

FPC trends

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e d i t o

Welcome to the latest newsletter from FPC, your partner in fire risk analysis, fire safety engineering and incident management.

This issue is the first edition where FPC is guided under the management of Ralf Bruyninckx. In "Changing of the Guards" Ralf makes a few observations on where he wants to lead the company within the next couple of years.

Our main article, "High-Rise Buildings: Can they really be protected?", gives insight into our views towards fire protection and emergency management for high-rise buildings. As buildings reach for the heavens, we cannot expect traditional fire safety techniques to apply any longer.

Next, we would like to inform you on strategic alliances with some leading companies in the industry. FPC has concluded these agreements to further develop our scope of services and to better service our customers.

One of FPC's main projects last year was to provide fire engineering and project management services for the installation of fire safety and sprinkler systems in numerous Theme Park Resorts throughout Europe. Check it out: the time constraint imposed to get the job done gave at least a couple of our staff members some (more) gray hair.

However, no time to stand still! New challenging projects have arrived and we started to develop a business unit dealing solely with the conduct of loss prevention audits.

Enjoy reading!

FPC Team



changing of the guards

As a practising fire protection engineer, I would first like to take this opportunity to express my great appreciation for Ed's substantial contribution towards the development of the fire safety consulting business in Europe. Together with an American partner, he introduced fire safety consulting in Europe some 30 years ago at a time when this trade was hardly practised. Nowadays, numerous companies specialise in this field successfully.

While Ed still loves his job and the fire protection engineering trade, he has decided at 60 the time is right to move on to a more relaxing life style. From a distance Ed will be continuing to support FPC as a part time consultant working from his small office at home. In particular, Ed sees his future part time engagement with the firm more devoted towards pure business related matters including special assignments for the FPC group of companies.

As most of you can imagine, "inheriting" the

daily management of a company that has been operating successfully in a niche market for 30 years is a challenge. On the other hand, the company is healthy and the team members who assisted Ed in making FPC what it is today are still going strong. These long time knowledge holders are effectively supported by a team of young educated fire safety engineers and an excellent administrative staff.

FPC has always been regarded as a dynamic and innovative company. I would very much like to keep it

(Please continue on p.7)

also in this trends

high-rise buildings	p 2-4
theme park resorts	p 5
new projects	p 6
property loss prevention services	p 7
customer & partner conference	p 8
new alliances	p 8

high-rise buildings: can they really be protected?

introduction

The birth of the High-Rise Building (Skyscraper as we know them) was in New York in 1926 with the construction of the Ritz Tower (165m) followed by the Chrysler building (319m) in 1930 and the world famous Empire State Building (381m) in 1931. Today this impressive 1931 building is dwarfed by the new world order of high-rise multiple occupancy structures.



In the aftermath of the tragedies of September 11, high-rise buildings have become the focus of much debate. However, based upon the vast number of high-rise projects around the world, especially in Asia and the Middle East, it is clear that the desire to build such monuments is still there.

With the continuous thirst for advancement in technology leading to bigger and taller structures to live and work in, additional challenges have been set for Security and Life and Fire Safety consultants.

top five high-rise fire safety challenges

A high-rise structure imposes challenges to fire safety practitioners that are almost unique and definitely more profound than for any other type of building accessible to the public.

- Evacuation: As buildings reach for the heavens, we cannot expect building occupants to evacuate using traditional 'means of egress' via hundreds of flights of stairs. Egress down multiple flights of stairs is expected to slow down occupant evacuation, create queuing and bottlenecks and cause injury.

- Construction: Modern high-rise buildings are less fire resistive because of their lightweight steel construction. Also, extensive use of glass and cladding on the facade allows for rapid fire spread along the exterior of the building.

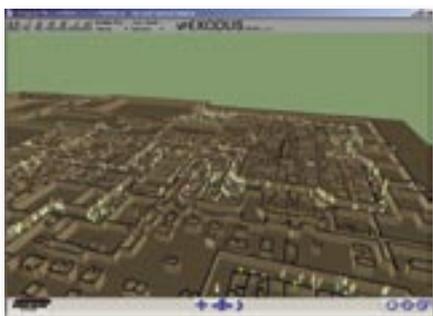
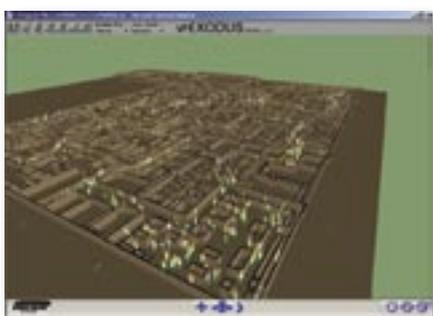
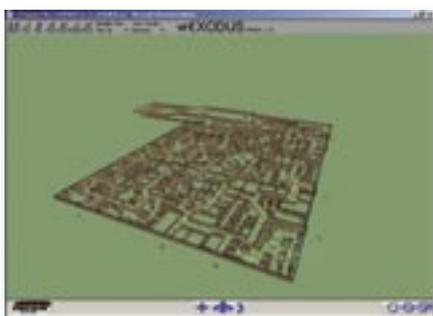
- Compartment sizes: Lay out of high-rise buildings is usually characterised by large compartment sizes including atria. This can cause for rapid fire and smoke spread both horizontally and vertically throughout the building.

- Multi-occupancy use: In most cases, high-rise buildings offer a mixed use of activities (commercial, residential, business, hotel), resulting into a range of different fire hazards. In addition, the functional occupancies are sometimes owned or managed by different companies, which creates organisational challenges.

- Height and accessibility of building:

what is a high-rise building?

A high-rise building is usually defined as any building that is too tall for a fire department's ladder truck to access from ground level. This may be a five-story building or a one hundred-story building that rises over a thousand feet above street level. According to NFPA 101 a high-rise is a building greater than 75 ft (23 m) in height where the building height is measured from the lowest level of fire department vehicle access to the floor of the highest occupiable story.



building Exodus : the most advanced crowd simulation and evacuation software developed by the University of Greenwich, UK.

Building height directly leads to inherent delays in getting to the fire floor and deploying fire-fighting equipment for fire brigades. Most high-rises are built in congested areas due to limited space, which also limits access to intervention teams (fire brigade, police, medical response).

life and fire safety solutions

Building and Fire Safety Codes alone cannot address the complex design issues associated with unique projects such as high-rise buildings. Joint application of a performance based design approach, in conjunction with the established prescriptive codes are required to determine and provide acceptable levels of life and fire safety.

To effectively protect or retrofit a high-rise building a 3-step approach is suggested:

strategic level: fire risk analysis (fra)

At this level the fire safety concept and the fire safety requirements related to the technical and organisational aspects for the high-rise building are defined. Several steps are to be followed to determine the hazards and potential consequences related to the features of the specific building under study:

- Review applicable codes, standards and similar design cases
- Identify credible fire scenarios (design cases)
- Establish performance (acceptance) criteria together with the authorities in terms of fire containment and occupant evacuation
- Model fire and smoke spread for scenarios by means of expert software models
- Model building evacuation to establish time lines (see picture)
- Introduce incremental life & fire safety measures
- Verify until proposed design meets performance criteria

The strategy implemented for ensuring occupant safety combines the use of safe havens, innovative smoke control systems, use of dedicated elevators and sophisticated fire detection, alarm and communication systems.

Smoke spread and heat damage must be limited to the fire floor by fast response sprinklers and compartmentation. The population must be able to leave the fire-affected area to a place of safety and fire-fighting personnel must be able to operate safely and efficiently.

w o r l d ' s t o p 1 0 h i - r i s e

Building	City	Height	Height	Floors	Year
1. Taipei 101	Taipei	509 m	1,671 ft	101	2004
2. Petronas Tower 1	Kuala Lumpur	452 m	1,483 ft	88	1998
3. Petronas Tower 2	Kuala Lumpur	452 m	1,483 ft	88	1998
4. Sears Tower	Chicago	442 m	1,450 ft	108	1974
5. Jin Mao Tower	Shanghai	421 m	1,380 ft	88	1998
6. Two International Finance..	Hong Kong	415 m	1,362 ft	88	2003
7. CITIC Plaza	Guangzhou	391 m	1,283 ft	80	1997
8. Shun Hing Square	Shenzhen	384 m	1,260 ft	69	1996
9. Empire State Building	New York City	381 m	1,250 ft	102	1931
10. Central Plaza	Hong Kong	374 m	1,227 ft	78	1992

Note that the new tower under construction in Dubai will be the tallest in the world. Refer to the web site for details (<http://www.burjdubai.com>).

fire safety approach



technical level:

fire protection engineering & system design

Fire protection engineering for high-rise covers and interfaces with multiple engineering disciplines;

- **Civil:** relates to fire safe construction, fire compartments, fire doors and the provisions of safe emergency exits (stairs, corridors, exits) for fire containment and evacuation.
- **Mechanical:** relates to a dedicated fire water supply system (storage, fire pumps and distribution) for sprinklers and fire hydrants to control and suppress a fire.
- **Electrical:** relates to fire detection, alarm and emergency power supply for reliable early warning and communication.
- **HVAC :** relates to smoke control and pressurisation systems to create compartments free of smoke to enhance evacuation and intervention.

The challenge is to engineer and design the individual systems and to assure proper integration into one functional fire safety system. All systems must be integrated into

a fire alarm control panel (FACP), installed in a protected Central Control Station. After installation, systems should be thoroughly tested and maintained.

Depending upon the type of system, testing should be done periodically to ensure proper operation in case of fire. Note that NFPA provides good guidelines for maintenance of fire protection systems.

organisational level:

fire prevention and emergency response

During exploitation of the high-rise, clear organisational roles and procedures should be defined (a) to reduce the probability of fire occurrence and (b) to ensure that personnel are properly prepared to respond effectively if required.

fire prevention

- Appointment of a responsible Fire Safety Director
- Impose strict procedures for security guards
- Define clear housekeeping rules
- Make all building occupants aware of the potential fire threats

emergency response

- Organise training programmes and fire drills
- Develop scenario specific emergency procedures, not limited to fire only
- Develop and maintain evacuation lay out plans
- Provide supporting (software) tools for management and personnel

conclusion

So, can high-rise buildings really be protected? To address this question, one should bear in mind that designing for zero risk is not feasible, nor from a technical, social or economical perspective. We always have to accept a certain level of risk when designing or entering a high-rise building. The key is however to define how much is too much and how little is too little. This can only be achieved when having the appropriate experts around the table who work in a methodological and expedient way together with the architect, client and local authorities.

theme park resorts

fire engineering and project management

Theme Park resorts usually offer high quality equipped villas, apartments and lodges, restaurants, retail outlets, a range of indoor and outdoor sports and leisure facilities themed into a natural environment, with woodland and water being the essential elements. Sometimes, a subtropical swimming paradise is at the heart of the village, with wild water rapids, water slides, Jacuzzis, wave pool, solaria and children's play pools, surrounded by luxuriant tropical plants and trees.

project request

The project was requested by both client and insurer because of concerns related to the high fire load in the main cluster of buildings. Besides the subtropical swimming paradise, several restaurants and activities for young and old are integrated into a creative design, surrounded by trees and wooden structures.

A small fire in the main building could rapidly develop throughout the entire building with a total loss and considerable business interruption as a consequence. Given the design concepts of the main buildings, where high fire loads are inherently present, there was no other choice left but fully sprinklering in addition to compartmentation, detection and alarm.



fpc's involvement

FPC was engaged because of its experience with similar work for several international hotels, resorts and large shopping centres.

The project was executed in two phases, where FPC's work encompassed;

Phase I: Project preparation, engineering and design, preparation of tender documents and procurement assistance.

Phase II: Project management, site supervision during construction, testing, commissioning and certification.

project challenges

The main project challenge was the time constraint set towards installation of the sprinkler systems. About 10 and above properties required sprinklering within one-year's time frame. This was no sine-cure given:

- different countries with each different design codes and authorities having jurisdiction,
- supervision of 5 different sprinkler installation contractors,
- specific requirements from owner and insurer,

- practical constraints related to the creative building configuration.

In addition, most of the installation works had to be carried out at night to limit interruption to the daily business operations. This required a high degree of organisation to ensure proper erection of scaffolding, installation of equipment and site clearance within the time allocated.



project results

The project was concluded in time and budget according to the full satisfaction of client and insurer.

All main buildings are now properly equipped with sprinklers to safeguard guests and to reduce potential consequential losses related to property, business and reputation.

For more information on Theme Park fire protection, please contact Luc Feremans at lferemans@fpc.be

Note

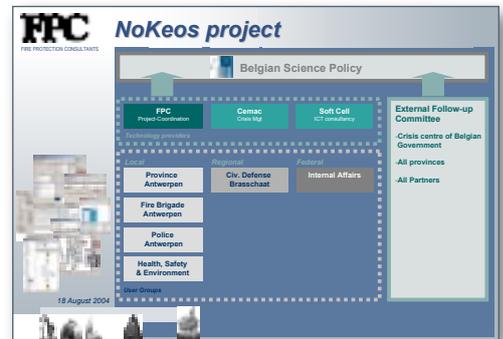
For reasons of confidentiality, the customer name is not mentioned in this article.

new projects

nokeos emergency management for belgian government

FPC has been awarded a substantial grant to customise NoKeos® to the specific needs of the Belgian Government. The project aims to partly automate the cooperation and coordination of the various public relief organisations to support decision-making and ensure proper information distribution in the event of a disaster. The automation will occur by means of NoKeos®, the emergency management application developed by FPC.

The “Multi-annual information society support programme” allows NoKeos® to be tested based on the organisational and system-technical requirements of relief organisations in Belgium and as such continue to improve it. Partners in the project are CEMAC and SOFT CELL and relief organisations (the end users) such as Civil Defence, Police, Fire Brigade and the Province of Antwerp. **Please contact Kurt De Raeve at kdraeve@fpc.be for more information regarding the project.**



fire safety master plan for amsterdam airport schiphol terminal

An AirportCity as Schiphol is an efficiently run international hub, providing various forms of transport and a wide range of services and facilities for passengers, visitors and business users, 24 hours a day: 40 million passengers and 408.300 air movements is something you've got to earn. It is therefore of major management concern to guarantee the (fire) safety of all passengers and staff.

FPC is proud to announce that it has been awarded the contract for developing 35 fire safety plans that will all together make up the overall Schiphol Fire Safety Master

Plan. Each plan includes functional requirements in terms of fire compartmentation, fire load, escape, and fire detection and alarm. As Schiphol is continuously expanding and changing, the fire safety master plan needs continuously updating as part of the ever-changing legal requirements to get and renew the necessary exploitation permits.

The project target date is April 2005. At FPC, a multi disciplinary team of fire engineers and designers will work on the project to get the job done in time and budget. **Please contact Dirk Smeets at dsmeets@fpc.be for more information on airport safety.**

halon phase out project, knpc, kuwait

FPC Middle East Ltd has been awarded a contract by Kuwait National Petroleum Company (KNPC) to provide Fire Safety Consultancy Services for " Phasing Out of Halon Systems and Replacement/ Upgrading of Associated Fire Detection & Alarm Panels " in KNPC Refineries.

FPC's scope of work covers all three refineries operated by KNPC in Kuwait. The data collection phase, which has just been completed, included the survey of over 250 installations that require Halon Replacement. The site surveys were conducted by 2 different FPC teams and took place under extreme temperature conditions (45C °-55 C°). The picture shows how these conditions can make a project team lean and mean. The final project goal is to recommend internationally approved Halon alternatives (FM200, Inergen, Argon...), prepare cost estimates and develop fire prevention standards for different locations at the Refineries. The project spans a period of 240 days and is due the first quarter of next year.

For more information regarding the project and/or Halon Replacement, please contact Souren Dakessian at sdakessian@fpcme.com.



The FPC United Colors of Benetton Project Team

property loss prevention services

Early 1973, with the inception of FPC, the majority of the company's clientele was to be found in the insurance business. For a period of 10 years, FPC provided loss prevention services for large American underwriters and insurance brokers in Europe. Now 30 years later, as an unfortunate result of 9/11 and the consequential shake up in the insurance industry, loss prevention audits are again considered of major importance.

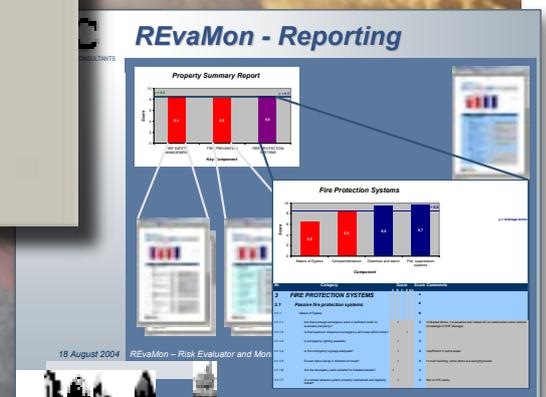
Therefore, FPC is developing a separate business unit to service insurance brokers, underwriters and direct industry customers with property loss control services.

scope of activities

- Offer customised evaluations of your facilities risks and related MFL and MPL
- Focus on the performance and operability of fire protection systems, including automatic sprinklers, special extinguishment agents, detection and alarm systems as related to the construction, occupancy and hazards at each location
- Emphasis on fire safety management and the human element aspect of loss prevention programmes

- Follow international acceptable codes and standards (NFPA, LPC, VDS), locally recognised standards and/or your corporate guidelines
- Have a world wide network with local staff familiar with international accepted standards
- Employ risk based tools for quantitative management reporting

Please contact **Jozef Haeseldonckx** at jhaeseldonckx@fpc.be for more information.



changing of the guards

that way. I believe FPC's main strength is to support customers in transferring a high-level risk philosophy into the practical realisation of a fire safety concept. We have been doing this, and will continue so, with a core team of highly capable people complemented with a network of partners and associates. This gives us the flexibility and creative freedom that is essential in the fast developing field of fire protection engineering.

In order to service existing and new customers even better I do consider it important to continuously develop our team capabilities. Therefore FPC will further invest into professional training and accreditation of personnel, expand our partnership network and even recruit some captains of industry. I also believe closer and effective communication with clientele will become even more important. In order to better understand and address current industry and customer needs FPC

will, amongst others, organise customer events, work more closely together with governments and delegate staff members to chair in industry committees.

Without ever giving up on our true roots, we also intend to selectively broaden our scope of services. Next to developing fire safety concepts and engineering fire protection systems, I believe fire safety practitioners should also focus on emergency management. After all to prevent and mitigate incidents a good balance is required between the operation of technical systems and a proper organisational response. There is still a lot of ground to cover in this area, where I feel FPC can significantly contribute.

I will take on my new job as managing director with the same spirit and enthusiasm as Ed always did and look forward to meeting each and every one of you in the near future.

Ralf Bruyninckx
Managing Director FPC

NoKeos® DVD

Now available on DVD: a complete movie demonstrating the use of NoKeos® for organisational decision-support before, during and after the occurrence of incidents.

Please contact nokeos@fpc.be to request a copy.



“Life & Fire Safety: Why should it be a concern?”

Customer & Partner Conference Announcement

Within the light of FPC's 30th anniversary and change of management we consider it a good opportunity to bring customers and partners together to discuss fire safety topics of interest.

Therefore, a customer & partner conference will be organised by FPC in Belgium on the 3rd of December 2004.

Within the context of the main theme, topics will range from aspects such as insurance, risk analysis, new HSE management techniques to emergency management and general trends in fire safety.

Internationally recognised keynote speakers and several practitioners from the industry will be invited to address and present the topics. There will also be plenty of time to meet up with all delegates and colleagues during social events, gladly offered by FPC.

Exact programme, call for registration and other announcements will be communicated within the next couple of weeks.

Block your agenda now!



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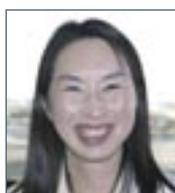
FPC new alliances

NTT DATA Corporation - Japan



NTT DATA traces its roots back to 1967, to the establishment of the Data Communications Bureau within Nippon Telegraph and Telephone Public Corporation (present-day NTT). The Bureau sustained consistent growth based on system development, building, operation, and maintenance across a broad front, ranging from nation wide systems that formed the cornerstones of society to a multiplicity of corporate network systems. In 1988 it began a new chapter in its story when it became NTT DATA Corporation.

Today, NTT DATA has grown into a group comprising 90 subsidiaries and affiliates and employs 17,389 people (as of March 31st, 2004) as NTT DATA group. NTT DATA has the best track record of any system integrator in Japan and harnesses many strengths to engage in business while maintaining its two priority management policies: “Enhancing the Competitiveness of the System Integration Business” and “Creating New



Businesses.” A partnership agreement has been made between NTT Data Corporation and FPC for delivery and integration of the NoKeos® emergency management system to clients in Asian region.

For more information about NTT DATA, please contact Michiko Fukuta, Deputy Manager of the National Security Business Unit, at fukutam@nttdata.co.jp

HSB-PLC - USA



HSB Professional Loss Control (HSB PLC) is a US based international risk management consulting firm specializing in unbundled property loss control related services. HSB PLC provides independent, client-focused consulting services for hazard and risk identification, risk-analysis, protection system evaluations, and risk mitigation strategies.



An alliance has been formed to provide property loss control services for US based companies with worldwide properties in portfolio. While HSB services the US market, FPC responsibility relates to inspection of properties throughout Europe.

For more information on HSB, please contact: Wayne Holmes, Vice President HSB-PLC, at Wayne_Holmes@hsbct.com.

Shell Global Solutions International B.V.- Europe



FPC is pleased to announce that it is now providing fire engineering services to Shell Global Solutions International B.V. FPC is supporting Shell Global Solutions' HSE business, and has just completed the first joint project in Brunei. Shell Global Solutions provides business and operational consultancy, technical services, and research and development expertise to the energy and processing industries worldwide.



For more information on Shell Global Solutions please visit their website on www.shellglobalsolutions.com or contact Evert Jonker, Fire safety & Fire Protection Consultant, e-mail: evert.jonker@shell.com.