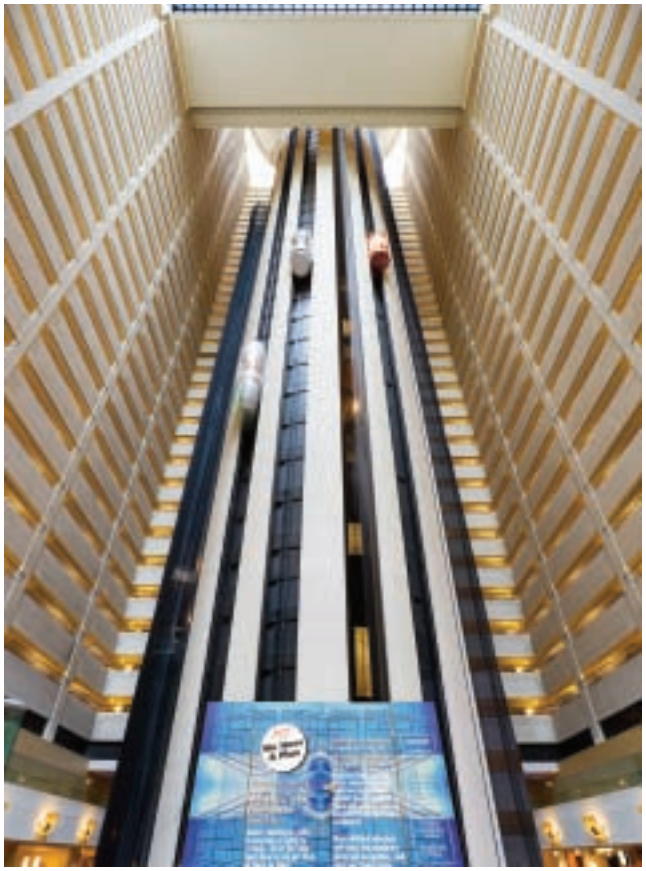
New York Marriott Marquis

by Jeffery W. Blain

Project Description

The New York Marriott Marquis' elevators comprised one of the most extensive and widely recognized redesign projects in Schindler Elevator Corp.'s history. Since opening its doors in September 1985, the Marriott Marquis experienced lengthy elevator delay issues due to its unique atrium design. Encountering elevator performance limitations, as well as the need for other facility upgrades, the hotel committed to a US$150-million overall renovation. Long overdue for an extensive modernization, the Marriott Marquis elevator modernization challenge was multifold. Restructuring had to be done without adding new elevators (which would have significantly sacrificed guest rooms) and without compromising aesthetic design. Most importantly, despite the considerable level of work necessary, keeping the highly trafficked hotel completely operational was critical.



"Work rooms" and protective netting that were erected during the modernization

The modernization necessitated careful maneuvering around a myriad of technical obstacles, including developing solutions compatible with the shape of the hotel's elevator core. The existing structure consisted of a circular elevator bank housing 12 passenger, four baggage-handling and six service elevators in the rear of the building. Partially as a result of this layout, the hotel received frequent complaints of long wait times and confusion from both guests and staff.

Edward Pietzak, then director of engineering for the Marriott Marquis, opted to install Schindler's Miconic 10® destination-dispatch system. Thus, the hotel in Times Square became the first in North America to incorporate this system. The Miconic 10 technology both overcame design hurdles and increased traffic efficiencies by more than 30% over conventional systems. In calculating fastest destination times and assigning appropriate elevator cars, the control system improved accessibility, wait times and complaints, and used 3% less energy than conventional systems.

Project Details & Specifications

Hotel Dimensions & Key Issues

Originally designed as a convention hotel, the size, number and configuration of the building's elevators were insufficient for its current congestion. The traffic is a result of the building itself being a tourist attraction, with a Broadway theater, multiple restaurants and a health club. Important notes about the structure are as follows:

- The hotel features nearly 2,000 guest rooms and suites.
- It features five floors of convention and meeting space.
- Its eighth-floor lobby features four restaurants and lounges, which are open to the public year round.
- The View Restaurant and Lounge is located on the top floor of the building, and during peak hours, two elevators are dedicated to moving passengers to and from it.
- The Marquis Theater (a Broadway theater with 1,500 seats) is accessed via the hotel.
- The hotel and its elevators are major tourist attractions. Tourists from around the world visit the hotel to ride its elevators.
- Building employees had only six elevators, which were shared by maintenance, housekeeping, room-service, bellhop and security employees.

The New York Marriott Marquis' exterior

The hotel's layout posed two challenges. First, it made adding elevators nearly impossible. Adding a second elevator bank would destroy the atrium atmosphere of the hotel or make it necessary to eliminate corner guest rooms on every floor. Second, removal of the existing bank would result in the need to completely shut down hotel operations. With an average occupancy rate of 95%, such a halt would result in the loss of millions of dollars in revenue for Marriott International.

The circular design of the elevator bank itself also caused problems for the guests. Guests were unable to see all of the elevator cabs at once, so elevators would often stop and restart without passengers because guests failed to reach an elevator prior to the doors closing or simply failed to hear a unit arrive due to their distance from it. This was compounded by the fact that many guests, frustrated with the long wait times that sometimes lasted in excess of 20 minutes, hit both the up and down buttons in the hope that they would obtain an available elevator faster. Of course, the effect of this was exactly the opposite.

Other Solutions Considered

Prior to choosing Schindler to solve its problem, several other ideas were considered or implemented by the Marriott Marquis. These included:

- Double-decker elevators were proposed, but the current elevator bank and shape of the hotel atrium could not accommodate them.
- Hiring greeters to guide people into elevators and ensure that each car was achieving maximum capacity
- Installing newer, larger elevators – this was also limited by the atrium size and the limits in the holes in the concrete for the elevator shaft.
- The latest load-weighing devices were installed to allow the elevators to bypass floors when sufficiently filled.

None of these solutions offered an acceptable answer.

Continued

The old elevator system

New York Marriott Marquis

Continued

Top left: The destination-dispatch elevator-system keypad that directs passengers to the correct elevator

Top right: A car-designation sign outside an elevator, which indicates which car a passenger should enter

How Miconic 10 Works

The goal of the Miconic 10 system is to personalize the elevator experience for the user. Passengers enter their floor destination via a keypad in the lobby (rather than in the elevator cab). The system then assigns a guest to the elevator in a destination-dispatch mode, which transports riders to their destination(s) in the least amount of time.

By grouping riders based upon their floor choice, the elevators limit the number of unnecessary trips. Furthermore, because the Miconic 10 distributes traffic to all of the elevators' cabs and groups guests in front of their assigned elevator prior to arrival, the system reduces the number of elevators missed by guests who are unable to get to a unit in time or see/hear one arrive. Schindler's technology also tracks usage patterns in the hotel and assesses the weight capacity of each car in order to prevent it from stopping for passengers once it is already full.

Modernization

In order to keep the current vertical-transportation system operational while undergoing modernization, Schindler technicians worked in conjunction with Marriott engineers to coordinate a schedule that allowed the work to be done within budget while minimizing its impact upon guests. A customized load-weighing system was designed to ensure accurate readings on each elevator in order to guarantee maximum operational capacity of the elevators not currently undergoing the modernization. The modernization began with the service elevators in order to establish whether Miconic 10 technology would be the solution to all the hotel's traffic-flow problems. Beginning in September 2001, two to three cars were taken out of service at a time to be worked on.

A passenger entering his assigned elevator in the lobby

Engineering Challenges

In addition to the hotel-related considerations, Schindler needed to take special precautions when dealing with the engineering challenges. The primary challenge was the cars themselves. Since the existing cars were very heavy, the company worked with the car designer to make them as big as possible while still saving weight. This involved customizing the equipment inside and under the car to create one-of-a-kind elevator cabs, the design of which would have been impossible in a traditional elevator given the need for call buttons and a control panel. The design allowed the elevator designer to create a larger elevator opening to improve traffic flow in and out of the car.

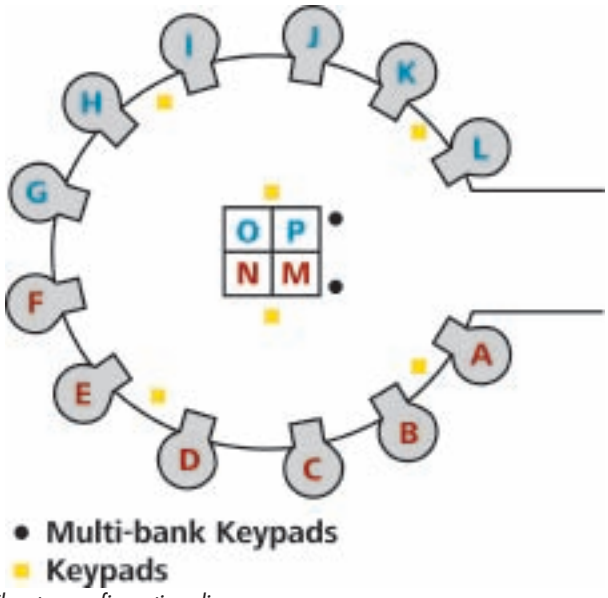
Installation was the next challenge. In addition to installing the elevator cabs, Schindler also replaced the two existing large Westinghouse escalators running from the street level to the third-floor theater level with four Schindler 9300 escalators in order to improve the traffic flow in that area.

Difficult Circumstances

The Unexpected

The terrorist attacks of September 11, 2001 happened shortly after the modernization began. As a result of the significant impact this event had on the New York hotel industry, it was decided that further alienating guests with significant elevator work was not in the best interest of the hotel. Therefore, the modernization plan changed from a phased modernization of the guest and service elevators simultaneously to a plan of modernizing only the service elevators.

Continued



Elevator-configuration diagram

Floor buttons are located behind a locked cabinet in the car-operating panel. This opens automatically during an emergency for access by firefighters.

The elevator system after modernization work

New York Marriott Marquis

Continued

The in-car destination indicator, next to the elevator doors, indicates the floors at which the car will make stops.

Renovation of The View completely changed the modernization schedule that had originally been implemented. This required that Schindler complete the restaurant's two elevators while the renovations were taking place and have them completed in time for its reopening.

The lockout of Local One of the International Union of Elevator Constructors also threw a curve into anticipated plans and deadlines of the project. This resulted in a considerable reassessment of the project timeline and required the team to take significant steps to get the modernization back on track once the workers returned to work. Modernization crews worked around the clock to meet deadlines following the labor dispute to keep the project on schedule. Rotating teams worked anywhere from eight- to 18-hour shifts. Getting the Miconic 10 system fully operational and bug free required that service teams were on call 24 hours a day.

The Expected

The primary complexity encountered in working at the Marriott Marquis was that there were few opportunities in which loud construction was not a complete disruption to the hotel and its guests. Hotel management worked with Tom Mackrell, the project superintendent and Mark Kasper, the project foreman, to establish "noise days" as far in advance as possible. These days would be used when there was a limited number of guests in the hotel.

Since it was doing work in an open atrium, Schindler had to design a custom safety-netting system to contain workers and protect guests from injury. This netting stretched over the first eight floors of the atrium. The work areas also needed to be kept to a minimum in order to maintain the hotel's aesthetic appeal. Temporary "rooms" were built on the third floor of the hotel where technicians could work without interfering with (and without interference from) hotel guests. These factors led to the project being incident free.

Results

Michael Stengel, general manager and area vice president of the Marriott Marquis, noted that Miconic 10 technology has improved efficiency and guest experiences. He continued:

> *"Times Square is undoubtedly the busiest neighborhood in the entire city, and the Marriott Marquis is one of the city's busiest hotels. Anything we can do to make a guest's stay more comfortable and memorable is very important to us. For years, we were challenged by the sheer volume of elevator use and how we might improve the guests' travel experience throughout the property. We have seen a tremendous change in the accessibility and speed with which guests are able to travel amongst floors with the new system."*

The Miconic 10 technology was fully implemented and brought on line in 2005. In order to help facilitate the transition for hotel guests, Schindler aided in developing marketing materials, including pamphlets and room-key holders to help guests better understand the technology, the rationale behind it and how to use it. In addition, Schindler provided a video loop that was played in the lobbies and guest rooms that explained how to use the elevator system.

The following benefits could be seen from the first quarter of 2005:

- Call time was reduced by almost 50% for all elevators.
- The improvement in the service elevators was so dramatic that the hotel could divert all baggage-handler traffic to the service elevators, thus removing some of the burden on the passenger elevators.
- The issues caused by the confusing circular lobby layout were lessened.

One measurement of the improvement in the passenger elevators could be seen in the number of complaints and the amount of money given to guests in rebates as compensation for their inconvenience. From May 20 to June 16, 2005, the hotel rebated US$7,437 for one month for elevator complaints while under the traditional elevator system. For the same time period in 2006 using the Miconic 10 system, rebates associated with elevator complaints were virtually eliminated.

Pietzak noted:

> *"I anticipate that we will stop elevator rebates. We used to average 20 elevator complaints a month. . . Statistically, we track a line item called 'everything in working order,' and we were always in the 70th percentile. Approximately 30% of operations had a problem, but most of the problems were related to the elevators. Since the elevators have been modernized, last period we were up to 93%."*

There has also been a marked increase in energy efficiency. For the first six months of 2006, the hotel reported a decrease of 3.3% – a million kilowatts – in energy usage, which has been attributed to the more-efficient elevator usage.

Jeffery W. Blain has been a senior project manager with Schindler since February 1, 2004. Blain began his career with Schindler in 1983 as a development engineer and progressed through the engineering department to assume the position of director, R&D, at Schindler's headquarters facility in Morristown, New Jersey in 1999. In 2000, he became manager, Modernization Engineering. Blain holds an MS in Electrical Engineering from Steven's Institute of Technology.

The hotel's new elevator cabs

Credits

Building owner: Host Hotels & Resorts

Building Architect: John Portman & Associates

Equipment Manufacturer: Schindler Elevator Corp.

Project Manager: Jeffery W. Blain, senior project manager for Schindler

Project Superintendent: Tom Mackrell, field superintendent for Schindler

Hotel Engineer: Ed Pietzak, former director of Engineering for the New York Marriott Marquis

Consultant: John Sailing, regional manager for Lerch Bates Inc.

Component Supplier: Scott Browders, Sales engineer/project manager for National Elevator Cab & Door Corp.