000 HRGC-3000 | |
| Components in machine | Main group controller | O | | X (program upgrade is needed) | | |
| | Auxiliary group controller | O (applied when requested by customers) | | O | | Double-calculation back up system |
| | CAN module for destination selecting system | X | | X | O | |
| | Group control communication board for each elevator | O | | X | | |
| | Power supply device for group control board | O | X | X | | DC24V 1.5A |
| | Uninterruptible Power Supply (UPS) | X | O | O | | Adapted when used on touch screen destination selecting system and building information |
| | For ten-key destination selecting system Power supply device | X | | O | | DC24V 13A |
| | Group control communication cable for each elevator | O | | X | | |
| Components within the elevator | Button removal swing panel within the elevator | X | | O | | |
| | LCD to display registered floors | X | | O | | Displays location and building information |
| Components on platform / hoistway | Destination selecting system | X | | O | | |
| | Destination selecting system communication cable | X | | O | | |
| | Elevator lantern | O (applied when requested by customers) | | O | | |
| | Guide sign for elevator | X | | O | | Applied to every floor |

※Available type STVF7, FIVF3, FIVF4, T&S, HSVF, WBVF, WBHS, SUVF

*See* https://www.hyundaielevator.co.kr/en/technology/environment/reservation

81. On information and belief, the Hyundai Elevator System includes an assigned car determination section which determines a car to be assigned to a hall car call based on a number of users stored in the user head-count storage section when registration of a destination floor by use of the destination operating panel has been performed at the same time with registration of a group by use of the group boarding registering device. For example, upon information and belief, H. Solution includes an assigned car determination section which determines a car to be assigned to a call based on the number of users stored in the user head-count storage section when a group registers a call using the group boarding registering device and can be controlled or programmed through H. Solution.

# Benefits of Destination Selecting System

## 01. Reduced Waiting Time & Fast Arrival at Destination

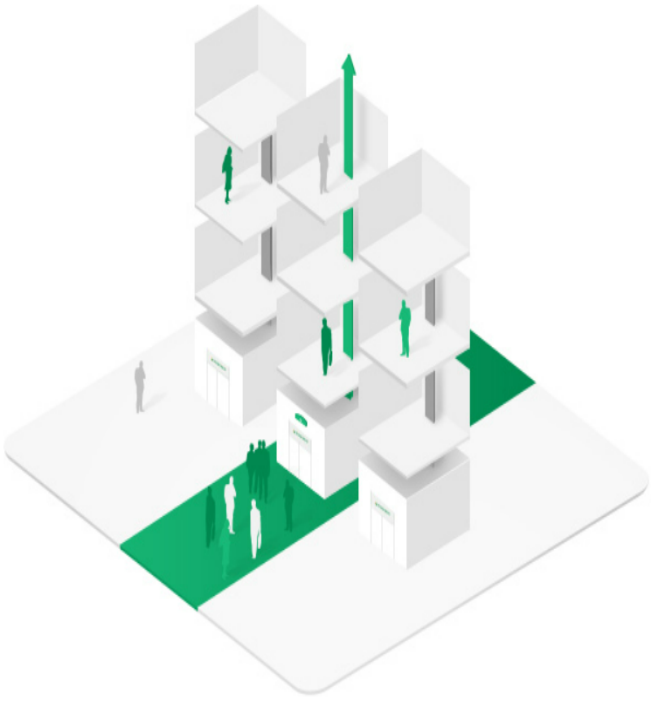
- The system selects the most efficient elevator for a destination floor, so decreasing the waiting time and unnecessary operations. It allows for optimal service of elevators.
- The number of stops at floors is decreased, which reduces the riding time.


H Company Building (20 floors)
Waiting time reduced by 24.8 sec.

K Company Building (33 floors)
Waiting time reduced by 14.6 sec.

## 02. Energy Savings

- The operating efficiency of elevators can be improved by 20 to 30%, resulting in energy savings of the building.
- Suitable for high rise buildings with high levels of traffic.



## Functions and options of the H.Solution

△ Limited functions ○ Available ◎ Excellent ※ Provided at cost

| Item | Details | HRGC-100 (general type) | HRGC-1000 (standard type) | HRGC-3000 (premium type) | Option |
|---|---|---|---|---|---|
| AI processing function | Optimal control of building traffic volume through application of the latest AI technology | ※Fuzzy | ※Game Tree | ※Game Tree | |
| Learning function | Improves group control performance by conducting learning by day/ time zone | ※Neural network | ※ANFIS | ※ANFIS | |
| Adaptation of variable speed elevator | Optimal control of elevator where speed varies depending on elevator load | | ○ | ○ | |
| Adaptation of double deck and double + single deck | Optimal control for group control on double deck or double + single deck | | | ○ | |
| Predictive assignment type | Optimal control after conducting comprehensive evaluation on present / future traffic situations | | ○ | ○ | |
| Evaluation on weighted waiting time depending on estimated number of passengers | Reduces congestion in platform by providing service to the floor where it is expected to have many passengers waiting for the elevator | | ○ | ○ | |
| Linkage control of security system in the building | Can control personnel having access to each floor by linking with security system within building (card key, speed gate) (destination selecting system) | △ | ○ | ○ | ※ |
| Hybrid destination selecting system | Installs destination selecting system at the floor where it is frequently congested and general hole button at other floors (used call button in the elevator) | ○ | ○ | ○ | |
| System control by experts | Provides solutions for improving traffic during peak congestion | △ | ○ | ○ | |
| Controls waiting status of the elevator | Controls operation so that at least one elevator can stand by at the floor | ○ | ○ | ○ | |
| Commuting hour service | Controls operation so that several numbers of elevators can stand by at the floor during peak hours | ○ | ○ | ○ | |
| lunch time service | Controls operation so that several numbers of elevators can stand by at the floor during peak hours | ○ | ○ | ○ | ※(Add E/L monitoring panel) |
| Closing hour service | Minimizes waiting time by distributing elevators during peak hours | ○ | ○ | ○ | |
| after-lunch time service | Minimizes waiting time by distributing elevators during peak hours | ○ | ○ | ○ | ※(Add E/L monitoring panel) |
| Off-peak hour service | Reduces power consumption by minimizing unnecessary operations during night time | ○ | ○ | ○ | |
| Distribution service during commuting hours | Distributes elevators into low-floor and high-floor elevators during commuting hours to maximize transportation ability | ○ | ○ | ○ | ※(Add E/L monitoring panel) |
| Centralized service on certain floors | Executes multi-batch in order to solve temporary congestion within a short period of time | △ | ○ | ○ | |
| Multiple objective control evaluation type | Can select certain objectives such as focusing on waiting time, changing operating floors, and designating certain floors | △ | ○ | ○ | |
| Controls stop status on the floor | Every elevator that passes by departure floor stops at the base floor | ○ | ○ | ○ | ※(Add E/L monitoring panel) |
| Power saving service | Executes power saving operation by minimizing number of operating elevators when the number of passengers is reduced | ○ | ○ | ○ | |
| Control for priority assignment | Assigns the elevator that has been called upon from adjacent floor | | ○ | ○ | |
| Estimated control for capacity | Estimates the number of passengers to control capacity in advance and improve operation efficiency | △ | ○ | ○ | |
| Exclusive operation | Operated exclusively by car call separately from operation of group control | ○ | ○ | ○ | |
| Displays arrival alarm | Generates signal that can be recognized visually / audibly at the time when car speed is reduced | ○ | ○ | ○ | |
| Prompt notification function | Generates a signal that can be recognized visually / audibly by selecting the car to be serviced immediately after the call is registered | ○ | ○ | ○ | |
| Displays the selected elevator | Turns on lantern on the elevator that leaves from base floor to provide customers with convenience | ○ | ○ | ○ | |
| Cancel registration | Press the button once more to cancel the registration (only available in group control system) | ○ | ○ | ○ | |

See https://www.hyundaielevator.co.kr/en/technology/environment/reservation

See https://www.youtube.com/watch?v=fc6FuuI5T9E

82. On information and belief, Hyundai Elevator directly infringes at least claim 1 of the '997 patent and is in violation of 35 U.S.C § 271(a) by making, using, offering to sell, and selling Hyundai Elevator Systems.

83. Hyundai Elevator's infringement has damaged Murolet and caused it to suffer and continue to suffer irreparable harm and damages as a result of Hyundai Elevator's infringement.

**JURY DEMANDED**

84. Pursuant to Federal Rule of Civil Procedure 38(b), Murolet hereby requests a trial by jury on all issues so triable.

**PRAYER FOR RELIEF**

Murolet respectfully requests this Court to enter judgment in Murolet's favor and against the Hyundai Elevator Defendant as follows:

a. finding that the Hyundai Elevator Defendant have infringed one or more claims of the '109 patent under 35 U.S.C. §§ 271(a);

b. finding that the Hyundai Elevator Defendant have infringed one or more claims of the '044 patent under 35 U.S.C. §§ 271(a);

c. finding that the Hyundai Elevator Defendant have infringed one or more claims of the '711 patent under 35 U.S.C. §§ 271(a);

d. finding the Hyundai Elevator Defendant have infringed one or more claims of the '755 patent under 35 U.S.C. §§ 271(a);

e. finding that the Hyundai Elevator Defendant have infringed one or more claims of the '997 patent under 35 U.S.C. §§ 271(a);

f. awarding Murolet damages under 35 U.S.C. § 284, or otherwise permitted by law, including supplemental damages for any continued post-verdict infringement;

g. awarding Murolet pre-judgment and post-judgment interest on the damages award and costs;

h. awarding cost of this action (including all disbursements) and attorney fees pursuant to 35 U.S.C. § 285, or as otherwise permitted by the law; and

i. awarding such other costs and further relief that the Court determines to be just and equitable.

Dated: February 5, 2025

Respectfully submitted,

*/s/Raymond W. Mort, III*

Raymond W. Mort, III
Texas State Bar No. 00791308
raymort@austinlaw.com

THE MORT LAW FIRM, PLLC
111 Congress Avenue, Suite 500
Austin, Texas 78701
Tel/Fax: 512-865-7950

*Of Counsel:*
Ronald M. Daignault (*pro hac vice* to be filed)*
Chandran B. Iyer (*pro hac vice* to be filed)
Shailendra Maheshwari (*pro hac vice* to be filed)*

rdaignault@daignaultiyer.com
cbiyer@daignualtiyer.com
smaheshwari@daignaultiyer.com
Daignault Iyer LLP
8229 Boone Boulevard,
Suite 450
Vienna, VA 22182

*Attorneys for Plaintiff Murolet IP LLC*

*Not admitted to practice in Virginia