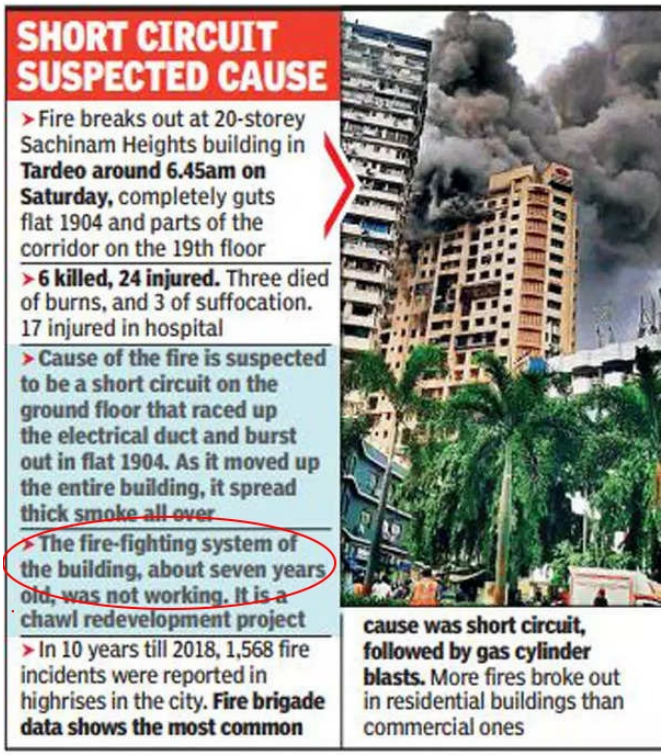
IOT in Firefighting Systems

Preface

In view of the various news reports on outbreak of fire and many such similar incidents occurring time and again that result in serious loss of property, casualties and even loss of innocent lives, the recent unfortunate outbreak of fire at **Tardeo in Mumbai** has brought forth some serious points for immediate attention and actions pertaining to the present fire hazard management system.



SHORT CIRCUIT SUSPECTED CAUSE

- Fire breaks out at 20-storey Sachinam Heights building in **Tardeo around 6.45am on Saturday,** completely guts flat 1904 and parts of the corridor on the 19th floor
- **6 killed, 24 injured.** Three died of burns, and 3 of suffocation. 17 injured in hospital
- Cause of the fire is suspected to be a short circuit on the ground floor that raced up the electrical duct and burst out in flat 1904. As it moved up the entire building, it spread thick smoke all over
- The fire-fighting system of the building, about seven years old, was not working. It is a chawl redevelopment project
- In 10 years till 2018, 1,568 fire incidents were reported in highrises in the city. **Fire brigade data shows the most common cause was short circuit, followed by gas cylinder blasts.** More fires broke out in residential buildings than commercial ones

We see such news time and again, but not much is done once the heat dies down. The recent Tardeo fire saw some serious deaths and loss to property.

The firefighting system, though present, ***was not operational due to absence of required water pressure needed to activate the system.***

What is more, news paper reports says ***there were 1568 fire incidents reported in high rises in the past 10 years.***

And, yet we do not have a systematic method of ensuring the working of the fire safety systems installed in such buildings.

Is there a solution to this? **Definitely YES**

Firefighting systems typically have a jockey pump, and one or more main pumps which will start in a cascading style if sufficient water pressure is not built up when fire breaks out. PMPs are pressure maintenance pumps used to provide a prescribed level of pressure needed to prevent the main fire pump from starting intermittently and to provide sufficient flow to replenish the system within a set time frame. This specifically prohibits the main fire pump or secondary fire pump from being used as a PMP. The JP provides makeup water for incidental leakage within the system such as, packing on valves, seepage at compression joints, leaks at fire hydrants, and inadvertent use of water from the interior or underground piping system.

However, there is a need to check if the jockey pump is working, that the water pipe is adequately pressurised, and that there are no leaks in the pipeline.

Proposed system features

The proposed system should have all the features mentioned below:

- Four automatic relay switches to perform ON and OFF function to operate the jockey pump and other pumps well in time.
- log the water pressure value in the pressurised pipe at regular and desired intervals.
- provide the exact location where the fire safety system is not maintaining required water pressure and levels for the pumps to operate.
- Keep a real time check on the functionality of pumps of fire safety system that are already installed or will be installed in future at all industrial and residential buildings.
- collect, record and transmit real time data to the users and the fire department
- provide real time notifications and timely alerts if adequate pressure and level is not maintained in water hoses of the safety system in building.
- be password protected, completely tamper-proof and secured from possible unwanted human overriding and sabotage.
- bring more awareness about fire safety and encourage the users and residents of such buildings to be more actively involved in preventive maintenance of their existing fire safety systems
- Finally, all this data can be supervised from any remote location through a cloud-based system as this data is maintained on cloud servers.

Proposed Solution

In order to prevent huge losses of property and innocent lives, the R&D team of Oguage has come up with unique solution that has been tested and has been proven to be accurate under necessary parameters to ensure all above mentioned points.

The Fire Department will be provided with a system, where it can monitor real time data of individual installations and be able to access it's working in real time. Any fault will be indicated not only to the key residents or users of high-rise buildings, but also to the fire department via prompt notifications including the location of the installation, for timely action. The software solution provided on data centre will give an audit trail of the pressures in each installation, a real time compliance.

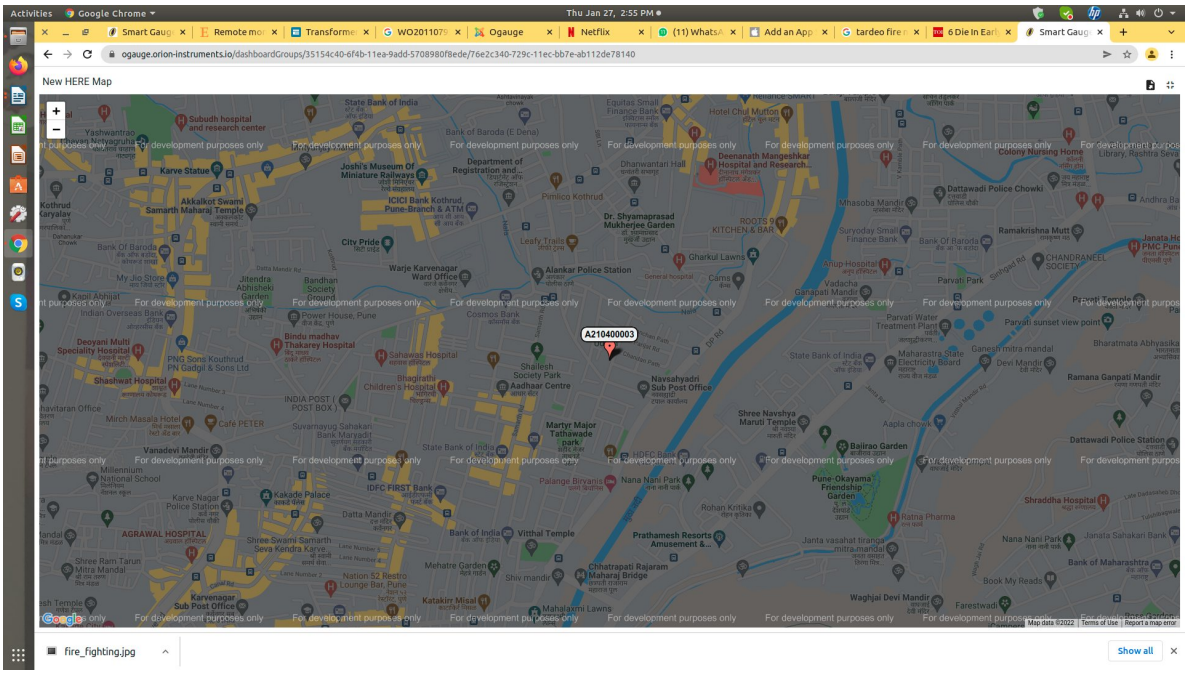
Implementation of the Ogauges will not only save loss of human lives and material, however, will also ensure the preventive steps for readiness in the event of a fire hazard.

Despite various guidelines, norms of safety and numerous efforts put in by the government authorities in the interest of citizens' safety, unfortunate incidents of uncontrolled fire make their place in news headlines. Oguage – will prove to be a lifesaving automation device. It is not only just the need of the hour that assures safety to fullest, but also encourages peoples' participation and involves their accountability in prevention against fire hazard incidents.

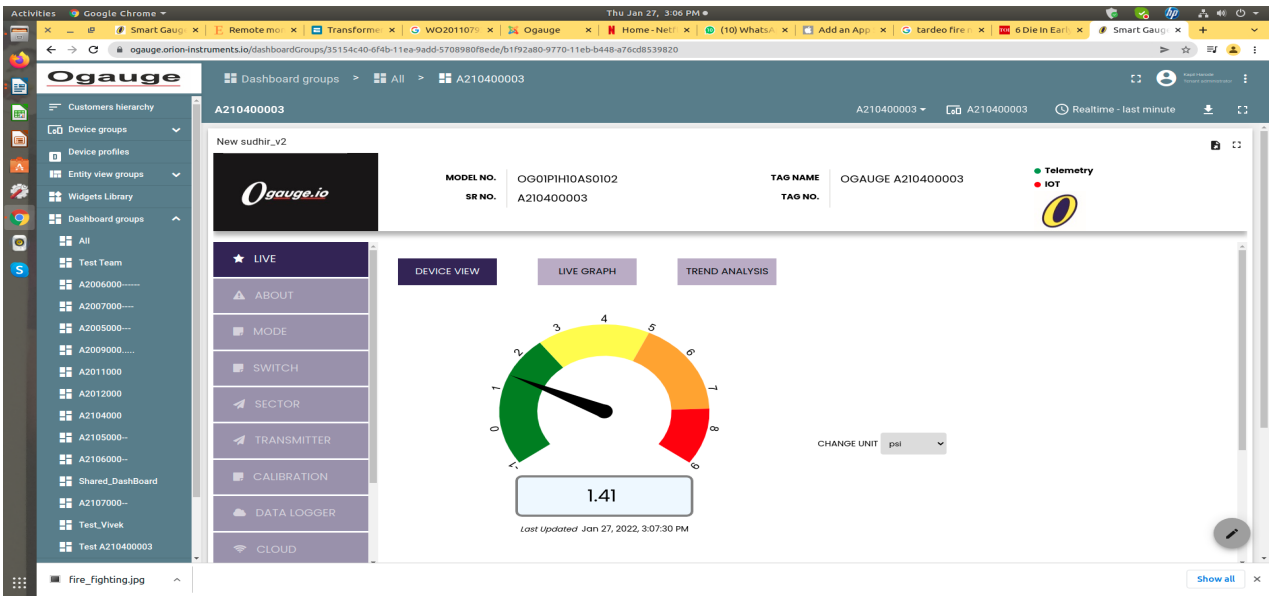
With access to the cloud-based dashboards, it enables the users and residents of high-rise buildings to take prompt actions based on inputs provided by this device and fight the fire hazard most effectively.

Some sample dashboards are given below:

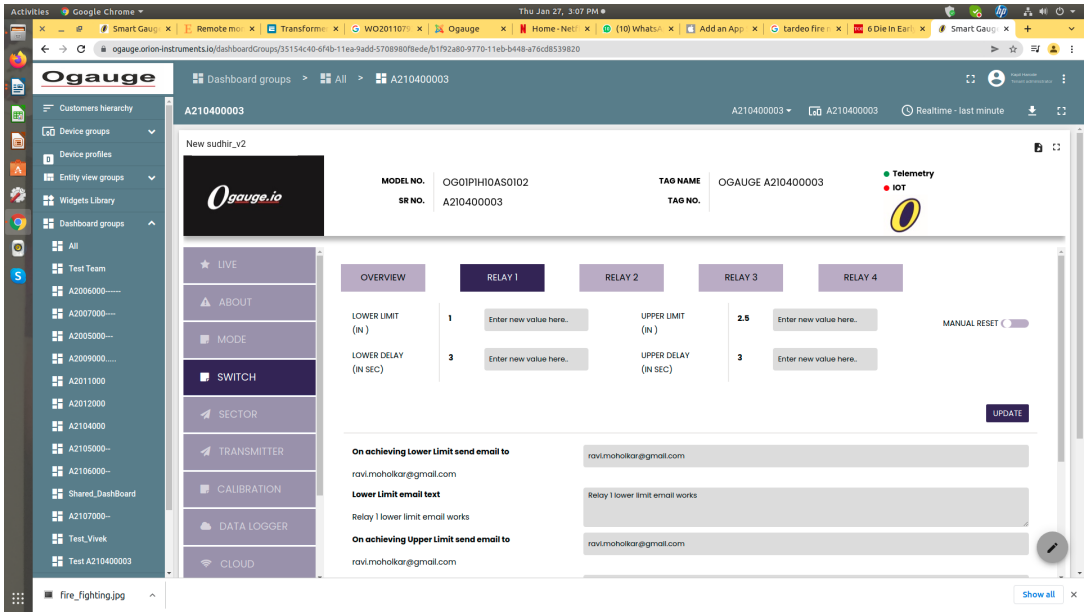
Sample dashboard map for geolocation



Sample dashboard for live pressure



Sample dashboard for relay



Additional dashboards can be prepared based on requirements. Some part of it also can be made public.

Typically following events can be monitored:

1. If the pipeline is adequately pressurised
2. How many times the jockey pump started (frequency of operation) in a specific period.
3. The gauge keeps logging all main events at all times required for analysis during audit trails. Hence, can be audited based on real time data.

This can be an advanced technological step for establishing a full-proof system for preventing loss of properties and fatal casualties.