SAFETY IN ELEVATOR INSTALLATION AND MAINTENANCE

ENGR. OLUDOTUN MAJEKODUNMI, FNSE, FNISAFETY E

1. INTRODUCTION:

(1.1) - Today I am talking about a topic that is often overlooked but unbelievably crucial to our everyday lives – safety in elevator installation

and maintenance.

(1.2) - Elevators are essential systems that we use very frequently in modern buildings yet we seldom stop to think about the complexity and cutting edge safety mechanisms built into them.

(1.3) - However, these complexities demands careful attention to safety protocols in order to ensure the protection of workers involved in the installation maintenance and operation of these systems including the protection of users and the environment.

(1.4) - Hence, a combination of mechanical, electrical and software engineering ensure your safety from the moment you enter an elevator to the time it reaches your destination.

(1.5) - In this lecture, I will discuss all the different facet of safety in elevator technology focusing on safety of workers during installation and maintenance, users experience and environment concerns

(2) SAFETY FOR WORKERS DURING INSTALLATION AND MAINTENANCE

(2.1) - Workers involved in the installation, maintenance and repair of elevators face various risks and so it is necessary to create a safe working environment for them.

(2.2) - Safety during installation: The installation phase is very important as it involves working at height using heavy equipment and complex electrical systems which raises the need for these key safety measures.

(2.2.0) - Users report on any issue they notice, like unusually noise or malfunction should be checked to ensure quick repairs

(2.2.1) - Personal protective equipment (PPE) - Workers should wear PPE including hard hats, gloves, Harness, non -slip footwear to protect from falling electrical shocks or heavy safety.

(2.2.2) - Fall protection - install scaffolding or harness systems to prevent fall from height especially when on elevator shafts or tall buildings.

(2.2.3) - Proper handling of heavy equipment- The installation often requires heavy machinery so proper lifting techniques and the use of cranes or hoist are essential for safety.

(2.2.4) - Safety during maintenancemaintenance an elevator involves servicing mechanical, electrical and safety systems. Hence, mechanical workers must follow strict protocols.

(2.2.5) - Lock out/Tag out procedures- Before beginning work, all electrical systems should be turned off and locks should be applied to prevent accidental activation.

(2.2.6) - Inspection of safety devices: Workers should check the function of brakes, sensors, cables and other safety features to prevent malfunction.

(2.2.7) - Regular Training – Maintenance staff should undergo regular safety trainings to ensure they are up to date on best practices and regulatory changes

(2.2.8) - Hazardous material handling – Elevators often involve the use of oils lubricant and other hazardous substances so workers should - Follow safety protocols for handling chemicals, including wearing of gloves and eye protection - Properly dispose of any waste material adhering to local environmental safety standards.

(2.2.9) - Safety barriers – Elevators should have proper safety barriers to prevent passengers from accidentally entering the shaft area.

(3.0) - Safety for elevator users Elevator safety for users is important as they are the primary people interacting with the system.

(3.1) The following are the key considerations for user safety.

(3.1.1) Emergency features procedures.

- Emergency communication systems Elevators must be equipped with a reliable two or three way communication system (like an emergency phone or intercom) that connects user to building personnel or emergence services in case of malfunction
- Emergency stop and alarm buttons Users should be able to stop the elevator in case of malfunction alarm bell should be easily accessible.

- Emergency light to provide temporary lighting in case of power outage.
- Door sensors Modern elevators features door sensors to detect obstacle is in the way, reducing the risk of injury
- Overload sensor Elevators are fileted with sensors to detect when the cabin is overloaded if the weight exceeds the capacity, the elevator should not operate until it is within limits

- Safety brakes – Elevators are equipped with safety brakes to stop the car in case of an unexpected failure ensuring that the elevator doesn't fall Lighting ventilation – Adequate lighting and ventilation systems are necessary to ensure a safe and comfortable environment for passengers particularly in the event of a power failure

(4.0) Public Awareness or passenger education

(4.1) Proper usage – Clear signage's remind passengers not to block or force open the doors, overload the car or engage in unsafe behavior.

(4.2) Evacuation procedure – Passengers should be informed about evacuation in case of a fire or malfunction.

(5.0) Safety in the environment – Elevator technology also considers environmental factors to ensure safety and sustainability.

(5.1) Installation in safe environment: Elevators building codes and must consider environmental condition.

- ensure structural Integrity of building elevator shaft.
- Compliance with all safety regulations including smoke detectors and automatic fire doors.
- Adequate ventilation systems to prevent of the

elevator motor and machinery.

(5.2) Minimizing environmental Impact: Elevators especially in high rise building consume substantial energy so energy systems and sustainable technology like regenerative drives should be adopted to minimize their environmental foot prints.

 Regenerative drives – these systems return energy to the building grid reducing electrical consumption. - Sustainable materials – use materials with low environmental impact during installation and maintenance (e.g recyclable parts) - Noise and vibration control – Elevator operation can cause noise and vibration which affect the environment and nearby occupants. Using sound proof materials and vibration dampening technologies can intimate these concerns.

(6.0) Emergency preparedness – In case of accidents, such as electrical shocks or mechanical failures, workers should be trained to respond appropriately.

 First aid and CPR training – Basic first aid skill is vital for handling injuries quickly.

- Emergency evacuation plans – Workers should know how to evacuate a building in case of fire, earthquake or any other emergency.

(7.0) Regulatory Standard Compliance: Elevator installation, maintenance & operator should adhere strictly to various safety regulations and standards. Some of the key guidelines include. National Fire Protection Association (NFPA) standards for fire in elevators.

ASMEA 17.1 / CSAB 44 – Safety codes for elevators and escalators which outlines design, installation, inspection and maintenance requirements.

Occupation Safety and Health Administration (OSHA) regulations to ensure worker safety. Adherence to these regulations ensure that both the environment and the worker are safe guarded from any potential hazard during installation and maintenance.

(8.0) <u>Conclusion</u>

In conclusion, safety in elevator technology is a multi-faceted responsibility that involves the protection of users, workers & the environment.

- Proper design, regular inspection and adherence to safety standard can minimize rick for users.
- For workers implementing of effective safety measures during installation, maintenance is crucial to preventing injuries

- Lastly, environmental considerations must be prioritized to ensure a sustainable safe and efficient elevator system for the future, continually improving safety protocols and maintaining high standards of care, we can ensure that elevators remain a safe and reliable modern transportation for everyone involved.

Thank you.