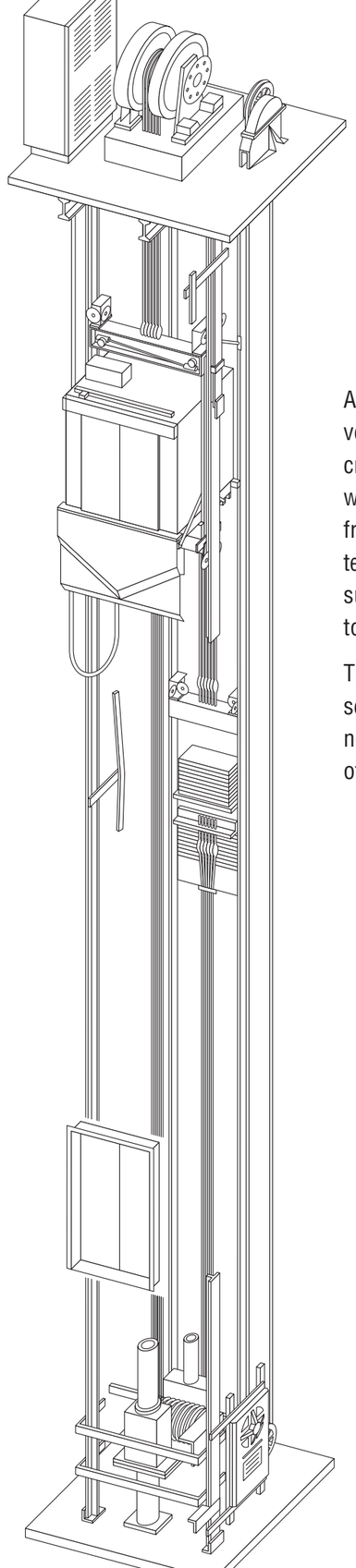
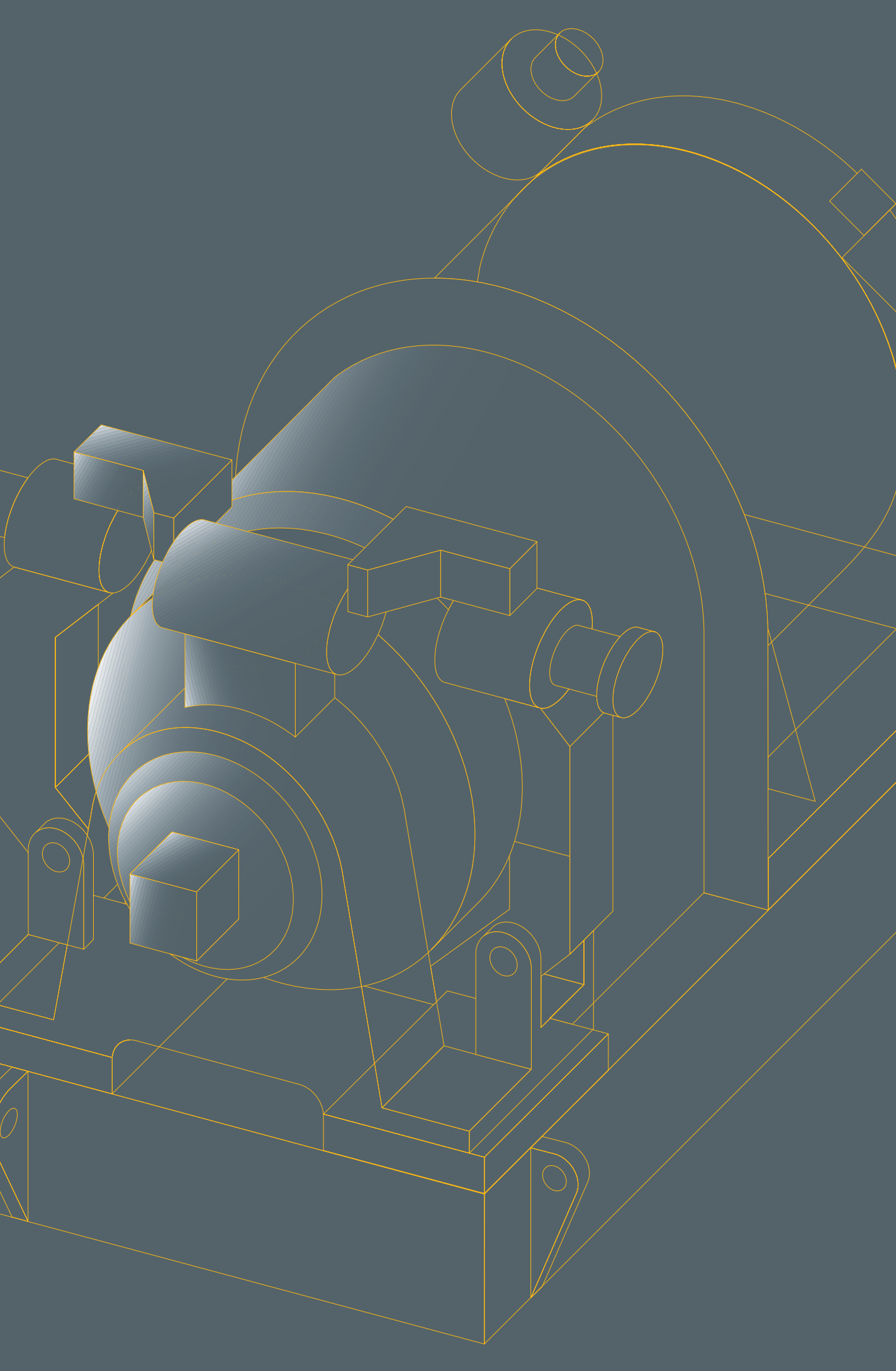

OTIS
Elevonic® Class

Global + Local



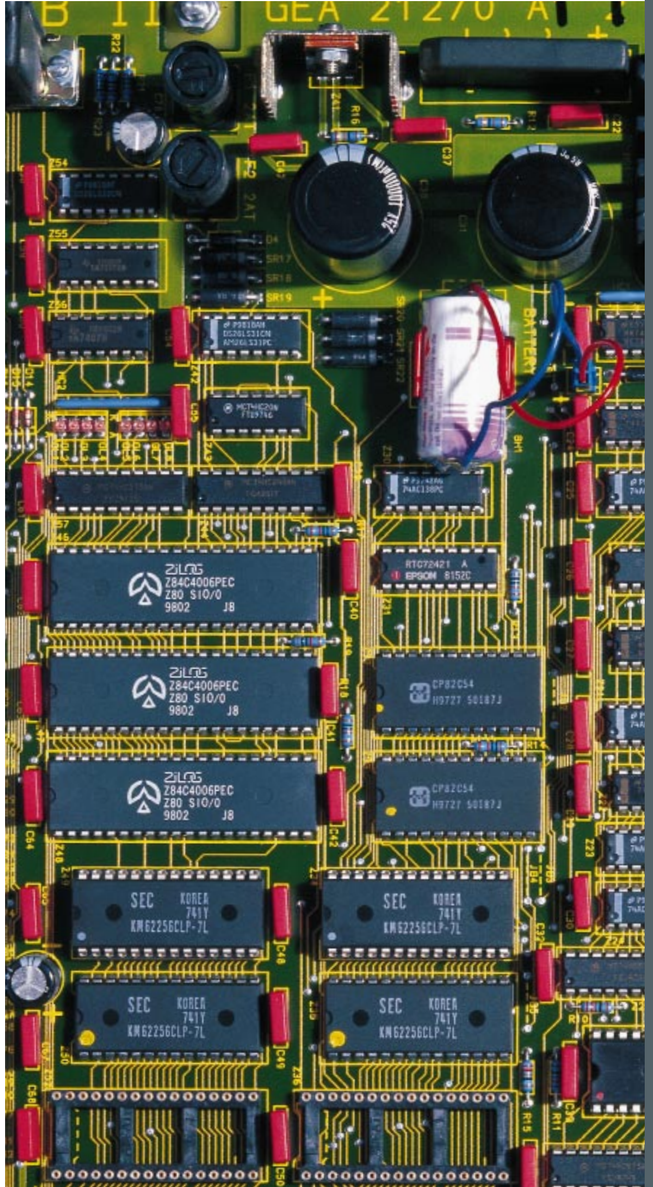
As a global organization, capable of supplying the most advanced vertical transportation technology, Otis has the resources to create a truly global product: an elevator that, by exceeding the world's strictest standards of performance, can be specified from Berlin to Chicago to Kuala Lumpur. And Otis' standard systems of planning, scheduling, installation, handover and after-sale support result in an elevator system that allows your building to perform optimally.

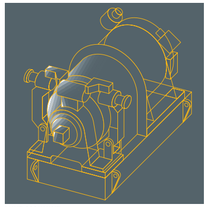
This commitment to excellence translates into highly personal service on each and every installation—to meeting the particular needs of architects, contractors and owners at every stage of a project. Global Vision, Local Focus. The Otis Elevonic® Class.



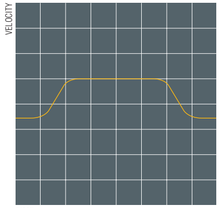
Power + Control

Considering a machine that can move thousands of pounds into the sky—not once, but hundreds of times a day, for decades—one thinks of the sheer power involved in the task. Considering the precision and safety with which the same machine executes this function, one thinks of the extraordinarily sophisticated elements that bring that power under perfect control.

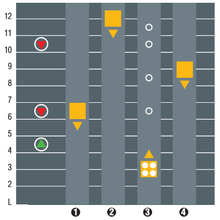




ACVF MACHINE



TIME



The push of a hall button sets the RSR Plus® system in motion, performing split-second calculations to dispatch the best car.

Ⓐ NEW 'UP' CALL MADE ON 4TH FLOOR:

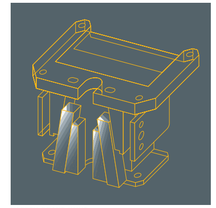
❶ Empty car delayed, picking up passenger on 6th floor

❷ Empty car going down, making stop on 10th floor, then express to lobby

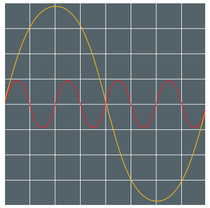
❸ Full car going up, making four stops

❹ Empty car, going down

Car 4 is assigned to the new call, minimizing wait times and limiting delays for all passengers.



SAFETY BRAKE SHOE



VARIABLE VOLTAGE, VARIABLE FREQUENCY

Power Matched with Precision

The Elevonic® Class uses advanced variable-voltage, variable-frequency machines with sophisticated AC drive systems. The resulting power train:

- Reduces machine size and weight
- Reduces starting current
- Eliminates power-supply line pollution
- Eliminates carbon-brush dust
- Provides an optimum machine-drive combination for the duty loads required by your building

The Intelligence of a Great System

Otis' intelligent Elevonic® controller reduces waiting times, enhances group performance and guarantees the same smooth, quiet ride, regardless of circumstances.

The Elevonic Class of ACVF control systems delivers consistent, precise leveling and optimal ride comfort. Multiple closed-loop functions constantly monitor a car's performance, measuring every aspect against predetermined standards, and correcting even the slightest deviations within milliseconds.

The Definitive Measure of Performance

Efficient dispatching is key to performance; and the most efficient dispatching systems in the industry are provided within the Elevonic® Class range of products.

A dispatcher faces many challenges; it must interface with other parts of the control system, adapt to different performance guidelines, handle demanding traffic loads, and achieve minimal wait times.

The core of the Elevonic Class controller is the RSR Plus® dispatcher—the most efficient in the vertical transportation industry. Its algorithm of bonuses and penalties consistently delivers the shortest waiting times with the minimum number of elevators.

The Elevonic controller has the ability to further refine its decisions by factoring in less clear-cut dispatching issues, such as load weighing and traffic mode identification.

Additional state-of-the-art dispatching technologies such as the CHANNELING® system, Neural Networks and CANBUS are also available within the Elevonic® Class. With information about passenger destinations, these systems can reduce the number of stops for each round trip.

These dispatching systems can control as many as 12 double-deck elevators—24 doors—in a 140-story structure.* This exceptional capability stems, in part, from the system's cutting-edge digital architecture, which delivers a ten-fold increase in the speed at which data is gathered and deployed.

* Available on duties over 7 meters per second

Safety First

Otis has earned, and maintains, the best safety record in the vertical transportation industry. This unprecedented record results from many factors.

Product innovation: Otis works constantly to improve the safety of existing products and to implement new safer technologies.

- A high-tech alloy wedge face for the safety brake shoe, with exceptional temperature, strength and friction characteristics improves braking performance, and reliability in emergency situations
- The HPLIM® door system eliminates pinch points
- The LAMBDA® 3D entrance-protection system prevents doors from striking passengers

Safe practices: The Otis Safety Management System begins with a corporate policy of 'safety first.' Standardized procedures ensure that every installation and service task is performed the safest way every time. 'Safe management' infuses safety issues into daily planning processes.

The result: The Elevonic® Class exceeds all the world's major safety codes.

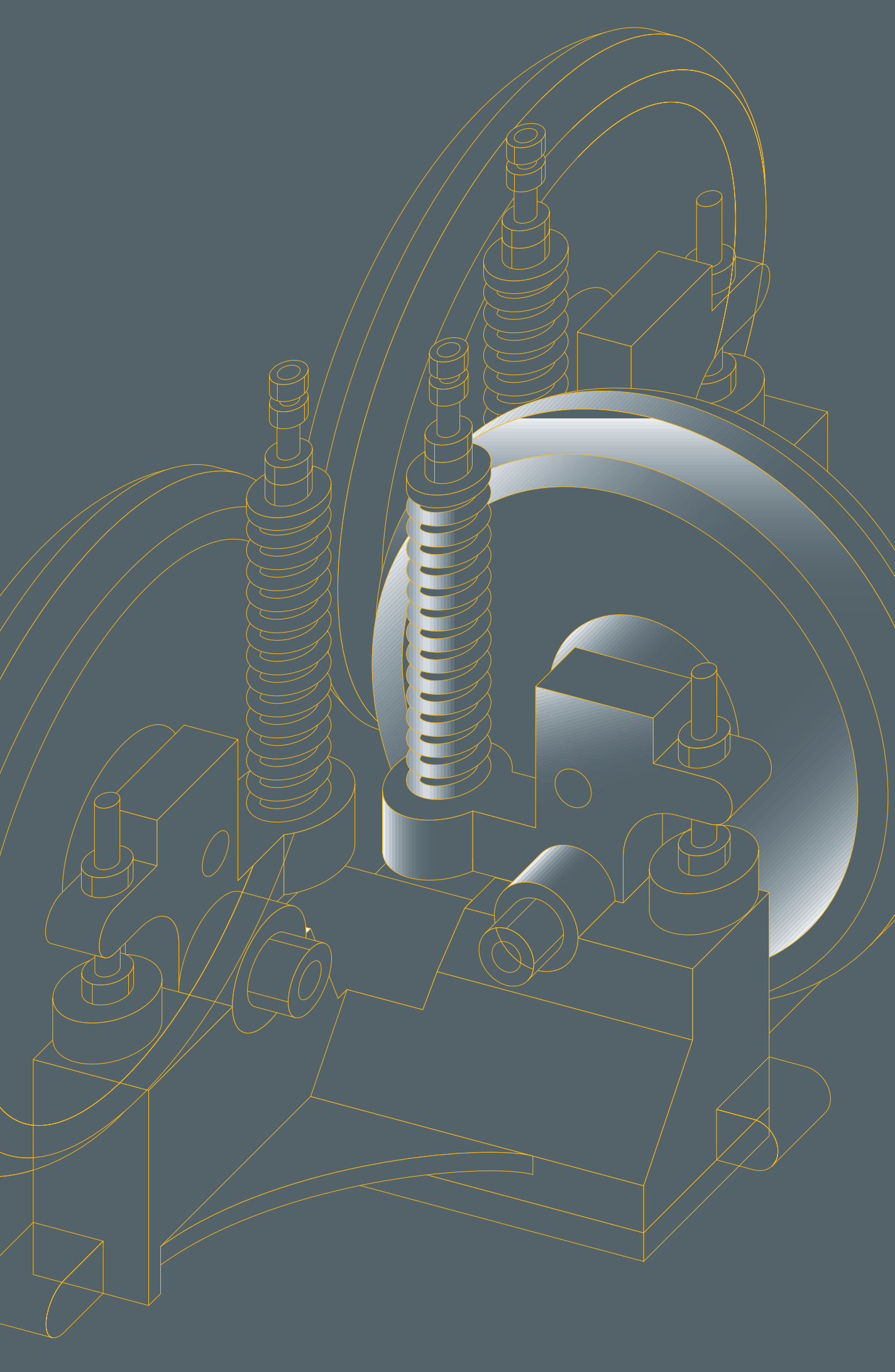
Energy Efficient

To promote a cleaner environment, the Elevonic® Class systems use ACVF regenerative equipment whenever possible, to return energy to a building's electrical grid for reuse. They provide a total power factor that is near unity, resulting in the most energy-efficient elevators in existence.

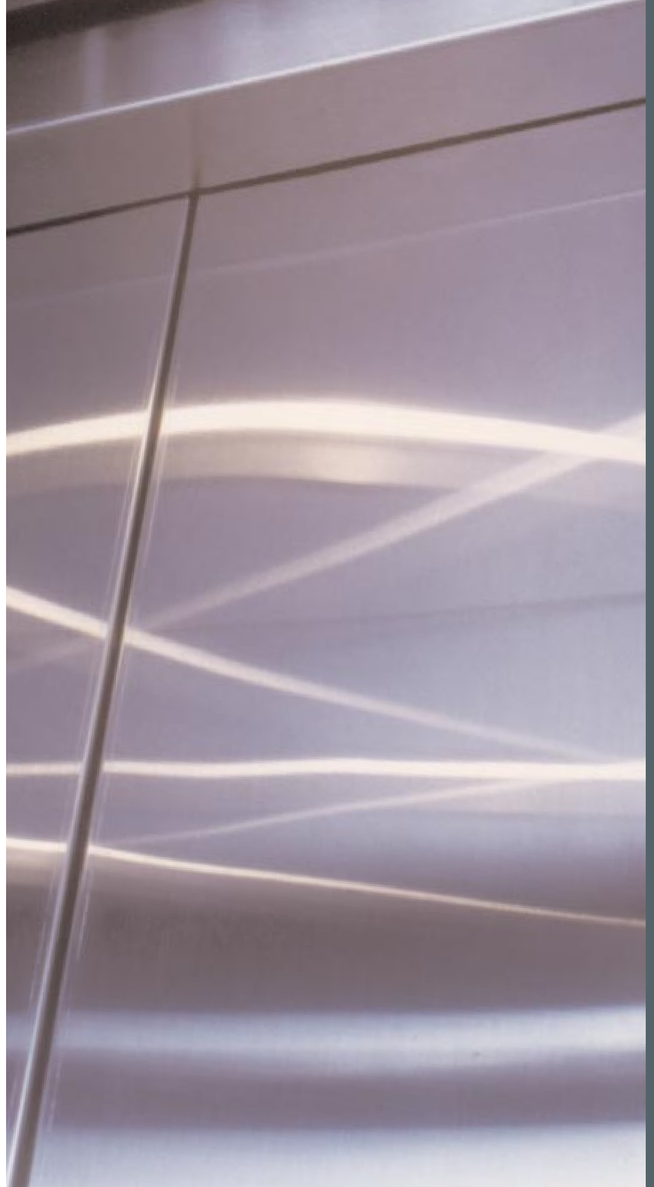
The gearless Elevonic AC machines further conserve power by reducing initial starting currents, improving drive-train efficiencies and eliminating carbon brushes.

The efficiency of the Elevonic Class system's dispatchers also save energy by reducing unnecessary starts and stops, resulting in elevators that are environmentally friendly.

These efforts reflect Otis' corporate commitment to a cleaner and safer environment.



Ride quality must exceed the discerning expectations of the passenger and meet the exacting standards of the design engineer. Passengers define luxury as a ride that is swift, smooth and silent. Design engineers require that this luxury be delivered by systems that are safe, technologically advanced and as dependable as science can make them.

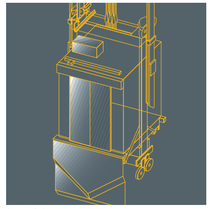


Smooth + Efficient

World-Class Ride Quality

Otis provides a world-class ride on every elevator we install; the result of continuous efforts to achieve smooth acceleration and deceleration with absolute minimum vibration and noise.

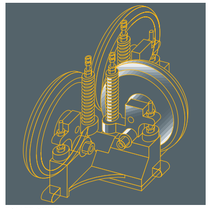
Having installed vertical transportation systems in most of the world's 125 tallest buildings, Otis understands that a smooth ride depends on more than superior elevator design. Hoistway size and configuration, air flow, the shape of the car, even architectural finishes can impact ride quality. That's why Otis uses its experience and resources to help architects and engineers optimize building design features in the planning stage, and to create installations that harmonize both structural and elevator system design. This universal approach allows Otis to achieve consistent world-class ride quality on every project.



CAB DESIGN

A Quiet Ride

Many factors ensure the Elevonic® Class can deliver a quiet elevator ride. Using computer simulation techniques and prototypes tested in the wind tunnels of the United Technologies Research Center, Otis' engineers crafted a cab design that achieves smooth air flow, even at high speeds. Cabs are designed to provide the required ventilation while still sealing elevators from speed-generated sound. Using flow-related noise analysis, the cab ventilation system has been rendered virtually silent. Acoustic damping materials and other highly effective insulators further prevent noise from entering the cab interior. And Otis' balanced fan features a uniquely designed baffle that provides superior forced ventilation with minimal perceptible noise increase.



ROLLER GUIDE

A Remarkably Smooth Ride

By minimizing vibration from the rails, as well as from aerodynamic forces affecting the car, the Elevonic® Class combines the fastest speeds in the world with an astonishingly smooth ride.

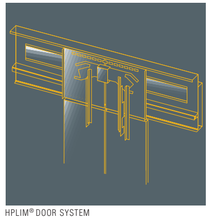
As a car moves up and down, imbalances created by the dynamically changing loads of the traveling and compensating cables alter the forces on the roller guides. This results in horizontal and vertical vibration and, often, noise. Otis engineers neutralize these factors by determining the proper load locations of the suspension points. The process—called dynamic balancing—dramatically improves ride quality.

Furthermore, since precise rail alignment is the most effective way to minimize horizontal vibration, Otis has developed the patented Rail Survey Unit (RSU), a computer-based tool that, by mapping rail deviations, enables installers to ensure a precise, accurate degree of alignment.

Entrances: The First Impression

Door systems represent a passenger's first interface with a vertical transportation system. They must work safely, efficiently and dependably, and are critical to the successful handling of a building's elevator traffic. The door system contributes, not just to the passenger's perception of the elevator, but to the quality of the building.

The Elevonic® Class meets these challenges with two unique systems.



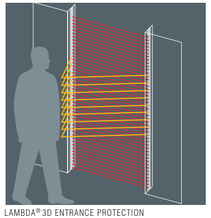
HPLIM® DOOR SYSTEM

The Best Door Operator in the World

Otis' High Performance Linear Induction Motor (HPLIM®) door system is one of the fastest in the world. The system replaces the traditional rotary motor with radically innovative linear induction technology.

Linear-induction motors significantly reduce the number of moving parts resulting in more dependable and safe operation. Since door problems represent some 40 percent of all service calls, the HPLIM system's superior reliability enhances a building's overall elevator performance.

The HPLIM system's closed-loop software maintains the same profile despite environmental conditions such as wind, dirty sills or worn rollers. Doors close with consistent speed and smoothness on every floor. The system also offers the added value of near-silent performance.

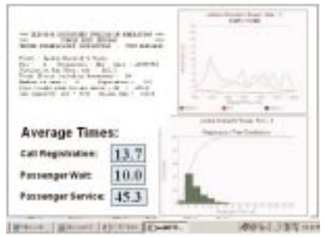


LAMBDA® 3D ENTRANCE PROTECTION

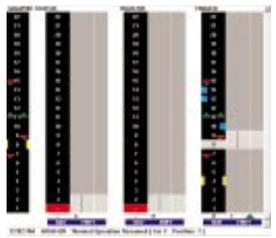
An Invisible Safety Net

The LAMBDA® 3D entrance-protection system offers maximum protection for passenger safety. Using 56 infrared emitters and detectors to create an invisible safety net across the elevator entrance, the microprocessor-controller system continually scans for interrupted beams. If a beam in the curtain is interrupted, the LAMBDA system will reopen the elevator door instantly—without touching passengers.

In addition to the curtain of protection across the door, the LAMBDA 3D system has protection beams that project into the hallway, to detect passengers before they enter, and as they exit the elevator.



OTISPLAN® TRAFFIC SIMULATION SCREEN



EMS GRAPHIC STATUS SCREEN

Using principles, methods, tools and techniques developed and refined around the globe, Otis' system of project management ensures that customers receive an installation of the highest quality. Standard processes help projects remain on schedule and on budget. Projects are installed in compliance with specifications and with an absolute focus on safety.

Otis' emphasis on early planning and proven practices, along with our unmatched service organization, ensures maximum reliability and uptime, as well as seamless transitions throughout all phases of the project.

Planning

The OTISPLAN® design and evaluation tool simulates the actual operation of a building's vertical transportation system. This tool facilitates the selection of elevator systems to provide optimal traffic handling, regardless of a structure's size, function or style.

By partnering with planners in the design stages, Otis can also help avoid potential, often costly elevator system problems, including those arising from rope sway, a phenomenon occurring in high-rise structures. Using specifically designed computer software, Otis can perform detailed sway analysis, and develop strategies that eliminate the problem before construction starts.

Project Management

As a global company with decades of experience in sharing and standardizing best practices, Otis is uniquely capable of selecting the optimal installation method for each project. By combining our proven processes with early-stage planning and a policy of open, consistent communication, Otis stands ready to deliver a quality installation within the overall construction program.

Handover and After-Sale Support

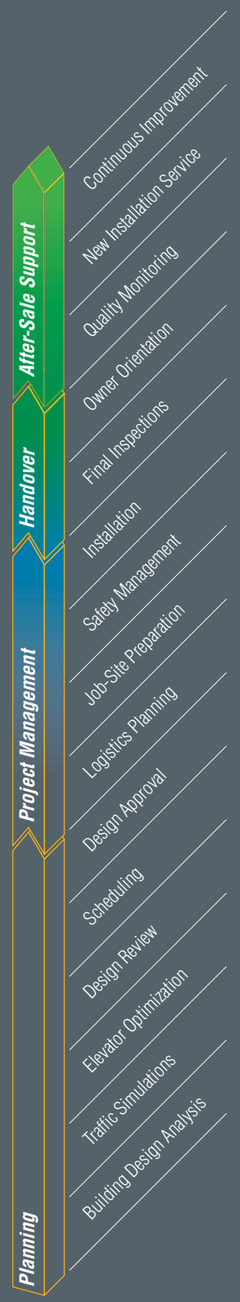
At handover, Otis works to ensure that the code-required inspection proceeds smoothly. Project managers help to identify the service features appropriate to an installation, and to schedule all necessary maintenance.

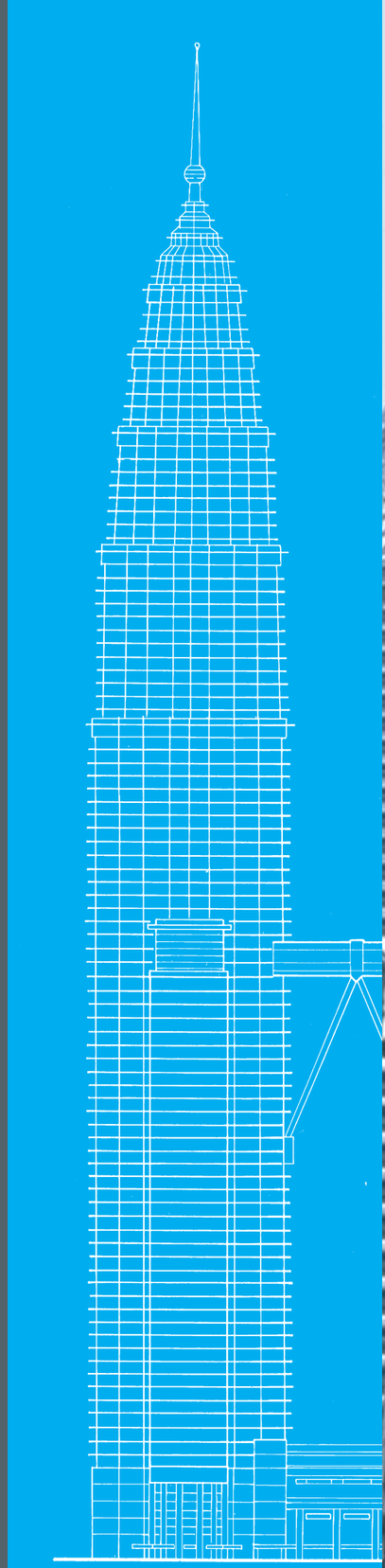
Once building management has developed an accurate picture of elevator use, Otis' EMS (Elevator Management System) allows for customization of the system's response patterns. As tenant requirements evolve, EMS can be used to adapt elevator operation to any changes.

Maintenance

Otis' maintenance systems reflect the philosophy that the best time to resolve problems is before they arise. Otis technicians pursue a rigorous service program to meet a building's requirements, and when interfaced with our Remote Elevator Monitoring (REM®) system, Otis service expertise can better predict maintenance issues before they result in disruptive shutdowns. The sophisticated REM system constantly tracks hundreds of separate elevator functions—24 hours a day, seven days a week.

Planning + Installation + Service





Quality Assurance + Testing

BRISTOL TEST TOWER, USA

SHIBAYAMA TEST TOWER, JAPAN

Otis Quality Testing Procedure

1. Thermal Shock
2. Vibration
3. Drop
4. Impact
5. Temperature / Humidity
6. Salt Fog
7. AC Power Quality
8. Cold Operation
9. Power On / Off
10. Electrostatic Discharge
11. Electromagnetic Interference
12. Transient Surge
13. Electrical Fast Transient Burst
14. Simulated Condensation / Contamination
15. High Potential (Hi-Pot)
16. Leakage Current
17. Open / Short
18. Light Exposure
19. Dust Contamination
20. Water Resistance
21. Highly Accelerated Life Test
22. Heat Release
23. Verify AC motors

Inherent Quality

From start to finish, Otis subjects each new elevator and component design to a comprehensive and intense quality assurance program. Two features make Otis' program unique. The first is the establishment of strict checkpoints that occur at each significant step in the process: a new design cannot proceed to its next stage without approval at each checkpoint. The second is the nature of the approval itself: it must be obtained, not just from project managers and senior executives, but from everyone involved in a new design.

Otis applies the same rigorous quality control to the small details as it does to complete systems. Every new part evolves from a comprehensive, quality-based process in which new designs are tested prior to manufacture, then tested again as finished parts. This rigorous testing guarantees that each part will perform optimally. If a malfunction occurs, Otis conducts a relentless root-cause analysis, and uses the results to perfect the part.

A Global Presence

For a century and a half, Otis has played a central role in shaping, not just the look, but the capabilities of the world's great cities. The company has enabled architects, builders and engineers to realize their grandest dreams, and to shape an even more amazing future. With the Elevonic® Class, Otis stands ready to work with today's visionaries—to define and achieve the promise of tomorrow.

Landmark Projects

Chifley Tower	Sydney	Australia
Governor Phillip Tower	Sydney	Australia
World Trade Center	Sao Paulo	Brazil
Canada Trust Tower 1	Toronto	Canada
First Canadian Place	Toronto	Canada
Canary Wharf DS7 Tower	London	England
Maine Montparnasse	Paris	France
Main Tower	Frankfurt/Main	Germany
Sony Center	Berlin	Germany
Central Plaza		Hong Kong
Shinjuku Park	Tokyo	Japan
Petronas Towers	Kuala Lumpur	Malaysia
Petron Mega Plaza	Manila	Philippines
Republic Plaza		Singapore
United Overseas Bank Plaza 1		Singapore
World Trade Center	Bangkok	Thailand
Chrysler Building	New York	USA
Empire State Building	New York	USA
John Hancock Center	Chicago	USA
Texas Commerce Plaza	Houston	USA
World Trade Center	New York	USA

Otis
A United Technologies Company

26 GRL 006 (09.99) AD
Printed in the USA

Otis on the Internet: http://www.otis.com