The Potential of Integrating Fire Safety in Modern Building Design

- **Lack of knowledge**

- **Weak implementation of legislations**

- **Less Monitoring, Controls, Inspections and Audits**

- **Building Design Process**

- **Fire Safety Concept Implementation**

- **Fire Safety Considerations, Requirements**

- **Improved Protection of People and Buildings**

- **Integration of Fire Safety Considerations**

- **Future Potential**

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Learning Objectives

1. Discuss Fire Safety Design Strategies

2. Issues and Difficulties

3. Requirements of Fire Safety in Building Design

4. Perceptions of Stakeholders involved in Building Fire Safety Design – Challenges

5. Safety Considerations for Accessibility Design

6. Improved Protection of People and Buildings

7. Fire Safety Community

8. Conclusion and Recommendations

Introduction

1. Modern building design is strongly influenced by fire safety considerations

2. Advances in fire safety science have gradually revealed the potential value of integrating fire safety as one of the many variables that should be optimized during the building design process

3. Emphasize discrepancies exemplified by the various stakeholder participants between;

   - The perceptions of fire safety considerations

   - Requirements, and

   - Drivers

4. Building design is an iterative process with many stakeholders involved

Issues and Difficulties

1. Unfortunately, the fire safety design people are rarely or insufficiently involved
2. Extent of involvement is only secondary, sometimes with the goal of gaining regulatory approval
3. Accepted fire safety measures are considered to provide adequate fire safety without developing an optimal relationship between the overall design and fire safety measures in many buildings
4. Considered as an additional set of requirements imposed and thus act as constraint
5. Fire safety measures are under constant refinement and improvement and it is rely on assumptions and limitations
6. More readiness of regulatory bodies towards prescribed safety design than Performance-based design
7. Lack of empowerment of the fire safety design individuals

Requirements of Fire Safety in Building Design

- **Dialogue between competent professionals**
- **Regulatory authorities must be competent and capable to asses new design approaches**
- **Development of all those involved in fire safety community**
    1. **Safety regulators Standards developers**
    2. **Designers & engineers**
    3. **Academic researchers**
    4. **Professionals from Industries**
    5. **Fire & rescue services**
- **Refer to the detailed incident investigation reports on causes of fire incidents in buildings and implement their lessons learnt in design**
- **Use of data base with reference to fire incidents in buildings**

Perceptions of Stakeholders Involved in Building Fire Safety Design - Challenges

- **Developer** - Involve fire safety Code Consultant at late stage only
- **Building Owners – Occupants - Architects**
- **Structural Engineers** – Less awareness of fire science and fire dynamics. Less awareness of prescriptive requirements only. Rarely consider fire safety as a design variable. Fire is given peripheral importance in the structural design decision making or analysis process as it is treated an unlikely event. Are of view that architects and safety code consultants are responsible for specifying fire safety design requirements
- **Fire Safety Practitioners** - Science-based design and performance assessment are unlikely to become common in near future due to practical and regulatory inertia
- **Regulators or authorities having jurisdiction (AHJ) – Distance between stakeholders and regulatory authorities**

Perceptions of Stakeholders involved in Building Fire Safety Design - Challenges

- **Insurers** - Continue to rely primarily on prescriptive fire safety design based on codes
- **Fire and rescue services** - Integration of performance-based considerations
- **Freedom to Design**
- **Management Involvement and Overall Knowledge**
- **Far Behind the Modern Technology and Principles** – The technologies adopted are not appropriate. Needs detailed review and study before Decision - Selection / Implementation
- **Budget Constraints**
- **Time Limitations**

Fire Safety Community

Fire Safety Code Consultant
- **Specialist who has the technical knowledge needed to provide designs that comply with a given set of prescriptive fire safety rules**
- **Knows how to use building regulations and to follow prescribed standards and design procedures**
- **Unlikely to assist in the conceptual design stages**
- **Architects and structural engineers are of the view that Code Consultants constraints design freedom and are unable to explain or justify the scientific basis of the design recommendations imposed by the code**
- **Fire Safety Engineer**
- **Fire Safety Designer**

Conclusion and Recommendations

- Integration of competent fire safety engineering principles from the onset of the design process has significant potential to deliver a 'better' building
- The value of integrated fire safety engineering throughout a building's design process is potentially enormous
- Most design stakeholders currently do not integrate fire safety considerations into the iterative design process
- Perception exists that there is little added value in treating fire safety as an iterative design variable
- There are several barriers to the desired evolution of fire safety engineering as a profession that is integrated within the design process of the modern built environment

Elephant in the Room

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- **"Elephant in the room"** **is an English idiom for** *an obvious truth that is being ignored or goes unaddressed*

- **The idiomatic expression also applies to an obvious problem or risk no one wants to discuss**

- **It is based on the idea that an <u>elephant</u> in a room would be impossible to overlook; thus, people in the room who pretend the elephant is not there have chosen to avoid dealing with the looming big issue**

- **A <u>problem</u> or <u>difficult</u> <u>issue</u> that is very <u>obvious</u>, but is <u>ignored</u> for the <u>convenience</u> or <u>comfort</u> of those involved**

Thank you and Stay Safe