

AGNISHAMAK - A SMART FIRE EXIT SYSTEM

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ABSTRACT

This invention is all about a wall attachment fire escape system for multistorey buildings. A fire escape is a special kind of emergency exit, usually mounted to the outside but separate from the main entrance preferably near the fire exit of the building. The system turns on by the use of a temperature sensor which ignites on sensing a fire and enables the system. It opens the emergency exit window automatically by a control mechanism. The sliding mechanism of the system pushes the slider to the ground level at the appropriate inclination angle making it convenient for people to reach out safely.

Keywords: Fire Exit, Emergency Exit, Agni

I. INTRODUCTION

Safety is of primary concern in all the utilities and processes globally. This smart fire exit system will provide at most safety during emergency conditions and ensures safe handling of the escapees. Fire escapes are most essential in multiple-story residential buildings to evacuate people in case of fire accidents.

The most conventional method of fire exit system is ineffective since it fails in cases of manual operation, mechanical failure, and prompt action. The proposed idea is an automated system that will overcome the aforesaid drawbacks and also ensures the safeness of the escapees.

In case of a fire accident, the temperature sensor in the system detects the fire and activates the fire escape mechanism. This enables the emergency exit window attached in the building automatically by a control mechanism. The control mechanism has a half climber and hydraulic cylinder in it at the ground level. When the temperature sensor senses the fire, the IoT enabled system activates the half climber and the hydraulic cylinder. The supporting posts projects upwards to the required height to make the hydraulic cylinder rest in the supporting posts appropriately. The steel pylons hold the fiber plates and this carries the whole

weight of the escapees ensuring them to reach the ground safely.

II DESCRIPTION OF PROBLEM

- Fire escapes are most essential in multiple-story residential buildings to evacuate people in case of fire accidents.
- A fire escape consists of a number of horizontal platforms, one at each story of a building, with ladders or stairs connecting them.
- A fire exit can be of any structures like ladders, railings, movable exit systems, etc.
- The ladder from the lowest level of the fire escape to the ground may be fixed, but more commonly it swings down on a hinge or slides down along a track.
- Railings are usually provided on each of the levels, but as fire escapes are designed for emergency use only, these railings often do not need to meet the same standards as railings in other contexts.
- The moveable designs allow occupants to safely reach the ground in the event of a fire but prevent people from accessing the fire escape from the ground at other times (such as to perpetrate a burglary or vandalism).
- Exit from the interior of a building to the fire escape may be provided by a fire exit door, but in most cases the only exit is through a window.

➤ Due to traffic the late arrival of fire rescue vehicles may cause a lot of injuries and problems to the victims.

➤ A modern type of evacuation slide is the vertical spiral escape chute, which is a common means of evacuation for buildings and other structures.

III OBJECTIVES OF THE PROJECT

- To implement Fire Escape System for safeguarding the lives of people who were lived and worked in the buildings and apartments.
- To avoid injuries of the victims while escaping from the building.
- To save the lives of many people at a very short time by this invention.
- To this project aims at designing a system which not only rescues victim from fire but also deals with safe handling of the victim.

IV METHODOLOGY

The IoT enabled system activates the half climber and the hydraulic cylinder. The hydraulic cylinder in the sliding mechanism pushes the slider to the ground level at the required inclination. The supporting posts projects upwards to the required height to make the hydraulic cylinder rest in the supporting posts appropriately. The steel pylons hold the fiber plates and this carries the whole weight of the escapees ensuring them to reach the ground safely.

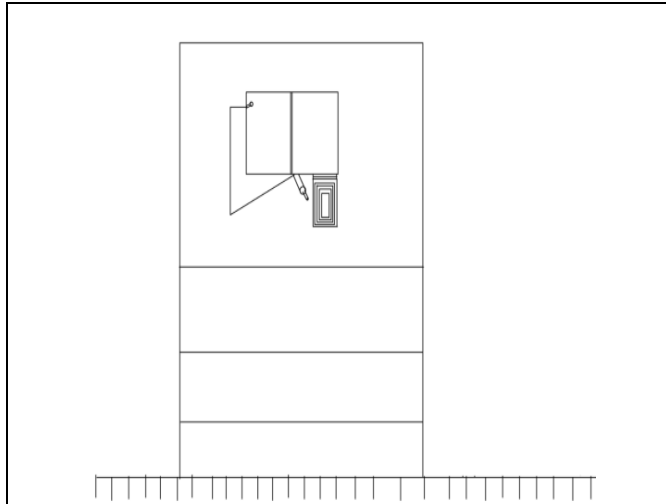


Figure 1: Front view setup of fire escape system before the fire accident

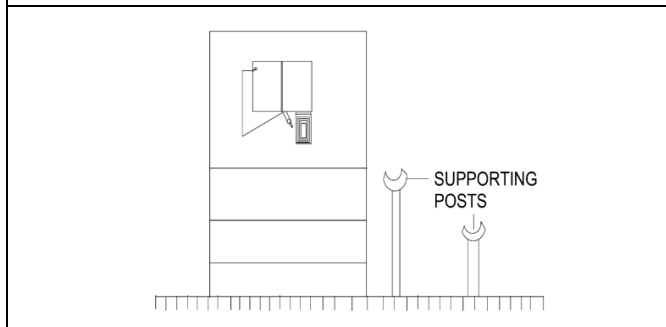


Figure 2: Front view setup of fire escape system after the fire accident

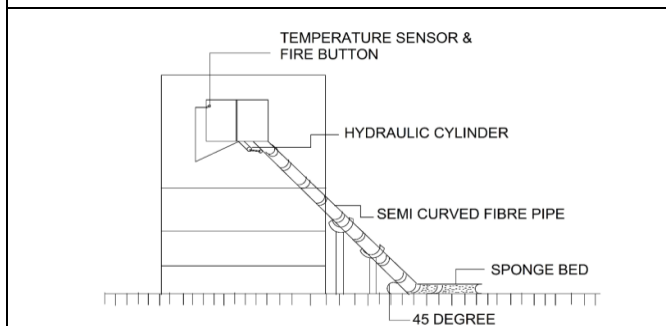


Figure 3: Front view setup of fire escape system after expansion

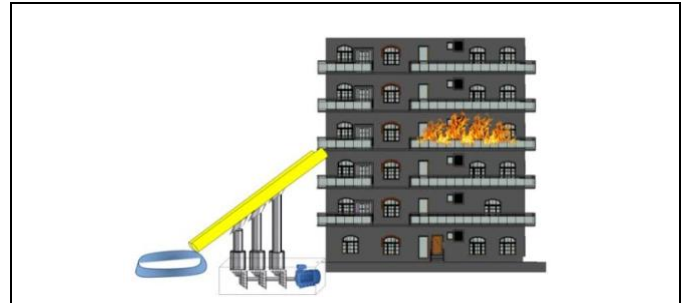


Figure 4

Case: I AGNISHAMAK- Attachment of Vertical Motion Hydraulic Cylinder

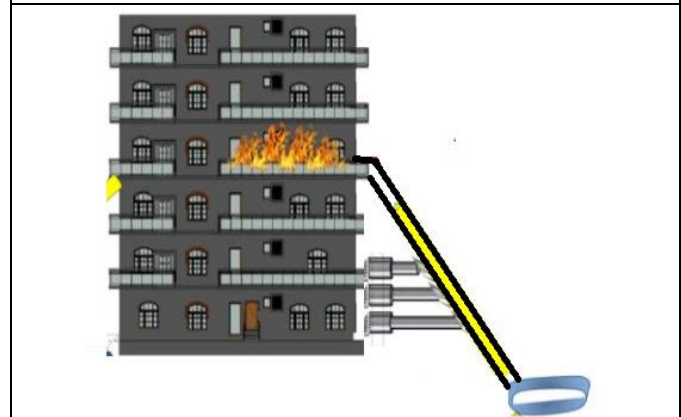


Figure 5

Case: II AGNISHAMAK – Attachment of Horizontal Motion Hydraulic Cylinder

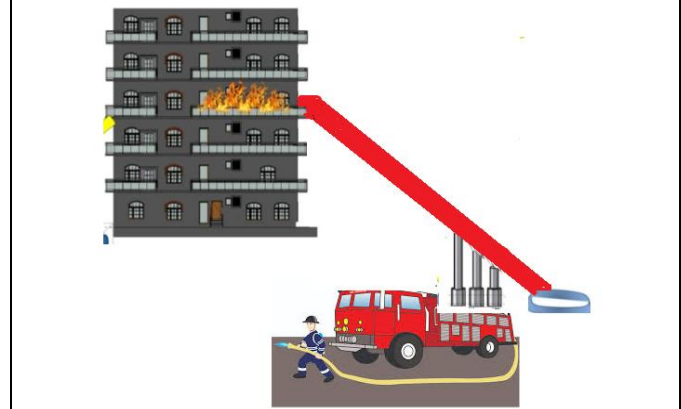


Figure 6

**Case: III AGNISHAMAK – Fire fighting
Vehicle Attachment**

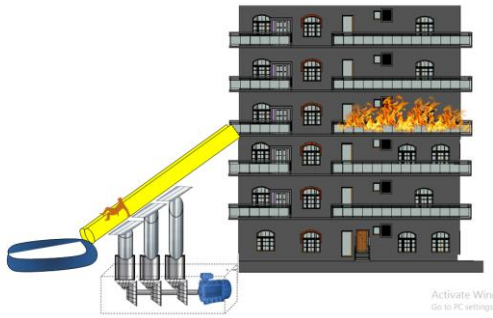


Figure 7

AGNISHAMAK- FIRE EXIT SYSTEM

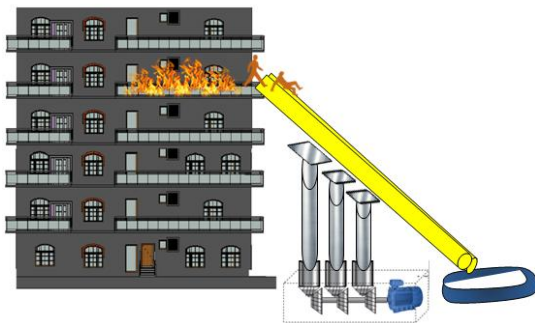
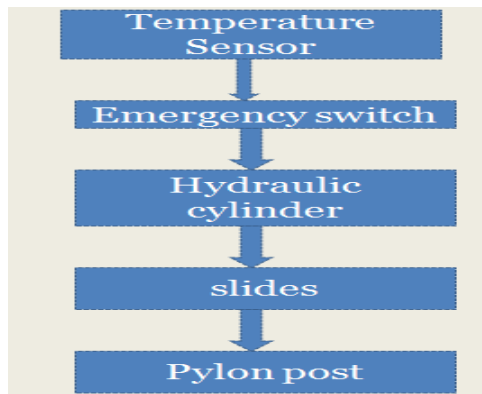


Figure 8

AGNISHAMAK- FIRE EXIT SYSTEM

FLOW DIAGRAM



VI WORKING PRINCIPLE

The innovation is a Novel, mechanized, smart fire exit system. It is based on ADAIES (Artificial Intelligence, Data Analytics, IoT, and Embedded Systems). The unique aspect of the product is automation. This Smart fire exit system is an IoT enabled system which eradicates human errors due to nervousness and ensures prompt action during emergency conditions. Safety is the predominant.

A fire escape is a special kind of emergency exit, usually mounted to the outside but separate from the main entrance preferably near the fire exit of the building. It provides a method of escape in the event of a fire or other emergency that makes the stairwells inside a building inaccessible. In case of a fire accident, the system turns ON and opens the emergency exit window. The system activates the sensors in the ground and the slider projects upward automatically to the appropriate floor. The sliding mechanism of the system pushes the slider to the ground level at the appropriate inclination angle making it convenient for people to reach out safely. In the last slide of the fiber was made of sponge type material It ensures safe handling of the escapees.

VII APPLICATION

- Buildings & Apartments
- Shopping malls

- Educational institutions
- Organizations
- Hospitals
- Hotels
- All kind of multistorey buildings

VIII ADVANTAGES

- It provides easy rescue to the people.
- It helps to avoid major injuries to the victim.
- This technique is very helpful to the senior citizens and children.
- Safe landing is the main advantage of this technique with the help of using a sponge bed.
- Rescue many people at a time.

IX CONCLUSION

- The construction of prototype fire escape system save lives of many numbers of people at a time
- The fire exit system is flexible to install based on the availability of the building outside free space and the movement of hydraulic cylinder actuation in horizontal and vertical direction.
- This fire exit system can implement on the fire extinguishing vehicle in upcoming days.

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