

THE WAY T

GeN2[™] Flex



THE WAY TO GREEN



CONVENTIONAL DRIVE



⑤ REGEN™ VF DRIVE

LANDING CABINET



6 E&I PANEL CONTROLLER

CONVENTIONAL LIGHTING



O LED LIGHTING

MACHINE ROOM



MACHINE ROOMLESS Option: reduced overhead for flat roof building with a minimum of 2500 mm depending on local regulations.

The coated steel reinforced belt: technology that has transformed an industry.

The environmentally-friendly GeN2 system establishes new standards for lift performance, reliability and design flexibility. And while offering passengers more comfort, it also achieves both cost and energy savings.

Otis GeN2 Flex system: The Benefits

An innovative lift system which provides:

Environmental protection

- The belts and gearless machine with sealed-for-life bearings do not require any form of polluting lubricant.
- A compact gearless machine together with an energy-conserving ReGen drive achieves energy savings of up to 75% compared to a conventional system with a non-regenerative drive. It also reduces operational costs.

Design flexibility

- 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.
- With the machine on the rails, loads are transferred down to the pit thereby improving interface and reducing structural building costs.
- GeN2 Flex technology enables a rapid, safe and controlled installation that doesn't interfere with other building trades.

Safety and reliability

- The PULSE[™] system continually monitors the status of the belt's steel cords so enhancing both their lifetime and their reliability.
- With the optional Elite service, customers enjoy a priority service that radically improves both lift reliability and passenger reassurance. The level of service goes far beyond conventional maintenance to offer an array of benefits from rapid and efficient repairs to customizable lift operations.

The GeN2 Flex system is the smart choice for 'green' buildings.

REGEN DRIVE

A typical lift includes three major components: the machine, the lift car and the counterweight. The counterweight is designed to balance a halfloaded car. Electrical power is generated when a heavily-loaded car travels in a 'down' direction or a lightly-loaded car travels in an 'up' direction (green area of graph).

With a non-regenerative drive the energy generated is dissipated in a set of resistors creating a waste-heat load in the building.

With a regenerative drive, the energy generated is fed back into the building's grid where it can be used by other loads connected to the same network. The energy consumed with a non-regenerative drive is represented by the yellow area while with a regenerative drive the energy consumed is just the difference between the yellow and green areas.

The amount of energy savings due to regeneration depends on various system parameters and configurations such as car load, speed, length of run, traffic pattern and system efficiency.



As the preferred choice for 'green' building initiatives, ReGen drives deliver substantial energy savings while helping to meet or exceed established worldwide standards.

- Energy savings (up to 75%)
- Low harmonic distortion (typically below 5%) and reduced Radio Frequency Interference
- Operational cost savings through reduced peak
 power demand and decreased energy consumption
- Optimal performance the drive operates with voltage fluctuations of up to 30%.

Electrical power generation



Heavily-loaded car in down direction

Lightly-loaded car in up direction



Energy generated with fully-loaded car in 'down' direction.

It protects the environment....

A 'GREEN' MACHINE

Neither the belts nor the gearless machine with sealed-for-life bearings require any form of polluting lubricants.

The low inertia gearless machine 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.
- 15% more efficient than other machines with PM motors of axial construction design.



Gearless machine with sealed-for-life bearings and maintenance-free brake disc.

ENERGY EFFICIENCY

Comparison vs conventional lifts: Propulsion system



Hydraulic Geared Gearless G@N2



Energy consumption (kWh)



ENERGY-EFFICIENT LED LIGHTING

Superior quality with a longer life

Up to ten times longer lasting that a conventional fluorescent source, LED lighting is fitted as standard on the GeN2 Flex system. Besides saving costs, a lift has to be taken out of service far less frequently for maintenance visits which in turn reduces downtime.

Importantly, also, an automatic switch-off mode offers up to 80% energy savings over a fluorescent source. And repeated switching on and off does not affect its lifetime. Finally, light quality, too, is improved as LED lighting experiences none of the flickering associated with a fluorescent source.

Running the whole length of the car operating panel, LED lighting also achieves important energy savings.



....and it achieves substantial energy savings.

VDI 4707 CLASSIFICATION

A standard established in 2009 by Verein Deutscher Ingenieure, the authoritative association of German engineers, VDI 4707 assesses the energy performance of lifts taking into account load, speed, frequency of use and travel height - both during travel and standby modes.

The energy demand of a lift is rated using seven different classes from A to G where A reflects the highest rating possible (the least energy used) and G the lowest (the most energy used).

Measurements taken on installations with standard configurations prove that the GeN2 Flex lifts have earned a Class A rating so achieving the very highest energy efficiency criteria.

Note: "Usage category" shown on the table is calculated based on typical average number of travels per year and average travel time (from REM™ system database) for the GeN2 Flex duty.

	GeN2 Flex
Load (kg)	630
Speed (m/s)	1
Number of stops	5
Rise (m)	14
Trips per year	70 000
Usage category	2
Travel class	A
Standby class	A
Efficiency class	A

A GeN2 systems

Energy efficiency class



GeN2 642 kWh/yr Lighting Standby Travel Propulsion

VDI 4707

Values shown for standard GeN2 system. Technology advances will result in further reductions of energy consumption.

GEN2 TECHNOLOGY - THE WAY TO GREEN

	Flat Belt	Pulse	Machine	ReGen Drive	Rollers	LED Lighting
G@N2 [™] The benefits						
Energy Savings	*		*	*	*	*
Environmental Protection	*	*	*	*	*	*
Ride Comfort	*		*	*	*	
Safety and Reliability	*	*	*	*	*	*

REDUCED ENERGY CONSUMPTION

The standard GeN2 system incorporates a highly efficient machine, an energy-conserving ReGen drive and LED lighting with an automatic switch-off function to significantly reduce overall consumption.

> 630 kg at 1.0 m/s 5 stops 14 m rise 70 000 starts/yr (Usage category 2)

At the same time it achieves an outstanding level of ride quality.





- Industry hydraulic system
- Industry geared system
- GeN2 Comfort system

A gearless machine with a closed-loop VF drive increases passenger comfort.

The gearless machine combined with a sophisticated load weighing device and a closed loop variable frequency drive with vector control contribute to a smooth and quiet ride. Furthermore, they result in outstanding stopping accuracy of within +/- 3mm at every landing.



IMPROVED RIDE QUALITY

Replacing metal ropes with smooth, flat belts

Enhanced ride quality is achieved through the combination of a number of factors. Otis' flat polyurethanecoated steel belt which eliminates the metal-to-metal effect of conventional ropes together with the specially designed crowned-surface sheaves (with no twisting

of the belt through 180°) results in quiet operation.

means a quieter and smoother ride.

Interaction of Otis' flat belt and the smooth crowned sheave.

REDUCED NOISE AND VIBRATION

With appropriate treatment of the hoistway walls, the low noise gearless machine which is 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.



Smooth crowned sheave.

Flexibility is a key strength of the Gen2 Flex concept. So, too, is increased passenger capacity.

FLEXIBILITY

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



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.



Rear counterweight configuration

Available car dimensions with rear counterweight configuration



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.



BEFORE

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.

To satisfy a variety of requirements, a wide range of door types is offered.

5 DOOR TYPES

AFTER

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.







Alternative steel door finish (5) AS 220

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

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.



BEFORE

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.

AFTER



Two panel

centre-opening



Four panel centre-opening







Two panel telescopic side-opening.



Three panel telescopic side-opening

What's more advanced security features reflect an absolute commitment to both safety and reliability.

SAFETY FEATURES

For lift users and service technicians.

Door Deterrent Device

If the car is stopped between floors, a deterrent device prevents the car door from opening. Hence a person cannot take the risk of exiting.

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.

Rescue System

A patented, battery-operated rescue system with electronic speed monitoring enables the safe and fast rescue of trapped passengers in the event of a 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 2 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 (within +/-3 mm at every landing).

Machine Brake System

To further improve safety, the machine's dual brake system is equipped with two switches to prevent the lift from moving before the brake is fully released.



LAMBDA 2D entrance protection.



Stopping accuracy: to within +/- 3 mm.

INCREASED RELIABILITY

The PULSE electronic system monitors the status and integrity of the belt's steel cords 24/7d providing advance notice of the need for replacement. Not only does this improve their reliability and extend their life but it also reduces the downtime required for inspection.





A controlled process minimizes installation time and improves safety.

With all major components located inside the hoistway, the installation process of the GeN2 Comfort lift has minimal impact on building construction and other trades.

The machine is integrated on top of the rails thus virtually eliminating the interface with the building. The car serves as a construction platform for rapid installation and alignment of rails.

Finally, the factory-tested E&I controller panel, integrated into the landing door frame, enhances the aesthetic appearance.



E&I controller panel - closed E&I controller panel - open

An extensive range of car designs with energy-efficient LED lighting 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 LED 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.





SKINPLATE

CAR PANELS
 ① Zircon Blue
 ② Sky Blue

- Sky Blue
 Sand
- Gream
- ⑤ Grey

FLOORING Rubber Artificial stone



LAMINATE



Rubber

Artificial stone

STAINLESS STEEL & ALTERNATIVE STEEL

CAR PANELS Stainless steel

② Buffalo skin

Alternative steel
(1) AS 220

FLOORING Rubber Artificial stone



SELECTA™

The name unequivocally defines the car. The Selecta design is all about choice.

Around the engaging LED 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 18 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 laser-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.



SKINPLATE

CAR PANELS

- Zircon Blue
 Sky Blue
 Sand
 Cream
 Grey
- FLOORING

Rubber Artificial stone Natural stone



LAMINATE

◯ CAR PANELS

- Lotus Noon
 Morello Cherry
- 6 Crystal Loft
- ⑦ Brushed Blue
- ⑧ Brushed Grey
- White Marble
 A

\Diamond flooring

Rubber Artificial stone Natural stone



WOOD

CAR PANELS ① Mahogany ② Beech

Beech
 Cherry

\Diamond flooring

Artificial stone Natural stone



STAINLESS STEEL

○ CAR PANELS

Brushed
 Buffalo skin
 Linen
 Dama

FLOORING Rubber Artificial stone Natural stone



PANORAMATM

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.

Glass panel arrangements

Rear counterweight



Side counterweight

Rear panel

D1

F

D2

NOTE: shown here is a machine with left side configuration. For machine with right side, the same arrangements of glass panels are on the left side.



LUMINATM

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 LED 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.





> Flat, white skinplate or brushed stainless steel finish.



> Curved, white skinplate or brushed stainless steel finish.



 Flat, white skinplate or brushed stainless steel finish.



> Curved, white skinplate or brushed stainless steel finish.



SKINPLATE

CAR PANELS ① Zircon Blue

- Sky Blue
 Sand
 Cream
 Grey
- FLOORING Rubber Artificial stone Natural stone



LAMINATE



FLOORING

Rubber

Artificial stone

Natural stone

STAINLESS STEEL





Rubber Artificial stone Natural stone



WOOD







CAR OPERATING PANELS

Two types of car operating panel are available.

With the Optima and Selecta cars, environmentally-efficient LED lighting integrated into the car operating panel emits a soft diffused light which illuminates the car.

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



Liquid Crystal Display Screen (LCD)

Car Position and Direction Indicators plus information display. Bezel surround finished in satin chrome.

Multicolour Liquid Crystal Display Car Position and Direction Indicators

plus personalised information display. Bezel surround with satin chrome or mirror gold finish.





Electro Luminescent Display

Car Position and Direction Indicators plus personalised information display. Bezel surround with satin chrome or mirror gold finish.

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.



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.

CAR FITTINGS

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



MIRRORS

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. 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.



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.

As an option, a hall button can be integrated into the door frame (see left).



3

1 2 ACTUA CLASSICA Finishes for all the range ① Mirror gold plating Brushed stainless steel ③ Mirror stainless steel O Combined Hall Position Indicator and Signal Hall Lantern 67 -O Combined Hall Position Indicator and Signal Hall Lantern Positioned on the upper side of door entrance. **•** Hall Button Box 0 0 • Keyswitches and Jewels (option) For special facilities. Actua landing fixtures are available with red or blue LED technology. Classica fixtures are offered with blue LED technology only. 0 0 8 ۲ 8 0 0 ø 0 ø 0

Service and quality assurance are cornerstones of our customer-oriented focus.



Service initiatives that have become industry benchmarks.

How efficiently a lift performs depends on how well a lift is maintained. To this end, Otis offers an unrivalled range of maintenance solutions which can be adjusted to meet the very specific demands of each installation. Hence each solution is cost-effective and designed to assure equipment longevity.

Critical to Otis' comprehensive support system is Otisline - a dedicated in-house call centre where highly trained professionals are at your service 24/7 to resolve an issue promptly and efficiently.

Important, too, is communication. Vital to our clientoriented strategy, it means that through eService - our 24/7 online internet access - you will have immediate access to your lift's performance and service data. The result is increased transparency and accountability.

Finally we should mention quality. Stringent quality control procedures, ongoing and in-depth training of our engineers and the use of documented standard practices means the quality of both our products and our services is unsurpassed.

The incomparable advantages of Elite service.

Designed as a priority service for Otis customers, Elite service delivers an unparalleled level of both response and reliability that totally transforms the performance of your lifts.

The result of pioneering research into remote technology, Elite service involves a team of specialist engineers dedicating themselves to the monitoring and maintenance of your lifts.

Using advanced diagnostics, they can connect to your unit, identify an anomaly and frequently be able to correct the fault almost immediately.

What's more, because they can pinpoint the source of the problem, they can remove the risk of its recurrence.

Being able to anticipate problems, react and repair them quickly dramatically reduces downtime. And being able to restore a lift to service quickly means that in the unlikely event of a service interruption, the lift will normally be up and running again within minutes enormously reasssuring should a passenger be in the lift.

GeN2 Flex lift - Specificationss

Load capacity (kg)		from 180 to 630		
Passenger capacity		from 2 to 8		
Speed		1.0 m/s		
Maximum rise		45 metres		
Maximum number of stops		16		
System configuration		Side counterweight	Rear counterweight	
Car dimensions (mm)	Width	from 620 to 1250	from 850 to 1500	
	Depth	from 850 to 1500	from 620 to 1250	
	Height	2100, 2200, 2300	2100, 2200, 2300	
Door opening width (mm)	Manual	N.A.	from 600 to 1000	
	TLD/CLD	from 600 to 900		
	TLD 3/CLD2	from 600 to 1000		
Door opening height (mm)		2000, 2100		
Car entrances		1, 2 (opposite) or 2 (90°)		
Machine		Gearless with permanent magnet synchronous motor		
Drive		Otis OVF Variable Frequency with closed loop vector control		
Cars in a group		up to 2		
Power (3 phases + neutra	al)	400 volts (+/- 10%)		
Frequency	50 or 60 Hz			

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



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