



ELEVATOR WORLD recently visited ThyssenKrupp Elevadores' industrial premises in Porto Alegre, Brazil and some of its most important jobs in São Paulo. We were highly impressed not only by the size and organization of the business, but also by the outstanding enthusiasm shown by directors and employees alike.

ThyssenKrupp Elevadores

is a Brazilian elevator company member of the German ThyssenKrupp Group, one of the leading international holdings dedicated, under the name of ThyssenKrupp Elevator to the automatized transportation with sales that reach EUR3.5 billion (US\$4.2 billion) and 28,000 employees.

Firsthand Experience in Brazil

The Company's Historical Evolution

In 1948, Nogueira Lopes Cia Ltda started its activities in the elevator industry as a representative of Elevadores Bandierantes of São Paulo. Later, as it had the opportunity of manufacturing and installing elevators in the southern city of Porto Alegre, it gave birth to Sûr Indústria, Comércio e Representações Ltda. In 1964, the company changed its name to the well known Elevadores Sûr S/A Indústria e Comércio. It is said that the French word "Sûr" was chosen because it means "safe, faithful." With an increasing production of over 100 elevators per year and 300 employees, the company had to enlarge its premises by moving its location to the nearby industrial city of Guaíba. This was a turning point as the handicraft methods of production had to be changed into truly industrial. To this aim, Elevadores Sûr constituted a partnership with the Japanese Fujitec Co. Ltda. in 1974. This technological development continued in 1977 when the company passed into the hands of Adroaldo Carlos Aumonde who started a nationalizing movement with significant investments in modernization such as computerization of the industrial processes, personnel training, new managing methods focused on

by Carmen Maldacena
EW Correspondent

decentralization and participation of all employees. During the 1990s, Elevadores Sûr achieved good results, but as a consequence of globalization and the new challenges that cropped up, the directors decided on a strategic alliance to transfer Elevadores Sûr's stocks control to the German ThyssenKrupp Group.

After the merger, the company's name changed to Thyssen Sûr S.A., which in 2002, with the purpose of unifying the corporative image of the holding, became ThyssenKrupp Elevadores S. A.

Visiting ThyssenKrupp Elevadores

Porto Alegre, capital city of Rio Grande do Sul, the southernmost state in Brazil, has 1,400,000 inhabitants and it is the second best municipality for business transactions in Brazil. Once arrived in the city, this reporter started on a half-hour drive through gently rolling countryside to get to Guaíba, an industrial place of 130,000 inhabitants, where ThyssenKrupp Elevadores is located. Continued ▶

 Indicates an Online Feature



ThyssenKrupp Elevadores plant in Brazil ▲

ThyssenKrupp Elevadores' Premises

ThyssenKrupp Elevadores' 25,000-square-meter headquarters and industrial buildings sit on a 95,000-square-meter area. A total staff of 561 employees make up the work force that runs the elevator production here plus 1,201 persons distributed among 14 branches throughout Brazil.

The modern square building, guarded by an imposing 60-meter-high test tower, is surrounded by a large park that adds to the quiet atmosphere of the place. The offices dedicated to marketing, sales, technical development, industrial engineering, exports and field engineering related to maintenance are visually connected and close together for more efficiency.

On leaving this quiet area through a gate, a noisy world reveals itself: The huge factory is divided into islands or cells logically organized in a production flow. Raw materials come in at one end, move rapidly through the corresponding

islands for transformation into different components and arrive at the opposite end when ready for shipment. The complex process of building an elevator has been simplified in different ways. Manufacture starts according to each purchase order, which bears a bar code to identify each component belonging to each elevator. Latest-generation stamping, punching and bending machines can produce different types of pieces at the same time with automated loading and unloading. Cost efficiency is achieved avoiding idle stock even of raw material, as only the daily necessary amounts go into production. Doors and cars are assembled on site to avoid mistakes in the field, using the bar code linked to the central computer, which issues the packing list quite reliably.

This reporter's guide on this tour of the factory was Eng. Fábio Zanon, industrial director, a professional with 13 years' experience at Ascensores Sûr. He emphasized the idea of transparency implemented at the company. The employees' knowledge of the company's goals and results translates into confidence and commitment. Each working cell produces a particular type of component, and it has been organized, according to the employees' creativity, to improve and facilitate some production steps. For example, the employees in the landing door assembly cell invented, with the aid of a technician, a rotating working table used to speed the process.



▲ The machine manufacture cell

Experience in Brazil

“As they took part in this solution, they are committed to use the device efficiently, manufacturing 160 complete landing doors in an eight-hour working day,” explained Zanon.

In the machine cell, the assembly of worm and ring gear is tested to avoid vibrations and the complete machine is tested again with the corresponding governor and brake.

There is a special cell to manufacture elevators for riders with disabilities after an American Thyssen model with capacity for a wheel-chair plus companion and a travel range of 1.20 to 3.20 meters.

Finally, we left the clattering and hammering to go into the quieter world of electronics and electricity. Here women prevail. They sit at specially designed ergonomic tables and shelves to put into place the minute components of electronic boards or to assemble controllers, buttons, car and landing stations. The complete electrical installation of each elevator is tested here before shipment.

Assembling electronic components ▼



Comments on Social Aspects

Eng. Paulo Manfroi, service director, and Paulo Estefan, commercial director, joined Zanon at this point and proudly explained to this reporter striking aspects of social behavior achieved in the factory. Some 15 years ago, in times of Elevadores Sûr, the employees, acting on their own initiative, decided to organize debris disposal into containers of different colors for plastics, paper and organics. This incipient ecological culture led to a change of attitude and true concern related to the image the factory should convey: One of seriousness, organization and transparency. As a result of this process, the employees in each cell adopted the five Japanese evaluation items: Usage, Organization, Cleanliness, Health and Auto Discipline, which in turn, have other sub points. They are the basis for an internal competition with quite detailed compliance criteria. Once a month, each mini factory is subjected to inspections with no warning, carried out by a group of employees and technicians who evaluate the cell's performance according to the five points. The winning cell is awarded a prize every six months in the way of trips, food or gifts. The system has been operating for six years now. The 10-person inspecting committee is democratically chosen by the employees, who two years ago decided the group should be made up of other personnel as well.

In the controller section, an “Emotional Picture” is on display with photos of all employees in the area. Green, yellow or red heart-shaped magnets show the emotional condition of each person, each day. It is a feed-back system. Somebody may put a green heart by his/her photo but then, if a colleague discovers that person's condition does not deserve it, he/she is told about this fact and a yellow or red heart is added to the original green one.

The Test Tower

The test tower soaring over the factory is ThyssenKrupp Elevadores' main center for research and development. It is the place where the group of researchers led by R&D Director Lauro Galdino experiments and tests different installations or innovations. He explained to this reporter how the shaft is divided into two longitudinal sections and then crosswise so that four different types of elevators can be tested simultaneously. At this time, they are testing the performance of a DC gearless machine with its AC VVVF drive platform as in modernizations, the idea is, whenever possible, to preserve the original DC gearless machine with the same AC VVVF controller.

Comments on MRL Elevators

Galdino described with passion the advantages of MRL elevators, “which are arrived to stay.” He added elevator-related technical advantages to those referred to a more profitable use of building surfaces and architectural freedom of design.

Continued ►



▲ PC Board assembly

ThyssenKrupp Elevator offers MRL elevators with a speed range of 1mps up to 2mps but, as the first condition, the market must be ready to accept the system. Brazil, after much analysis of pros and cons, is now mature for the MRL after the previous acceptance of the "Expert" model, a size-reduced machine room concept still available.

According to Galdino's recommendation, the MRL system should use a gearless machine, because it is highly efficient with low noise and vibration levels and it is almost maintenance free. The machine should be conveniently cushioned on rubber buffers and located on an iron beam, which can be fixed to the building's structure.

It is also possible to place the machine on the guide rails, but, in this case, it is more difficult to isolate noise and vibration that can spread onto the building. In the Brazilian and Latin American markets, ThyssenKrupp Elevadores offers its MRL system "Expert XXI," only with a gearless machine.

The controller can be placed almost anywhere due to the strength and flexibility of the electronic components, though, in general, the top landing, near the machine, is the logical location. He prefers the easiest access to the necessary elements such as the lever to move the car, the governor and the information on the car leveling, so that just one person can safely carry out maintenance.

It is interesting to point out how the car acts like a piston within the shaft producing a comfortable air exchange that helps keep the temperature low. In Brazil, machine rooms are exposed to the sun too much and atmospheric discharges, which produce strong interference, whereas the shaft is better protected within the building's structure.

Mr. Galdino explained that in Brazil the EN81 Addenda on recommendations for MRL installations is followed the same as in Mercosur and in all those countries that have adopted the European Code. Even though the addenda has not yet been voted nor passed, it is the guideline which is permanently enlarged by manufacturers and safety experts.

With no code as yet enforced, Galdino described the method used in Brazil, which is similar to the one used in Argentina: Complete documentation describing the product in detail, the items common to the Mercosur Standards, such as the guide rails, and the items considered in the European EN81 Addenda must be submitted to the municipal authority. If compliance with all requisites is demonstrated, the authority approves each product and each model. Similar steps are followed in Brazil, in Mercosur countries and in Europe. The same process must be repeated with each product. In Brazil, once the corresponding municipal authority in Rio de Janeiro or São Paulo has approved of the product and issued the certificate, this is accepted in every other city.

Comments Near the Sky

There are three labs on the very top of the tower. They are development centers with experts in mechanics and electronics. The goal is to achieve the best technology with the best cost benefit. ThyssenKrupp grants freedom to its factories worldwide: "You must research and search for highest quality, best service and technology. If it is available in the company much for the better; if not, look for it outside; outsourcing is also possible to achieve these paramount goals. In Latin America, we expect to compete with good results attacking the whole market speed range and to export ideas, concepts and quality. That is the flexibility ThyssenKrupp Elevator gives us," concluded Galdino.



Lauro Galdino

Reporter with directors at ThyssenKrupp Elevadores facility.
 From left:
 Manuel Ventura
 L. Lechmann Coelho
 Lauro Galdino
 Carmen Maldacena
 Fábio Zanon
 Paulo Estefan

Talking of ThyssenKrupp Elevadores and *Latin America*

Manuel Ventura

a member of the ThyssenKrupp Elevadores Board of Directors, is a Spanish gentleman who was directly involved in the merger of the Brazilian and German companies. Most kindly, he discussed with this EW reporter different issues of the elevator industry.

EW: *What is the importance of the elevator and escalator business within the ThyssenKrupp group?*

MV: Even though that business is relatively smaller when compared to others within the ThyssenKrupp Group, such as that of steel, it is a very interesting investment area, particularly in terms of the service market. People in the elevator business must give customers not only reliable products but also good service which has become a new key to conquer bigger market shares.

EW: *How has ThyssenKrupp Elevator reached the leading position it has now on the international market?*

MV: It is a process that started 30 years ago purchasing elevator companies with proficient personnel and it proved to be a successful method. Consequently, it is the group's decision to bet strongly on the elevator business.

EW: *Since 1994 ThyssenKrupp Elevadores presence in Argentina has been aggressive with very good prices for Spanish products.*

MV: And it goes on like that. In fact, Spain, Portugal and Latin America make up a business unit within ThyssenKrupp Elevator, as those regions share language and culture. That is why its approach of Latin America was directed from Spain.

EW: *How did the Brazilian adventure begin?*

MV: It began in 1994. We knew we needed an industrial base in Latin America because of costs and market closeness. First, we had only administrative, commercial and service staffs in Argentina and then Mexico, Chile and Peru. Afterwards, we decided Brazil was the correct place, pinpointing Elevadores Sûr as a highly eligible partner because of its good quality products and technologically orientated people. In the meantime, we imported equipment from Spain to finally merge in 1999 in a non traumatic, fluent way with neither cultural clashes nor Spanish invasions.

EW: *How can you meet the needs of such a large market from Brazil?*

MV: With research, considering not only the technical peculiarities of each market but also the different aesthetic tastes. You must offer quality and price but also flexibility to adapt your product to so many different markets.

EW: *In Argentina, quite unlike other Latin American countries, there is a strong national elevator industry that competes with ThyssenKrupp and other multinational companies. Do you agree on this fact?*

MV: You are right and I will add an extra ingredient: Argentineans can manufacture, install and perfectly understand and meet the strongly aesthetic characteristics of the Argentine market. Brazilians, with a bigger high-rise market, for example, in São Paulo, pay more attention to technology.

EW: *What is the volume of the Brazilian market and what products does ThyssenKrupp Elevadores still import from Spain?*

MV: During the last two years, the Brazilian market fell due to the general recession in Latin America; it is not growing yet, but we can speak of 7,200 elevators per year. Argentina plummeted brutally, but there is some reactivation at present. Our company is strongly based and ready for the high jump. We still import escalators from Spain expecting to manufacture them in the short run. We also import some gearless machines for installations over 3mps.

EW: *How big is ThyssenKrupp Elevadores' market share?*

MV: Regarding elevators our company has around 29% of the market. The escalator share is 20%. Maintenance is 19% and increasing steadily, which is not bad considering we are younger than our competitors in that segment.

EW: *Could you describe your exports network?*

MV: We have companies of our own in 15 countries and branches mainly in Central America with a couple of distributors in smaller markets such as Bolivia and Ecuador. These organizations sell, install and maintain 90% of Brazilian product, and here I would like to point out that there is a prejudice regarding Brazilian products. This preconception is fortunately disappearing. When visitors come to our factory, they say as a compliment: "It looks like European!" But it is Brazilian, Latin American. The market over three meters in São Paulo is bigger than the European. I am here to raise this factory even more in Brazil, Latin America and farther. We started exports into South Africa and aim at Asia.

EW: *Mercosur member countries have been working hard on the industry's standards harmonization. Do you think a similar integration will be possible within Free Trade Agreement for the Americas (ALCA)?*

MV: Mercosur has been a great step towards harmonization. It is the best tool to offer the user safer installations. In my opinion, ALCA will progress with many difficulties, but it will indeed progress. Lately, trade freedom has been restrained and this is a drawback. Countries must open their economies to make their industries more efficient, even though I believe they must be competitive *per se*, regardless of specific economic conditions imposed by tariff barriers or exchange rates. This is definitely our goal!

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▲ Graceful Avante escalators – Holiday Inn Convention Center

ThyssenKrupp Elevadores' Highlights in São Paulo

After driving along the overcrowded highways from Guarulhos, the São Paulo international airport, to the city center, this reporter was introduced to four of Thyssen Krupp Elevadores' main jobs located in the biggest South American city by her permanent host Lauro Galdino and Sérgio Martins Cardoso, São Paulo manager. The visit included three hotels and a corporate building that had involved modernizations and new installations.

ThyssenKrupp Elevadores supplies the national and Latin American countries with elevators, escalators, moving walks and passenger boarding bridges and carries out the equipment manufacture, installation and maintenance. Annual invoicing climbs up to BRL240 million (US\$77.3 million) with 3,500 elevators annually manufactured. It has a strong, aggressive presence in Brazil, all of Latin America and also other continents in countries such as South Africa, Jordan and Lebanon.

Holiday Inn Select Jaraguá – New Elevators and Escalators

As part of the retrofit plan going on in downtown São Paulo, the companies Sol Invest and Six Continents built the hotel and convention center Holiday Inn Select Jaraguá where formerly stood the old Hotel Jaraguá and a next door building, former premises of two *Paulista* newspapers. Arch. Miguel Juliano was responsible for the transformation of both buildings into 415 hotel apartments, restaurant, convention center and auditorium, among other improvements.

ThyssenKrupp Elevadores replaced six 40-year-old elevators in the hotel and supplied and installed four new ones and 10 escalators with a capacity of 6,000 persons per hour to service the convention center.

The old and the new elevators are Frequencedyne Gold and Frequencedyne models driven by AC machines and VVVF electronic controllers that run the elevators at 150mpm. To improve operation and save 40% energy, the installation is equipped with TKVvision, a software that monitors and programs the elevators according to the hotel and convention center needs. The cars, built of brushed stainless steel with decorative details, opposite accesses and marble floors, are equipped with modern buttons and displays showing clocks, electronic news boards and thermometers.

The convention center is also serviced by 10 in pair superposed escalators model Avante, of Spanish origin, with ergonomic handrails, rounded shapes and glass balustrades that add beauty and comfort to

the user. The escalators are equipped with a frequency inverter that keeps them running at low speed in the absence of passengers. When a rider mounts the escalator, the photoelectric cells sense his/her presence and the system gradually increases the speed to 0.50mps. Energy savings amount up to 30-70% and special belts that can run for long periods without lubrication contribute to easy maintenance and environmental cleanliness.

Table 1: Guest Elevator Specifications

	Modernize/ Passenger	Modernize/ Service	New Passenger	New Service	New Freight
UNITS	4	2	2	1	1
STOPS	20	25	7	8	8
CAPACITY	900kg/12 passengers	900kg/12 passengers	1350kg/18 passengers	1200kg/16 passengers	1800kg/24 passengers
SPEED	150mpm	150mpm	60mpm	60mpm	45mpm
MACHINE	Model: EM 71, AC geared 3VF 1:1 Motor: 26 kW	Model: EM 71, AC geared 3VF 1:1 Motor: 26 kW	Model: EM 71, AC geared 3VF 1:1 Motor: 15 kW	Model: EM 62, AC geared 3VF 1:1 Motor: 15 kW	Model: EM 62, AC geared 3VF 1:1 Motor: 15 kW
DOORS	Central opening, 3VF	Central opening, 3VF	Central opening, 3VF	Central opening, 3VF	Central 4 panels 1400mm clear
CARS	Wood, stainless steel, glass, marble	Stainless steel	Wood, stainless steel, glass, marble	Stainless steel	Stainless steel

Table 2: Escalator Specifications

PARALLEL PAIRS	10 ESCALATORS – MODEL: AVANTE
SPEED	0.50mps
RISE	From 3030mm to 5220mm
DEGREE	35 degrees
STEP WIDTH	600mm
DIST btw SUPPORTS	From 9188mm to 12,315mm

Experience in Brazil



▲ The Holiday Inn Select Jaraguá



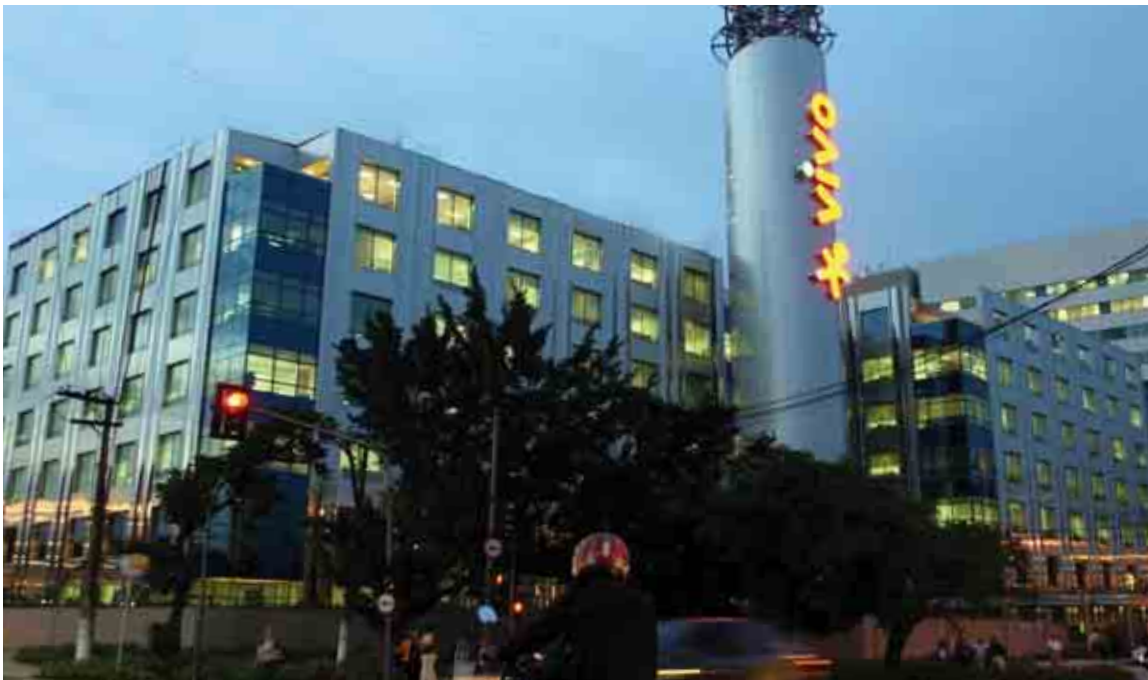
▲ Machine room at the Holiday Inn

▼ Elevator lobby at the Holiday Inn



▼ ThysenKrupp controller at the Holiday Inn





Vivo Corporate Building at Morumbi, São Paulo ▲

VIVO Headquarters Anticipated Destination and Call System

The modern steel and glass building of VIVO, the cellular telephone company, is located in the corporate district of Morumbi. The architectural project belongs to Edo Rochas Espaços Corporativos and the building has a daily flow of 2,000 people. It is the first project in Brazil to be furnished with ADC XXI, ThyssenKrupp Elevadores' new technology for elevator call distribution. The anticipated destination and calling system improves the elevator traffic and saves 30% energy by grouping passengers with the same or nearby destinations in one car. The interface between the user and ADC XXI is achieved by

SIX ELEVATORS WITH ADC XXI ANTICIPATED DESTINATION & CALL SYSTEM	
STOPS: 9	MACHINE: Model: EM 71, AC geared 3VF; 1:1
CAPACITY: 1650kg/22 passengers	MOTOR: 26 kW
SPEED: 105mpm	DOORS: 3VF, central opening, stainless steel
CARS: 3.0 meter high; stainless steel & mirror	

Table 3: Elevator Specifications



▼ Elevator car at Vivo Building



ADC XXI:
Anticipated
Call System
Hall
Terminal ▼



means of intelligent terminals located in the elevator access hall. The feedback between the passenger and the terminal is easily operated in the fashion of LCD displays and offers all sorts of options, including a four language choice: Portuguese, Spanish, English and German. In the VIVO building, there are four terminals in the elevator hall where the passenger presses the destination landing. Immediately, the system indicates which elevator should be boarded. The display on the front elevator entrance shows the destination so that the passenger can be assured of it. It is also possible to program the stop timing to meet the needs of disabled passengers. The system is so flexible that it can also operate as a hybrid system with terminals on some landings and the rest with conventional buttons and terminals inside the cars. In this building the terminals are available on the nine floors and installed by each group of three elevators of the six ones that service the building.

The user is guaranteed more comfort with the reduction of waiting time on landings and inside the car.



▲ Elevator hall at Vivo Building

Experience in Brazil

Grand Hyatt São Paulo – Luxury and Technology

This is the first hotel of the American Hyatt chain to be established in Brazil and built by Método Engenharia and Morumbi Hotels.

ThyssenKrupp Elevadores supplied 16 conventional elevators plus a panoramic one to serve the 26 floors of the hotel, convention center, restaurants, fitness center and two underground levels. Ten of them are used by the hotel guests and five cover the service activities. The convention center needs are met by hydraulic system Hidro HS used for five elevators including the panoramic with transparencies on two sides and a pair of parallel escalators.

To match the architectural project the passenger elevator cars had to be taller – 2.93 meters – with specially designed car stations and buttons. The other cars belong to ThyssenKrupp Elevadores' Skylux line finished in stainless steel. A traffic controller that can be easily adapted allows the intelligent use of the elevator group as required. All controllers are permanently auto checked by means of tele-service software that registers any anomaly and helps reduce maintenance and repairing time.

Continued ►

Table 4: Guest Elevator Specifications

	5 FREQUENCEDYNE GOLD	5 HIDRO HS
STOPS	23	2 to 4
CAPACITY	1440kg/24 passenger	1200kg/16 passenger
SPEED	150mpm	45mpm
MACHINE	Model: EM 71, AC geared 3VF, 1:1 Motor: 40kg	Hydro; indirect; Motor: 36.8 kW
DOORS: Central opening; S. steel CARS: Wood, S. steel, glass and mirrors		

Table 5: Guest Escalator Specifications

2 PARALLEL ESCALATORS
SPEED: 0.5mpm
RISE: 10,350mm
DEGREE: 30 degrees
STEP WIDTH: 1,000mm
DIST btw SUPPORTS: 17,315mm



▲ Magnificent escalators in Hyatt Convention Center



▲ Elevator lobby at the Grand Hyatt

Grand Hyatt Hotel ▼



Hotel Hilton Morumbi, São Paulo *Gearless Machines*

Hochtief Brazil and Botti Rubin Studio were responsible for the building and architecture of this Hilton hotel located in the east tower of the United Nations Business Center in Morumbi, São Paulo. ThyssenKrupp Elevadores installed 17 elevators to attend 505 apartments and the convention center designed to host 560 guests. Five out of eight passenger Frequencedyne Gold elevators are operated by German gearless machines that can run up to 210mpm. All of them have a transportation capacity of 18 persons. Seven service elevators with a speed range of 45 to 70mpm complete the building installation. Cars are 2.65-3.0 meters high with luxurious interiors and originally engraved stainless steel landing doors.

Special thanks to all ThyssenKrupp Elevadores' directors for their warm reception and detailed explanations and to their efficient journalist, Isabel Silveiras.

Jobsite photos by Dario de Freitas

Table 5: Guest Elevator Specifications

	5 FREQUENCEDYNE GOLD	3 FREQUENCEDYNE
STOPS	29	7
CAPACITY	1350kg/18 passenger	1350kg/18 passenger
SPEED	210mpm	75mpm
MACHINE	AC Gearless, 1:1 double roping; 6 ropes; Motor: 28.5 kW	Model: EM71; AC geared 3VF; 1:1 Motor 19 kW
DOORS: Central opening; imported engraved s. steel		
CARS: Wood, s. steel, glass and mirrors		

▼ Gearless machines

Guest car ▼



▼ Hilton Hotel soars into the sky



▼ Hilton Hotel machine room



▼ Hilton Hotel elevator lobby

