GeN2 Flex. Dynamic solutions for the installation of new lifts in existing buildings.
CONVENTIONAL STEEL ROPES

Heavy and space-consuming, the conventional machine also has high energy requirements.

CONVENTIONAL MACHINE

CONVENTIONAL INSPECTION OF STEEL ROPES

Traditional visual inspections of the ropes are only undertaken at intervals and require taking the lift out of operation for maintenance.

FLEXIBLE STEEL BELTS

The polyurethane-coated flat steel belt is up to 20% lighter and lasts up to 3 times longer than conventional ropes. What’s more, it requires no lubricants.

COMPACT SHEAVE

The GeN2 sheave, as small as 8 cm in diameter, has allowed Otis to design a machine up to 70% smaller than conventional machines.

COMPACT GEARLESS MACHINE

The low inertia gearless machine is equipped with a permanent magnet synchronous motor of radial design. The result is up to 50% more efficiency than a conventional geared machine.

PERMANENT MONITORING OF THE BELTS

The PULSE™ electronic system permanently monitors the status of the belt’s steel cords 24h/7d.

CONVENTIONAL SHEAVE

The broad-bending radius of steel ropes requires a large machine with a sheave that is typically 50-60 cms in diameter.
The coated steel-reinforced belt: technology that transforms an industry.

In the year 2000, the GeN2 drive system – an innovation developed and patented by Otis – radically changed the lift industry by replacing the conventional traction steel rope with a flexible polyurethane-coated steel belt. This pioneering advance complies with all relevant EU lift regulations.

Otis GeN2 Flex system: The Benefits

1. Replacing conventional steel ropes with smooth, polyurethane-coated steel belts results in a quieter and smoother ride.

2. A gearless machine controlled by a closed-loop, variable-frequency drive provides a comfortable ride with outstanding stopping accuracy.

3. A low-inertia gearless machine with a permanent magnet (PM) synchronous motor means energy savings and reduced operating costs.

4. The belts and gearless machine with sealed-for-life bearings require no addition of oil or polluting lubricants and thus protect the environment.

5. The interaction of the flat, coated steel belt with the smooth-surface crowned sheaves results in reduced belt wear.

6. A counterweight that can be placed at the side or at the rear of the hoistway results in greater flexibility. Extra hoistway efficiency is achieved so enabling a larger car to be installed.

7. The PULSE™ system continually monitors the status of the belt's steel cords 24h/7d.

8. A patented battery-operated rescue system with electronic speed monitoring enables safe and fast rescue of a trapped passenger in the event of a power failure.

9. With the machine on the rails, loads are transferred down to the pit thereby improving interface and reducing structural building costs.

10. GeN2 Flex technology enables rapid, safe and controlled installation that doesn’t interfere with other building trades.
Replacing metal ropes with smooth, flat belts means a quieter and smoother ride. Enhanced ride quality is achieved through the combination of a number of factors. Otis’ flat polyurethane-coated steel belt which eliminates the metal-to-metal effect of conventional ropes results in quiet operation.

The gearless machine together with a closed-loop, variable-frequency drive with vector control enables a smooth ride with outstanding stopping accuracy (within +/- 3 mm at each landing).

With appropriate treatment of the hoistway walls, the low noise gearless machine mounted on isolation rubber pads reduces vibration to the building and keeps average noise levels in adjacent rooms to below 30 dB(A) - in compliance with strict EU building regulations.

The GeN2 Flex system protects the environment at the same time as achieving new levels of ride quality and energy savings.

### Environmentally Friendly

Lubrication-free and more energy-efficient.

Neither the belts nor the gearless machine with sealed-for-life bearings require any form of polluting lubricants. The low-inertia gearless PM machine, controlled with a closed-loop, variable-frequency drive with vector control, results in substantial energy and cost savings when compared with conventional machines.

Additionally, the VF drive suspend-mode feature further reduces energy consumption.

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### Unrivalled Ride Quality

A flexible belt means a more compact machine.

The low inertia gearless machine with sealed-for-life bearings is equipped with a highly efficient PM synchronous motor of radial construction.

The result is a machine which is up to:

- 50% more efficient than conventional geared machines.
- 10% more efficient than conventional gearless machines with induction asynchronous motors.

### A Highly Efficient Machine

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The result is a machine which is up to:

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- 10% more efficient than conventional gearless machines with induction asynchronous motors.
Otis GeN2 Flex innovative features reflect an absolute commitment to safety.

SAFETY FEATURES

• Automatic Rescue System
  A battery-operated rescue system with electronic speed monitoring enables the safe and fast rescue of trapped passengers in the event of power failure.

• LAMBDA™ 2D Entrance Protection
  A screen of infrared beams acts as an invisible safety curtain. When an obstacle breaks this screen, the sensitive LAMBDA 2D system detects it and immediately reopens the doors.

• Stopping Accuracy
  The belt’s reduced stretch compared to conventional steel ropes together with a closed-loop VF control results in outstanding stopping accuracy.

• Door Deterrent Device
  If the car is stopped between floors, a deterrent device prevents the car door from opening.

• Hoistway Access Detection
  To protect a person entering the hoistway, a special safety feature prevents the lift from operating after a landing door has been opened.

REM® MONITORING

The REM system is the most advanced of its kind for ensuring lift reliability. Twenty-four hours a day, the REM system continuously monitors lift functions – detecting deteriorating components, intermittent anomalies, and small nuisances that might otherwise go unnoticed. It provides immediate, two-way voice communication between passengers and trained Otis personnel at the OTISLINE™ centre, simultaneously delivering greater peace of mind.

INCREASED RELIABILITY

Reliable by design and durable by construction.

The long-lasting coated steel belt, the smooth crowned sheaves and the reduction of moving parts in the gearless machine dramatically reduce wear and increase durability.

Reliability and safety are further enhanced with the PULSE electronic system which continually monitors the status of the belt’s steel cords 24h/7d.
The advantages offered by the GeN2 Flex system when replacing or installing a new lift in an existing building are compelling. Essentially, the GeN2 Flex system is designed to maximise passenger capacity and to adapt itself to virtually every hoistway. In order to optimise hoistway efficiency, the design offers variable car dimensions from 2 to 8 passengers.

Flexibility is further enhanced as the counterweight can be located either at the rear or at the side of the hoistway. Additionally, because of the compact design, overhead and pit dimensions are minimised.

Side counterweight configuration

Rear counterweight configuration

NOTE: Car width and car depth increments are in 5 mm. Shown in the two tables, for simplicity’s sake, are 50 mm increments. Minimum car size is 620 x 850 mm.
In existing buildings, every centimetre of space counts. Whatever the type or age of the building, the GeN2 Flex system is designed to provide a highly efficient solution.

• As the GeN2 Flex lift has no machine room, space savings are achieved.
• With a cantilever configuration, only one bearing wall is needed.
• Offering either back or side counterweight configurations, the car depth or width can be as small as 620mm which allows installation in very small hoistways.
• As the machine is fixed on the rails, loads are transferred down to the pit which reduces the stress on the building. This allows the GeN2 Flex system to be installed in hoistways with different types of walls such as brick, concrete or a steel tower with metallic or glass panels.
• Importantly, too, the system can be installed on the interior or the exterior of the building.

The GeN2 Flex system has been specially conceived for the installation of new lifts in existing buildings...

In the past, regulations did not require lifts to be installed in low rise buildings with less than 6 stops. But with an ageing population, such buildings provide restrictions for the elderly, for the disabled and for people carrying loads or children. The GeN2 Flex system effectively removes all such constraints.

Economically, too, the installation of a new lift in an existing building offers important incentives. Because not only does it increase the overall value of a property but it enhances rental potential as well.
The Gen2 Flex design offers considerable benefits such as:

- Enhanced reliability through the replacement of electro-mechanical controllers by microprocessor systems.
- Superior ride quality and stopping accuracy.
- Maximised lift car dimensions.
- Improved accessibility by enlarging the door opening or upgrading a manual door to an automatic door.
- Reduced operating costs through lower energy consumption.
- A green product with no polluting lubricants.

The drawbacks associated with old lifts are numerous. Lack of reliability, poor ride quality, inconsistent floor levelling, outdated aesthetics and limited accessibility are typical criticisms.

With the latest state-of-the-art technology, the Gen2 Flex system comprehensively resolves all the design, comfort and accessibility issues.

...and, equally, the replacement of older lifts by new designs.

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- Maximised lift car dimensions.
- Improved accessibility by enlarging the door opening or upgrading a manual door to an automatic door.
- Reduced operating costs through lower energy consumption.
- A green product with no polluting lubricants.
To satisfy a variety of requirements, a wide range of door types is offered.

**5 DOOR TYPES**

GeN2 Flex landing doors can be either manual or automatic and adapt themselves to different configurations and dimensions.

Panels, door frames and the telescopic door surround are supplied in either a choice of stainless steel finishes or with a prime coat finish ready for painting on site. The manual door panel can be glazed.

Stainless steel door finishes:
- Brushed
- Buffalo skin
- Linen
- Dama

Two panel centre-opening

Two panel telescopic side-opening

Four panel centre-opening

Three panel telescopic side-opening
An extensive range of car designs provides solutions to differing aesthetic needs.

**OPTIMA**

The Optima car perfectly illustrates the notion that elegance can be achieved through simplicity - provided it’s based on an inspired idea.

In the Optima design’s case, the idea is embodied by the car operating panel actually illuminating the car. Besides bathing the car in a soft diffused light, the panel also acts as a focal point for passengers.

The design of the COP is of course critical. With a curved faceplate, it is both simple and handsome. Chicklets with solid stainless steel target buttons add a touch of luxury as well as providing increased reliability.

Important to the refined appearance are the car panels themselves. In three finishes for different market needs, they are pleasing to the eye and easy to maintain. In fact it is the balance between the aesthetic and the practical that defines the Optima car.

Landing fixtures: Actua with red LED technology.
The name unequivocally defines the car. The Selecta design is all about choice.

Around the engaging lighting concept of the car operating panel - the panel actually illuminates the car and bathes it in a soft diffused light - an extravagant choice unfolds.

To satisfy the most diverse market requirements, there are four car designs with 24 car finishes. The same extensive choice is extended to the flooring - three types with 10 variations in all - and to the two handsome handrail designs.

Additionally, the car operating panel is offered in two versions: with chicklets and without chicklets, the latter featuring lazer-cut floor numbers.

The possibilities are indeed endless. In fact, the Selecta car has been conceived by us to be designed by you.

Landing fixtures: Actua or Classica with blue LED technology.
A novel and exciting way to travel in a commercial or residential complex, the attraction of the Panorama lift is that it is both designed to offer passengers a view and the public a focal viewpoint.

Adding the drama of movement to an architectural concept, the Panorama lift is increasingly chosen for installation in a lobby or atrium.

The glass panels are available in clear or smoked glass and the frames around them in white skinplate, one of three stainless steel finishes or prime coated steel ready for finishing on site.

The lift can be adapted to any number of architectural and decorative specifications.

Landing fixtures: Actua or Classica with blue LED technology.

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### CAR FINISHES

#### SKINPLATE CAR PANELS

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#### LAMINATE CAR PANELS

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#### WOOD CAR PANELS

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#### STAINLESS STEEL CAR PANELS

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</table>

### FLOORING*

<table>
<thead>
<tr>
<th>Rubber</th>
<th>Artificial Stone (HPL)</th>
<th>Natural Stone</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>F</td>
<td>I</td>
</tr>
<tr>
<td>B</td>
<td>G</td>
<td>J</td>
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</table>

*CAR CAN BE SUPPLIED WITHOUT FLOORING IF PREFERRED.
LUMINA

Probably the single factor that defines the character of a car is the lighting. With the Lumina car, we have created an extravagant range of four lighting arrangements. Each offers a different level of illumination, from the discreet to the sumptuous. In combination with a choice of four wall types, a host of decorative effects can be achieved.

Embedded in the side wall panels, the car operating panel is in stainless steel hence astutely complements the ambience of the car. So, too, do the metallic handrails.

Painstaking attention to detail can also be found in the car fittings – from the Car Direction Lantern which employs blue LED diodes to provide increased light intensity to the metallic plated kickplates. Such features, cumulatively, help establish the prestige of the Lumina car. And demonstrate that while lift travel is short in time, it can be long on pleasure.

Landing fixtures: Actua or Classica with blue LED technology.

Halogen spot lighting.
- Flat, white skinplate or brushed stainless steel finish.

Halogen spot lighting.
- Curved, white skinplate or brushed stainless steel finish.

Fluorescent lighting with protruding diffusers.
- Flat, white skinplate or brushed stainless steel finish.

Fluorescent lighting, indirect and direct, with protruding diffusers.
- Curved, white skinplate or brushed stainless steel finish.

SKINPLATE
- L51832 Lotus Noon
- L51833 Morello Cherry
- L51834 Crystal Loft
- L51835 Brushed Blue
- L51836 Brushed Grey
- L51837 White Marble

LAMINATE
- Zircon Blue
- Sky Blue
- Sand
- Cream
- Grey
- Green

STAINLESS STEEL
- Brushed
- Buffalo skin
- Linen
- Dama
- Pallinauto
- Chess

WOOD
- Mahogany
- Beech
- Cherry
- Pear
- Maple
- Birch

CAR PANELS
- Rubber
- Artificial stone
- Natural stone

CAR PANELS
- Rubber
- Artificial stone
- Natural stone

FLOORING
- Rubber
- Artificial stone
- Natural stone

FLOORING
- Rubber
- Artificial stone
- Natural stone
The bright, clear, non-tinted mirrors are in compliance with safety regulations to provide maximum passenger protection. Various arrangements are possible according to panel layouts.

### CAR OPERATING PANELS

Two types of car operating panel are available.

With the Optima and Selecta cars, two fluorescent tubes integrated into the car operating panel emit a soft diffused light which illuminates the car.

With the Lumina car, the car operating panel is set discreetly into the wall panel.

### CAR FITTINGS

Quality fittings enhance overall design. With the Optima car, kickplates and panel trims are available in a satin chrome, mirror chrome or with a natural anodized finish. With the Selecta and Lumina cars, they are offered with a satin chrome, mirror chrome or mirror gold finish.

### HANDRAILS

The Onda and Vento handrails consist of a bar and end cap with contrasting finishes. The handrails are designed to comply with the EN81-70 standard and as such the ends are inset into the car wall. A selection of the 11 finish combinations is shown below.

### SAFER ACCESS

The Flex concept is designed to be in line with the European standard, EN81-70 that provides recommendations to facilitate general lift use and also use by the disabled.

Minimum entrance widths for car sizes are:

- **Type 1 (450 kg)** - Car 1000 x 1250 mm
  - Accommodates 1 wheelchair user.
- **Type 2 (630 kg)** - Car 1100 x 1400 mm
  - Accommodates 1 wheelchair user and one passenger.

### DISPLAYS

In one of three types, the Display is designed to be easily visible from all angles. It houses the Car Position Indicator and the Car Direction Indicator. The dataplate contains load capacity and car alarm pictograms.

<table>
<thead>
<tr>
<th>Display Type</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid Crystal Display Screen (LCD)</td>
<td>Car Position and Direction Indicators plus information display. Bezel surround finished in satin chrome.</td>
</tr>
<tr>
<td>Multicolour Liquid Crystal Display</td>
<td>Car Position and Direction Indicators plus personalised information display. Bezel surround with satin chrome or mirror gold finish.</td>
</tr>
<tr>
<td>Electro Luminescent Display</td>
<td>Car Position and Direction Indicators plus personalised information display. Bezel surround with satin chrome or mirror gold finish.</td>
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</tr>
</tbody>
</table>
LANDING FIXTURES

Three types of landing fixtures are available with the GeN2 Flex design. The Actua fixtures are slightly in relief and are available with red or blue LED technology. The Classica fixtures lie flush and offer blue LED technology only. The fixtures are either in steel with a gold-plated finish or solid stainless steel with a mirror or brushed finish.

### ACTUA

- **Keyswitches and Jewels (option)**
  - For special facilities.

- **Combined Hall Position Indicator and Signal Hall Lantern**
  - Positioned on the upper side of door entrance.

### CLASSICA

- **Car Direction Lantern**
  - Located in the door jamb, the Car Direction Lantern is finished in satin chrome.

- **Combined Hall Position Indicator and Signal Hall Lantern**

- **Hall Button Box**

- **Finishes for all the range**
  1. Mirror gold plating
  2. Brushed stainless steel
  3. Mirror stainless steel

Actua landing fixtures are available with red or blue LED technology. Classica fixtures are offered with blue LED technology only.
## GeN2 Flex lift – Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Load capacity (kg)</td>
<td>from 180 to 630</td>
</tr>
<tr>
<td>Passenger capacity</td>
<td>from 2 to 8</td>
</tr>
<tr>
<td>Speed</td>
<td>1.0 m/s</td>
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<tr>
<td>Maximum rise</td>
<td>45 metres</td>
</tr>
<tr>
<td>Maximum number of stops</td>
<td>16</td>
</tr>
<tr>
<td>System configuration</td>
<td>Side counterweight</td>
</tr>
<tr>
<td></td>
<td>Rear counterweight</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>from 620 to 1250</td>
</tr>
<tr>
<td>Depth (mm)</td>
<td>from 850 to 1500</td>
</tr>
<tr>
<td>Height (mm)</td>
<td>2100, 2200, 2300</td>
</tr>
<tr>
<td>Car entrances</td>
<td>1, 2 (opposite) or 2 (90°)</td>
</tr>
<tr>
<td>Machine</td>
<td>Gearless with permanent magnet synchronous</td>
</tr>
<tr>
<td>Drive</td>
<td>Otis OVF Variable Frequency with closed loop</td>
</tr>
<tr>
<td>Control system</td>
<td>MCS 220 TCBC modular control system</td>
</tr>
<tr>
<td>Cars in a group</td>
<td>up to 2</td>
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<tr>
<td>Power (3 phases + neutral)</td>
<td>400 volts (+/- 10%)</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 or 60 Hz</td>
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</tbody>
</table>

**Notes:**
- TLD: Two panel telescopic side-opening
- CLD: Two panel centre-opening
- TLD3: Three panel telescopic side-opening
- CLD2: Four panel centre-opening