

OTIS

GeN2™ Comfort

GeN2™ Comfort lift. Taking ride quality to a higher level.

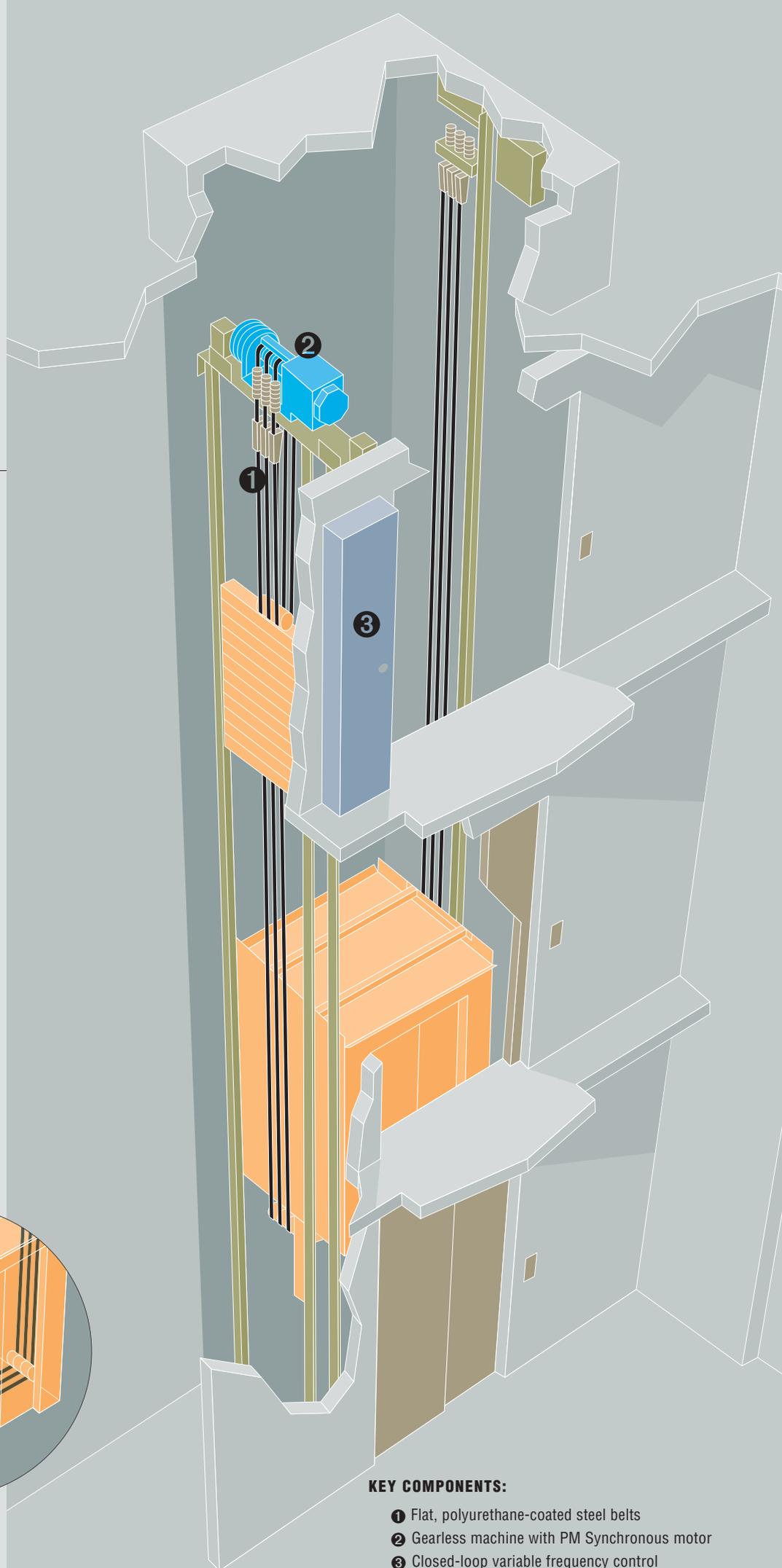
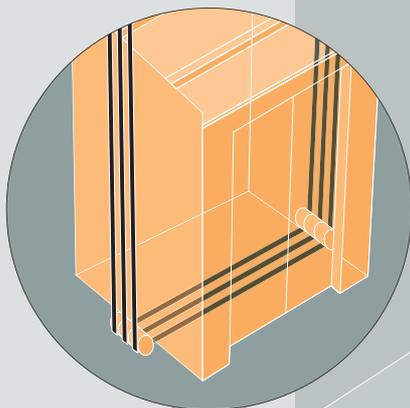


GeN2 Comfort lift

A machine roomless system with unsurpassed levels of comfort, reliability, safety and environmental protection.

Using a unique polyurethane-coated steel belt drive system – a revolutionary technology invented and patented by Otis – the GeN2 Comfort system provides a highly efficient and cost-effective solution ideally suited for residential and commercial markets.

The GeN2 Comfort system enables architects greater freedom of design and builders benefit from a more controlled installation process with minimum building interface. Developers and owners can manage the building more economically and, moreover, benefit from increased rentable space.

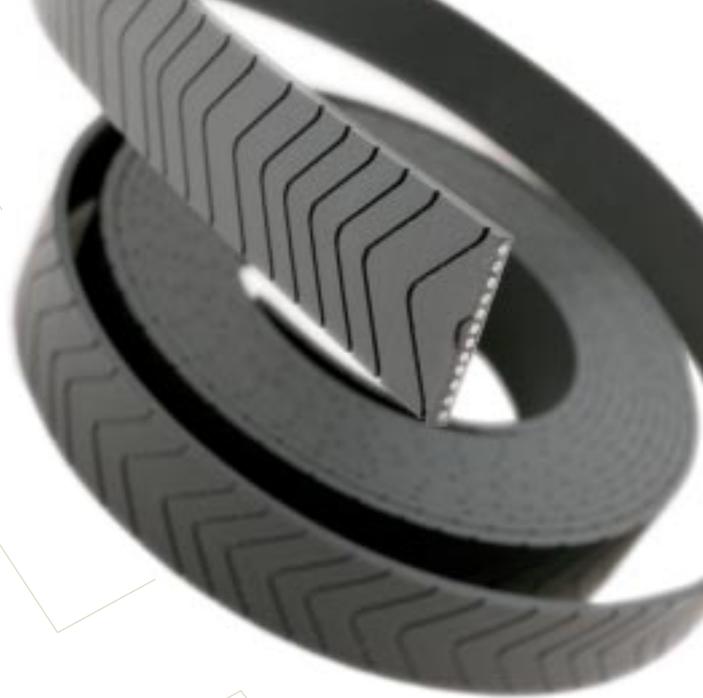


KEY COMPONENTS:

- ❶ Flat, polyurethane-coated steel belts
- ❷ Gearless machine with PM Synchronous motor
- ❸ Closed-loop variable frequency control

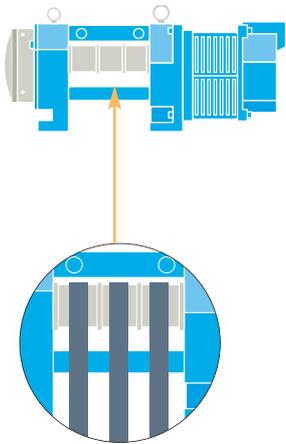
The coated steel reinforced belt: technology that re-invents an industry.

In the year 2000, the GeN2 drive system – an innovation developed and patented by Otis – transformed 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 Comfort system: The Benefits

- 1 Replacing conventional steel ropes with smooth, polyurethane-coated steel belt 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 flexible belt means a more compact machine which removes the need for a machine room and reduces building costs.
- 7 Otis' 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 Comfort technology enables rapid, safe and controlled installation that doesn't interfere with other building trades.



GeN2™
Comfort

Conventional Geared Lift



Ⓐ CONVENTIONAL STEEL ROPES

The stiffness of conventional steel ropes requires a large bending radius.



Ⓑ CONVENTIONAL MACHINE

The broad bending radius of steel ropes requires a large machine with a sheave that is typically 50-60 cm in diameter.

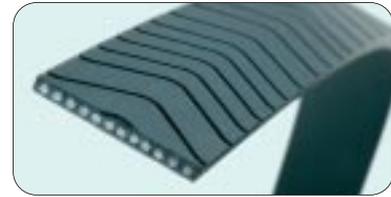


Ⓒ MACHINE ROOM SYSTEM

In a conventional system, the large machine and controller require a machine room typically positioned above the hoistway. All bearing loads are supported by the building structure.

The lift reimaged.

With GeN2 Technology



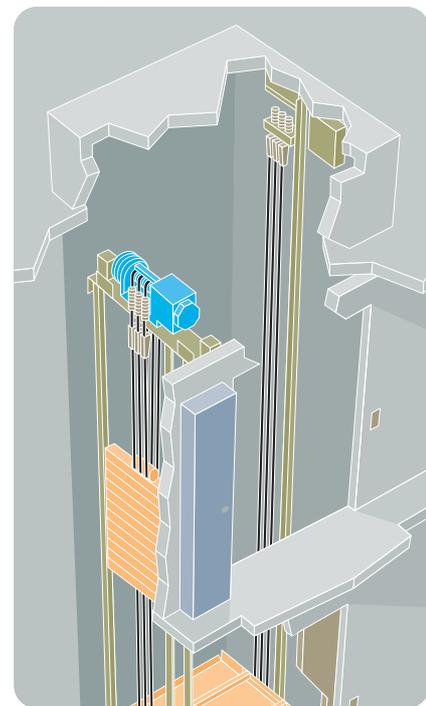
Ⓐ FLEXIBLE STEEL BELTS

The polyurethane-coated flat steel belt is up to 20% lighter and lasts up to 3 times longer than conventional ropes. Its flexibility results in a much smaller bending radius.



Ⓑ COMPACT GEARLESS MACHINE

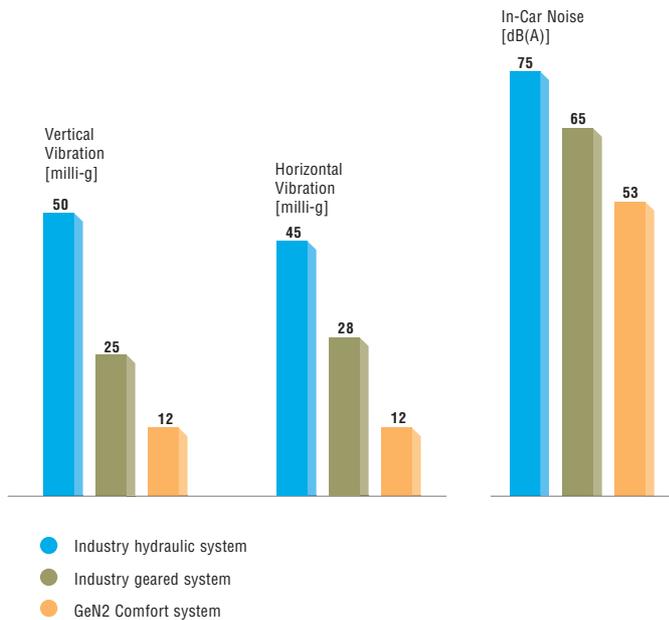
A sheave - which can be as small as 8 cm in diameter - has allowed Otis to design a machine that is up to 70% smaller than conventional machines.



Ⓒ MACHINE ROOMLESS SYSTEM

The compact GeN2 gearless machine does not require a machine room and can be easily positioned on top of the car and counterweight rails. This means all bearing loads can be transferred to the pit, thus reducing structural building costs.

The GeN2 Comfort system establishes new benchmarks for comfort and performance.



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

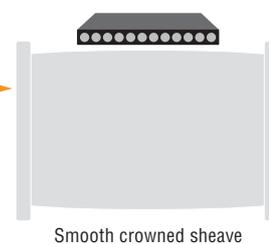


UNRIVALLED RIDE QUALITY

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 together with the specially designed crowned-surface sheaves (with no twisting of the belt through 180°) results in quiet operation. The gearless machine combined with an analog load-weighting device and a closed-loop variable frequency drive with vector control enable a smooth ride with outstanding stopping accuracy (within +/- 3 mm at every landing). Cumulatively, these features have allowed Otis to achieve a quiet, smooth and comfortable ride experience. 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.

Flat coated steel belt



Smooth crowned sheave

A HIGHLY EFFICIENT MACHINE

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.

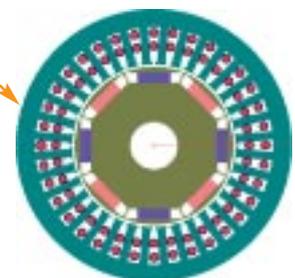
The result is a machine which is up to

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

Cross section of a radial design motor with embedded permanent magnets (PM).



GeN2 system protects the environment while reducing operating costs and increasing system reliability.

ENVIRONMENTALLY FRIENDLY

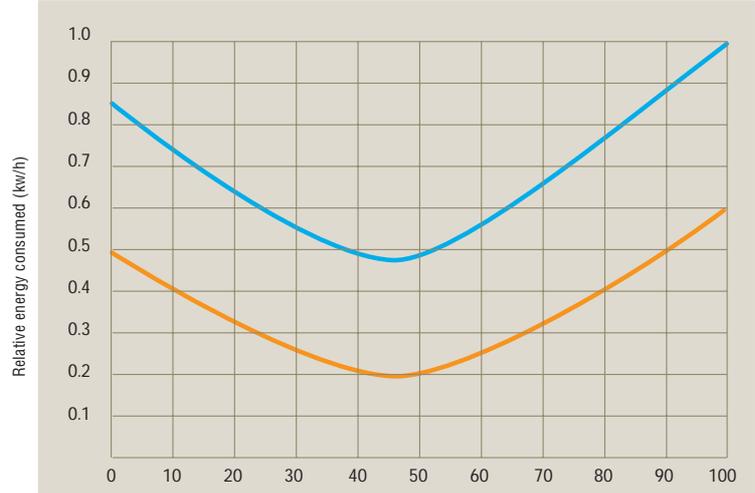
Lubrication-free and more energy efficient

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 cost savings when compared with conventional machines.
- Reduction of power installed thereby reducing operational cost.
- Lower starting and nominal currents thus reducing the feeder size lines and installation costs.

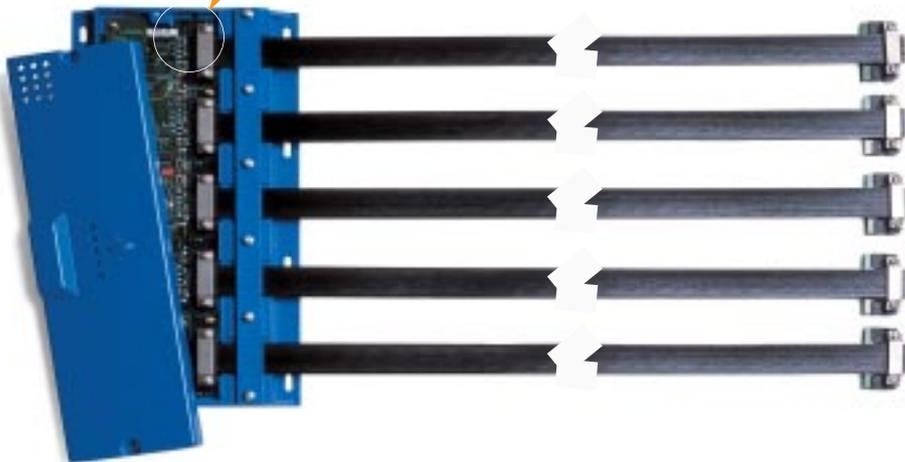
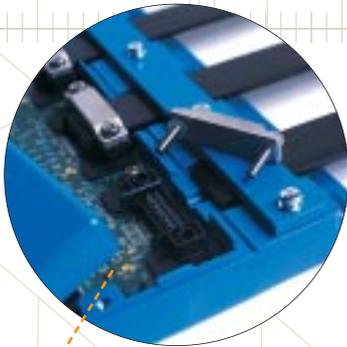
Additionally, the VF drive suspend-mode feature further reduces energy consumption.



Percentage of load in the car.

Based on 630kg at 1,0 m/s and 150 starts per hour.

- Industry geared system
- GeN2 Comfort system



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 Otis' PULSE electronic system which continually monitors the status of the belt's steel cords 24h/7d. Contrary to current visual inspections of conventional steel ropes, the Otis PULSE system automatically detects and informs Otis technicians on the quality of the belt cords, thus eliminating downtime and greatly enhancing the reliability of the inspection.

Otis' PULSE system monitors the integrity of belt cords 24h/7d.

Otis GeN2 innovative features reflect our absolute commitment to safety.

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

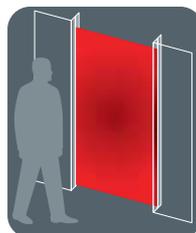
The belt's reduced stretch compared to conventional steel ropes together with a closed loop VF control results in outstanding stopping accuracy (within +/-3 mm at every landing).

• Machine Brake System

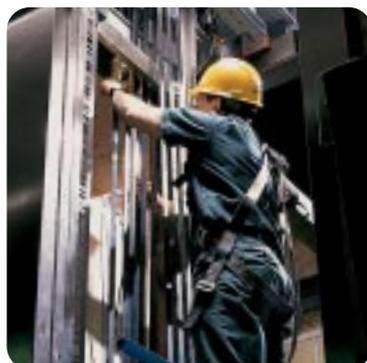
To further improve safety, the machine's dual brake system is equipped with two switches to prevent the lift from moving before the brake is fully released.



Stopping accuracy:
to within +/- 3 mm



LAMBDA 2D entrance
protection



RAPID INSTALLATION

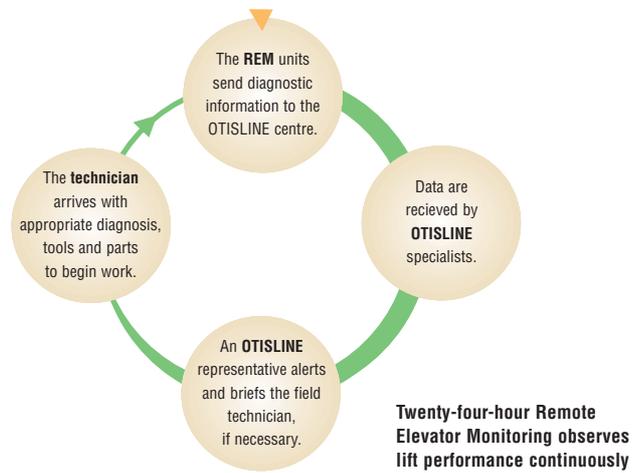
A controlled process minimizes installation time and improves safety

With all major components located inside the hoistway, the streamlined 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 controller and drive are integrated into a single cabinet which is factory pre-tested.

Service and quality assurance.



REM® MONITORING

- The REM system (Remote Elevator Monitoring) 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.



e*SERVICE

- Through e*Service at www.otis.com customers with units under Otis service contract can have round-the-clock access to maintenance records, a snap-shot of the lift performance history and fast verification of the work done.

SERVICE

- Otis maintenance systems reflect the philosophy that the best time to resolve problems is before they arise. Otis technicians pursue a rigorous service programme to meet a building's requirements. Working with the REM system's 24-hour monitoring capabilities, Otis service technicians can more effectively locate performance anomalies and correct them before they affect lift service.

QUALITY ASSURANCE AND TESTING

- Otis has met the stringent ISO 9000 international standards for quality assurance. The control of processes, from design to manufacturing to field operations, makes it possible to consistently produce and supply high quality lifts, while meeting customer specifications.
- The entire Gen2 system – including machine, coated steel belts, brakes, controller and drive – has been tested worldwide. The system has weathered conditions of extreme temperatures and has withstood tests of thermal shock, voltage variations, power shortages and interruptions, and transient power surges – representing virtually every possible breakdown of a building's electrical system.

Gen2 Comfort lift - Specifications

Load capacity (kg)		320	450	480	630	900	1000
Passenger capacity		4	6	6	8	12	13
Car dimensions (mm) - Width x Depth		800 x 1100	1000 x 1250	1000 x 1300	1100 x 1400	1400 x 1500	1100 x 2100
Speed		1.0 m/s					
Maximum rise		45 meters					
Maximum number of stops		16					
Machine		Gearless with permanent magnet synchronous motor					
Drive		Otis OVF Variable Frequency with closed loop vector control					
Control system		MCS 220 TCBC modular control system					
Cars in a group		up to 3					
Door opening width (mm)	Telescopic	700	800	800 - 900	800 - 900	900	800 - 900
	Centre opening		800		800 - 900	900	800 - 900
Door opening height (mm)						2000 - 2100	
Car entrances		1 or 2 (opposite)					
Power (3 phases + neutral)		400 volts (+ - 10%)					
Frequency		50 or 60 Hz					

Groundbreaking technology complemented by class leading aesthetics.

OPTIMA

The Optima car perfectly illustrates the principle that elegance can be achieved through simplicity - provided it's based on an inspired idea. With the Optima design, that idea is embodied by the car operating panel actually illuminating the car. Important to the car's refined appearance are the panels themselves. In three finishes, they are cheering to the eye and easy to maintain. In fact it is the balance between the aesthetic and the practical that defines the Optima car.



OPTIMA™

Optima, Selecta, Lumina

www.otis.com

Details of the product design are subject to change.