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Elevcon 2001 Singapore Abstracts

The JTC's experience in cutting customer's complaints on lift services in its industrial and office buildings by installing a Supervisory Control System (SCS)

Tan Sing Ong, Pang Yee Ean, Tan Johnson
Jurong Town Corporation, Singapore

In 1994, JTC called a contract to install a Supervisory and Control System (SCS) for 68 blocks of its industrial buildings in Singapore. The system then was a state of art design based on a "open system" concept using Programmable Logic Controller (PLC). To date, about 2650 mechanical and electrical equipment including 400 lifts in JTC's industrial and office buildings are monitored and controlled by this SCS system. The system has many unique function and features including wireless monitoring, verification logic and fault tracking software for successful operation of the SCS system. The SCS system has since cut the numbers of complaints from JTC's customers on lift breakdowns by as much as 50%.

Use of Elevators for Emergency Egress & Evacuation

Roger Howkins,
Arup Research & Development, London, UK

The paper will examine (in the next generation of building) the requirement to provide a safe and reliable evacuation provision from a possible hazard area within a high-rise building, especially where fire is considered to be the potential hazard. By the use of risk assessment procedures, evacuation by elevator will be considered along with alternative and traditional evacuation methods. The paper will ask the question why existing building and elevator codes will need a quantum leap change, to allow alternative methods of evacuation, especially by elevators.

Codes & Regulations Affecting the Lifts Installations in Singapore

Johnson See
Managing Director, Otis Elevator Co (s) Pte. Ltd. Singapore

The revised Code of Practice for Installation, Operation and Maintenance of Electric Passenger and Goods Lifts (Singapore Standard CP2:2000) was approved by the Electrical Industry Practice Committee (EIPC) on behalf of the Standards Council of Singapore on 28 September 2000. The main international reference standards used for this latest revision (which is the 3rd revision) are: EN81-1:1998 and ASME A17.1:1996. Besides this CP2: 2000 Code of Practice, there are other codes and regulations (such as the Building Control Division's Code of Barrier-Free Accessibility in Building; the Fire Safety Bureau's Code of Practice for Fire Precautions in Building; and the Building Control Act) affecting the lifts and escalators installations in Singapore. The paper looks at the relevant codes and regulations affecting the lifts installations in Singapore and highlights the key points of changes in the revisions.

An Intelligent Multi-Agent Traffic Planning System

Dr. Jana Koehler and Daniel Ottiger, Schindler AG, Switzerland

Offering an individually tailored service to passengers while maintaining a high transportation capacity of an elevator group is an upcoming challenge in the elevator business. Reserving a car or blocking call buttons are simple, but inefficient and questionable solutions. Modern intelligent planning technology offers a much more attractive answer by flexibly synthesizing the optimal control for any combination of VIP services, access restrictions to building zones, the separation of passenger groups etc. By embedding a planner into a multi-agent system we obtain a control software that simultaneously increases the transportation performance of the elevator group.

Updated Status of the International Standardization of Elevator Ropes

Dr. Michael Molkow,
Drahtseilerei Gustav Kocks GmbH & Co., Germany

The European CEN lift rope draft Standard, ready for Formal Vote as well as the draft Standard ISO / CD 4344 are covered. Both Standards have been developed in a cooperation of the respective working groups. As the Standards / drafts are now in quick progress, the paper will show the status at February 2001, whilst in Singapore the very actual status of these Standards will be presented.

Advancement in Elevator Technology for Construction in Densely Populated Cities

Mr. Rowson K H Lee, Mr. Dante C M Lam & Mr. C M Yung
The Hong Kong Polytechnic University, KONE Elevator (HK) Ltd. & Shui On Construction Co., Ltd., Hong Kong

High-rise is the fundamental design criterion for construction in densely populated cities like Hong Kong. It dictates construction method, resources allocation and tender price. While conventional passenger hoist is unable to provide an effective and efficient vertical transportation in high-rise construction, JumpLift is designed to serve this purpose with due consideration on quality, productivity, safely, as well as its convertibility to a permanent lift. There are theoretical justifications for the benefits and recognition of JumpLift. It is the attempt of this research to quantify the same in the Hong Kong construction industry from the perspective of users, developers and industry.

Elevator Design Conforming to UNIVERSAL DESIGN



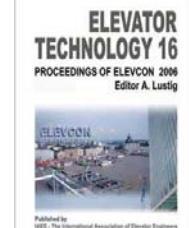
HISTORY

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| ELEVCON 1986-2002 |
| PHOTOS ELEVCON ISTANBUL 2004 |
| ELE-BERLIN |
| ELE-SINGAPORE |
| ELE-MILAN |
| ELE-ESPAÑA 2003 |
| Ele-China 05 |
| IBEX CHINA |
| EXHIBITION |
| ABSTRACTS CHINA |
| PHOTO BEIJING-05 |
| PHOTOS BEIJ-05 2 |
| ELE ESPANA 05 |
| ELE ESPANA 07 |
| ELE-DAY 07 ABSTRACTS |
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| photos_01 |
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Ele-Thessalonica 2008

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Mr. Masakazu Kawahira,
Fujitec Co., LTD., Japan

We have been developing elevator designs from the standpoint that UNIVERSAL DESIGN of elevator products is such a design that can be used by as many people as possible regardless of their abilities." We jointly studied and conducted a questionnaire survey and a video taping analysis to find out how elevators are actually used by wheelchair users and the visually-impaired with a research institute. Also, we reviewed associated global regional codes, including ADA of the USA and EN-81 of Europe. From these researches we propose what the best UNIVERSAL DESIGN for elevator users should be like.

Landing Call Allocation Based on Linear Programme Method

Mr. Chen Guifeng
Chevalier Singapore Holdings Limited, Singapore

This paper describes a way of landing call allocation, which is based on the linear programming algorithm in elevator group control system. The basic idea here is to minimize the total cost – the waiting time of passengers and hence enhance the elevator system's performance. The paper discusses the simulation of the waiting time based on the given system using general concept and theorem to construct the idea of the linear programme which is a classical optimizing theorem, the example demonstrates how the linear programme works and its application in the landing call allocation.

Safety for Sale

Dr. ir. P.E.T. Striekwold
Liftinstituut, Amsterdam, the Netherlands

In Europe, new directives are developed according the "new approach". The objective of directives is twofold: elimination of restrictions for trade between countries and increase of safety. At the same time, competition between Notified Bodies increases by extension of their market from national to international. Manufacturers have more freedom in the development of new products and the selection of a Notified Body to certify these products. They may even certify products themselves if they comply with a specified quality-assurance system. In this paper, Liftinstituut will present examples, which may give reasons to doubt if the objective to increase safety will be realized.

Performance of Multi-Car Linear Motor Elevators

Mr. Takeshi Sudo, & Mr. Sandor Markon
Fujitec Co.,Ltd, Osaka, JAPAN

Since a long time, ropeless linear motor elevators with several cars in each hoistway have been proposed as a way to increase the handling capacity, by allowing both vertical and horizontal movements, so that cars could circulate or bypass each other. If horizontal movement is not needed, the multi-car system becomes more simple and feasible.

However, in such a system there are many constraints on the car movements, so the performance gain is not evident. We have developed a simulator system to analyze multi-car linear motor elevators.

Here we report on the results, which show that such systems would have clear advantages.

Dispatching of Elevator Cars Using Improved Procedure for Calculation of Car Kinematics

Mr. Zavarin Gagov, Mr. Young Cheol Cho, & Mr. Wook Hyun Kwon
Control Information Systems Laboratory, School of Electrical Engineering,
Seoul National University, Seoul, Korea:

In this paper we use new calculation procedure to generate reference velocity curves for elevator systems. We obtain results comparable with those of previous authors, using shorter methodology. Further, we focus our attention on so called stop control point discussing its impact over global system performance. We support our assertions with implementation algorithm and simulation results.

Safety First - Reliable Brakes for Latest Elevator Designs

Mr. Hans Eberle
Mayr Antriebstechnik, Mauerstetten, Germany

When it comes down to passenger safety and reliability, there is hardly a more important component in elevators than brakes. However, in advanced elevator designs, with gear-less drive technology and no machine room, the traditional, proven drum brake design can hardly suffice all the new requirements. Innovative disk brake designs have been introduced to the market and are rapidly being accepted as the preferred choice for new and traditional designs. This paper introduces the new designs, explains the benefits and points out important details of alternative designs. After all, if there would be only one component that deserves your full attention for reliable quality, it must be the brakes.

The Latest Elevator Group Control System

Mr. Shiro Hikita, Mr. Masaaki Amano & Mr. Hiroshi Ando
Mitsubishi Electric Corporation, Inazawa Works, Elevator Supervisory System Development Section,
Japan

Mitsubishi Electric has developed a new elevator group control system named Sigma AI-2200. This system has two major features. The first one is a newly proposed group control logic, which tunes the group control rule-sets dynamically, using an embedded real-time simulator. The second one is a kind of destination call entry system, applying new hall operation panels and some other devices. This paper introduces the functions of Sigma AI-2200 as the most advanced of these systems.

And also simulation results are shown to verify the group control performance.

MEL ART-II Full-Color Graphic Painting Finish

Mr. Yasuyuki Suzuki
Mitsubishi Electric Corporation, Inazawa Works,
Elevator Appearance Component Development Section, Japan:

Since 1995, we have been offering MEL ART, an innovative full-color graphic painting finish. And now we offer the enhanced version MEL ART-II. Since the designs are prepared with computer graphics, customers can use company logos, personal photos, drawings or just about anything they want to adorn the ir elevators. With its improved 720dpi resolution, six different color inks, and final clear urethane coating, MEL ART-II boasts even more vivid images and a higher quality finish. The combination of newly developed inks, with better light stability, and original ink-jet printing technology ensures lightfast characteristics equal to single-color paint schemes.

Active Roller Guide System for High Speed Elevator

Mr. Kenji Utsunomiya, Mr. Kenichi Okamoto, Mr. Takashi Yumura, Mr. Kiyoshi Funai & Mr. Hisao Kuraoka
Industrial Electronics & Systems Laboratory, Mitsubishi Electric Corporation & Inazawa Works, Mitsubishi Electric Corporation, Japan

Ride comfort in high-speed elevators is largely determined by the level of horizontal vibrations. The vibrations are caused by winding of the guide rail, and increase with elevator speed. But there is a limit to suppress such vibrations by conventional passive vibration isolators. We developed an active roller guide system that has actuators to control each roller. These actuators have good controllability and stability due to the non-contact drive. High suppression performance for the horizontal vibrations was realized by this system.

Development & Application of the Acceleration-Based velocity measuring equipment for Elevators

Mr. Akira Tanakadate & Mr. Kiyoshi Naganuma
International Operations Group, Hitachi Building Systems Co.,Ltd., Japan

It is ruled to measure the elevator velocity periodically in order to monitor and maintain the performance of elevators. The conventional methods, which are done on the car or in the machine room, are not convenient and safe. We have developed Acceleration-Based Velocity Measuring Equipment, which can compute the velocity accurately through integrating the acceleration value detected by an accelerometer. With this device, anyone can measure elevator velocity in the car easily and safely, especially for machine-room-less elevators, by means of the contact less method. We have applied it to improve the riding comfort adjustment method for hydraulic elevators.

On the Idea of Performance Based Lift Codes

Mr. H S Kuok, Dr. A T P So & Mr. S K Liu
 Chevalier (HK) Ltd. & City University of Hong Kong

As economy is getting more and more globalised, clients are demanding more and more high quality products that are world wide acceptable. However, owing to the existing rigid prescriptive approach, lift codes may not be easily understood or accepted by all countries. We may imagine a possible trend in the future that the prescriptive codes will gradually be replaced by universal codes with emphasis on general performance rather than the technical details down to accurate figures. Performance-based codes have several advantages, such as clear definition of code objectives, high transparency, high flexibility in overall design to suit different applications, and the employment of analytical methods, data and assumptions formalized in a single code of practice. As a matter of fact, the fire protection codes have been aiming at this approach for years. This paper attempts to examine the possibility of the replacement of lift code from a rigid to a more flexible approach by adopting the performance-based manner. It is not intended to create anything solid here while the authors merely want to initiate discussions and debates in this direction of development in the elevator industry.

Homelift-Concept Based on New Technology and Materials

Mr. F. Thielow & Mr. H. Feistenauer
Logos-Liftsysteme, Germany

A growing market for elevators in private homes with 2 to 4 stops requires new concepts for reduced space usage, fewer environmental risks and, additionally, better design. Particularly interesting are concepts, which require no machine room and minimal pit space. Through this, the architecture of a house would be minimally influenced and later installation simplified. This article presents a completely new type of technical approach and describes a column drive system with a self-supporting pillar, built in a way similar to a reinforced-concrete construction, and a spindle drive technology visionary in concept and assembly. Entirely new performance data will be achieved. The first studied applications were introduced and received much recognition from an international audience of specialists at Interlift 99. In the meantime, an approved version (according European Directive) is about to be used.

Total Safety Approach on Elevator Doors

Mr. Beat De Coi
CEDES AG, Switzerland

In the past and today, elevator passengers are protected between automatic sliding doors with mechanical safety edges, photo eyes, light curtains and, other means of sensors. Common to all solutions is that they are incapable of protecting persons from the leading edges of the doors. The results of suddenly closing doors range from only frightened to falling and severely injured people. In addition to that, the awareness of accidents caused by entrapment of fingers and hands during opening, especially pronounced with glass doors, is on the rise. If European Safety Standards for Machines would be applied to elevator doors, by law all elevators have to be shut down immediately, as they do not comply with the regulations in force! The proposed paper describes the risk assessment for elevator doors according to the EU Ma-chine Directive and outlines a new concept of door sensors that elevates the safety into a much higher category.

Gearless Technology, Status and Innovative Outlook

Mr. Gerhard Thumm
THYSSEN Aufzugswerke, Neuhausen, Germany

The motor and drive technology in the elevator industry have changed quite rapidly in the last three years. The big success of machineromless shas also brought up a big number of gearless machinesto the field. As a consequence gearless machines are replacing more and more Hydraulic and Geared applications. The paper highlights the today's state of the art gearless technology and introduces an innovative new concept of a small gearless machine with an integrated drive.

Radiated emission from a lift control panel based on an IGBT inverter

Mr. Sinichirou Yamaguchi, Mr. Toshiharu Matsukuma, Mr. Toshisuke Mine, Mr. Takao Kishikawa & Mr. Futao Watanabe

Hitachi Building Systems Co., Ltd. & Building Systems Div. Hitachi, Ltd., Japan

Up-to-date elevator control panel consists of high-speed micro controller and IGBT power devices in its inverter circuit. They can achieve the high efficiency and comfortable riding. However, it is possible IGBT's high-speed switching to cause radio frequency (RF) radiated emission as well as RF conducted emission. Since the EMC regulation has started with introducing EMC standard (EN12015 and 12016) by EN81, vender has to overcome this invisible problem. Here, we present the EMC evaluation facilities and the result of radiated emission from the control panel using an IGBT inverter.

Elevator Planning and Analysis on the Web

Dr. Bruce A. Powell
Otis Elevator Company, USA

This paper discusses a set of recently developed on-line elevator planning tools used by Otis sales associates for most new equipment and modernization projects. These OTISPLAN tools comprise three major applications: (1) **single group performance** tool for calculating up-peak round trip time, interval, and handling capacity, (2) **multiple group optimization** for determining good banking arrangements for tall buildings requiring two or more groups, and (3) **dispatcher performance simulation** for evaluating performance of individual Otis controllers against two-way and down peak traffic. The OTISPLAN tools represent an important part of a larger e-Business strategy. A demonstration of the Web site will be given as part of the presentation.

New Lift Rope Technology -- Coated Steel Belts

Mr. Hugh J. O'Donnell
Otis Elevator Company, USA

This paper provides an overview of Otis' new GeN211 machine roomless elevator system. In particular, details about the revolutionary new coated steel belt technology are discussed. Examples and results of breaking load tests, bending fatigue and traction durability, and environmental tests (including low and high temperatures) are reviewed. The advantages inherent in this new lifting technology are reviewed, and up-to-date successes are provided.

WORKSHOP

Performance based Lift Codes - Pros and Cons ?

Dr. Albert T. P. So
City University of Hong Kong, Hong Kong

Lift codes have been prepared in a prescriptive way for decades. Most dimensions of machinery and parts have been specified to very accurate figures. In the early 90's, the concept of performance based codes emerged. The most active discipline involving in the creation of performance based codes is "Fire Safety". Now, the question is "should lift codes follow the concept of fire codes to change from a prescriptive manner to a performance based manner". If that is the trend, all clauses will be re-written in a more conceptual way and the results are specified instead of the approaches to arrive at the results. During the workshop, we shall discuss the following issues:

- a) Should performance based codes be our future?
- b) If yes, what are the major concerns?
- c) How to make this approach successful and popular?
- d) What are the advantages and disadvantages of this approach?
- e) Discussions on some examples of changes.

diring welcome reception



During tour: guidance



View of Singapore living estates from one of the buildings during the tour

refreshment on top of 40th floor (tour)



Singapore delegation headed by Mr LAM president of Singapore Lift Association first meeting on the Boat tour in Berlin