

## LIGHTED FIRE-FIGHTING ACCESS PANEL SIGNAGE

### FIELD OF THE INVENTION

[001] The present invention is a lighted fire-fighting access panel signage adapted to be secured onto a designated fire-fighting access panel. When connected to home automation devices, such lighted fire-fighting access panel signage can function as an alerting device by being programmed to blink or change colour to alert public or rescuers.

### BACKGROUND

[002] To enable effective mounting of rescue and external fire-fighting operations, provision for external access to building for fire-fighting and accessibility of site to fire-fighting appliances are incorporated in the design of buildings. Such external access may be windows, balcony doors, glazed wall panels or solid wall panels that are openable from outside of the building. Fire fighters can gain access to a building externally via fire-fighting external access panels to rescue any occupant who is trapped in the building and to allow fire-fighting from the outside of building.

[003] Certain requirements to the fire-fighting access panels include, placement of such panels at habitable spaces and restriction not to be located at protected staircases or lobbies.

[004] In Singapore, to enable fire fighters to locate the designated fire-fighting access openings, fire-fighting access panels are to be marked with either a red or orange triangle of equal sides (minimum 150mm on each side), which can be upright or inverted, on the external side of the wall and with wordings "Fire Fighting Access - Do Not Obstruct" of at least 25 mm height on the internal side.

[005] Traditionally such signage is a simple, passive signage that is adhered to or printed onto the designated fire-fighting access panel. Without adequate ambient lighting or during times of power outage, the signage can require some time to locate. Locating the fire-fighting access panel quickly is crucial during emergencies.

## SUMMARY OF THE INVENTION

[006] In the present invention, a novel fire-fighting access panel signage comprising a light element such as a signage embedded with LEDs or lighted tape is disclosed. The use of LEDs or lighted tape allows lighting up the signage at low power consumption. Where the fire-fighting access panel is made of glass, such as a window, glazed wall panel or balcony door, the signage may be secured in between a pair of spaced apart glass panels to secure it in position and for easy maintenance. Such lighted fire-fighting access panel signage may be connected to a power source via wires. The power source can be a battery, rechargeable battery or an AC/DC power supply source. Besides using a pair of wires, printed conductive line, copper tape or etched ITO (indium tin oxide) circuit on the glass panels can also be used to connect the signage to the power source to light up the signage. Such lighted fire-fighting access panel signage allows easy locating of the fire-fighting access panel when the external ambient light is low, such as at night or during bad weather conditions such as a heavy rain or haze. Use of printed conductive line, etched ITO creates an uncluttered/clean appearance of the glass panel since no wires are seen extending from the lighted fire-fighting access panel signage.

[007] Where the fire-fighting access panel is made of a glass, the lighted fire-fighting access panel signage can also be secured on either surface of a single glass panel or external surface of a pair of spaced apart glass panels. Where the fire-fighting access panel is opaque, the lighted fire-fighting access panel signage can be secured on the surface of the panel external to the building.

[008] Independent power source is envisaged for the lighted fire-fighting access panel signage so that the signage can continue to function during power outage or when the supply to the mains is cut off during a fire. Power for the rechargeable battery can thus be provided from a solar panel embedded between the two glass panels, placed on an external surface of the glass panel or opaque wall panel, or located apart from the fire-fighting access panel to receive solar energy and then converted to electrical energy and stored in the rechargeable battery.

[009] The light of the present fire-fighting access panel signage can be controlled by external means to produce a warning signal upon a certain trigger, for example when a particular unit in the building catches fire. The light of the signage may be programmed to blink instead of being

continuously lit or change colour, to alert the surrounding residents or in general, people that are within visual distance to the building.

#### Brief Description of the Drawings

[0010] This invention will be described by way of non-limiting embodiments of the present invention, with reference to the accompanying drawings, in which:

[0011] FIG. 1 is a front and side view of a lighted fire-fighting access panel signage positioned between a pair of spaced apart glass panels with LEDs strip or lighted tape formed around its perimeter.

[0012] FIG. 2 and FIG. 3 are front and side views of lighted fire-fighting access panel signages secured on the either side of a glass panel in relation to a building.

[0013] FIG. 4 is a front and side view of a lighted fire-fighting access panel signage powered by a battery disposed between a pair of spaced apart glass panels. A solar panel located within the space between the pair of glass panels is used to harvest solar energy and stored in the battery.

[0014] FIG. 5 shows a lighted fire-fighting access panel signage where the battery is located external to the pair of glass panels. In addition, an external power source can also be used to charge the battery when there is insufficient light for the solar panel to produce power.

[0015] FIG. 6 and FIG. 7 show embodiments of the invention whereby the solar panel and lighted fire-fighting access panel signage are secured on either side of a designated fighting access panel that is formed from a single glass panel.

[0016] FIG. 8 shows a lighted fire-fighting access signage secured onto an opaque wall panel.

#### DETAILED DESCRIPTION

[0017] One or more specific and alternative embodiments of the present invention will now be described with reference to the attached drawings. It shall be apparent to one skilled in the art,

however, that this invention may be practised without such specific details. Some of the details may not be described at length so as not to obscure the invention. For ease of reference, common reference numerals or series of numerals will be used throughout the figures when referring to the same or similar features common to the figures.

[0018] FIG 1 is a front and side view of a fully assembled lighted fire-fighting access panel signage **30** installed on a designated fire-fighting access window panel. The window panel is constructed out of a pair of spaced apart glass panels and the lighted fire-fighting access panel signage **30** is sandwiched between the pair of glass panels **10** and **20**. The main body of the lighted fire-fighting access panel signage **30** may be formed from translucent non-conductive material such as acrylic, polycarbonate, plastic, PVC, glass and supported by a frame that may be coated with luminous paint. The colour and dimension of the signage **30** is adapted to comply with local regulations such as Section 4.2.3(d) of "Chapter 4, SITE PLANNING EXTERNAL FIRE FIGHTING PROVISION" from the Singapore Civil Defence Force.

[0019] The main body of signage **30** acts as a light diffuser to evenly diffuse light when light is passed through. A LEDs strip or lighted tape **40** is provided around the perimeter of the body of the lighted fire-fighting access panel signage **30** with a pair of wires **50** electrically connected to cathode and anode of the LEDs strip/lighted tape **40**. The pair of wires **50** runs in between the gap of the pair of glass panels **10** and **20** and is connected to an external power source. The external power source can be controlled by automation devices to determine when the LEDs strip/lighted tape **40** is turned on. For this embodiment, a light sensor **60** is embedded between the pair of glass panels **10** and **20** to detect the surrounding light level conditions so as to initiate the lighting up of the LEDs strip/lighted tape **40** at a specified detected light intensity. Alternatively a timer may be used to switch on the light of signage **30** during specified periods of the day. Light sensor **60** is connected via wire **61** to external control circuitry. Such lighted fire-fighting access panel signage **30** provides easy location of the fire-fighting access panels externally, and internally for non-opaque fire-fighting access panels during emergency. The frame of the lighted fire-fighting access panels signage **30** can be formed from opaque materials of any colour as required according to local requirements, or non-opaque material sprayed, painted with colour or covered with coloured tape.

[0020] FIG. 2 and FIG. 3 illustrate a lighted fire-fighting access panel signage **30** placed on either side of a designated fire-fighting access window panel that is constructed with a single glass panel.

Since the window panel allows light to pass through, the lighted fire-fighting access panel signage **30** can be installed on either side of the window and still be visible from outside the building.

[0021] FIG. 4 shows a lighted fire-fighting access panel signage **30** that is powered by an external power source **270** or a rechargeable battery **200**. A solar panel **100** placed between a pair of spaced apart glass panels **10** and **20** forming a border around the glass panels. Solar panel **100** is used to harvest solar energy for storage into the rechargeable battery **200**. The solar panel **100** can be monocrystalline, polycrystalline, or even thin film amorphous solar panel. The rechargeable battery **200** is placed within the space between the pair of glass panels **10** and **20**. One end of a pair of wires **250** is connected to the cathode and anode of the LEDs strip/lighted tape and the other end of the pair of wires **250** is connected to the rechargeable battery **200**. Rechargeable battery **200** is used as a backup power source in case the external power supply source **270** is cut off for whatever reasons. Switching charger **280** may be located externally to the window pane to automatically switch power supply source between battery **200** and external power source **270**. Solar panel may also be located on the external surface of the glass fire-fighting access panel or separate from the access panel on any part of the building that can receive sunlight.

[0022] FIG. 5 shows rechargeable battery **210** being located external to instead of embedded between the pair of glass panels **10** and **20**. In normal conditions, the external power source **270** is connected to the end of the wires **250** via switching charger **280** to power on the LEDs strip/lighted tape **40**. If the external power source **270** is cut off for whatever reasons, the switching charger **280** will be able to detect it and automatically switch to battery source **210** to power on the LEDs strip/lighted tape **40** via wire **251** instead. In addition, the battery **210** can also be charged by external source **270** via switching charger **280** when the solar panel produces inadequate power.

[0023] FIG. 6 and FIG. 7 show solar panel **100** and lighted fire-fighting access panel signage **30** placed externally on either side of a fire-fighting access window panel that is constructed of one glass panel. The functionality and performance is the same as the assembly of FIG. 5 except for the lack of aesthetic appearance and maintenance issue.

[0024] FIG. 8 show a lighted fire-fighting access signage **30** placed externally on an opaque fire-fighting access panel **300**.

While specific embodiments have been described and illustrated, it is understood that many changes, modifications, variations and combinations thereof could be made to the present invention without departing from the scope of the present invention. For example, the wires extending from the lighted fire-fighting access signage may be embedded in the opaque fire-fighting access panel for a clean/uncluttered appearance and for ease of maintenance.

## Claims

1. A fire-fighting access panel signage assembly, comprising  
  
a fire-fighting access panel signage having two opposing sides and comprising light emitting element such as LED, lighted tape or photoluminescence material  
  
placed within a space defined by a fire-fighting access panel formed by a pair of spaced apart glass panels, whereby the fire-fighting access panel signage is arranged to emit light on both sides when lit.
2. A fire-fighting access panel signage assembly of claim 1, whereby the entire signage emits light on both sides when lit.
3. A fire-fighting access panel signage assembly of claim 2 additionally comprising a rechargeable battery and a solar panel, the rechargeable battery charged by the solar panel and the light emitting element powered by the rechargeable battery.
4. A fire-fighting access panel signage assembly of claim 3, wherein the rechargeable battery is alternatively charged by an external power source.
5. A fire-fighting access panel signage assembly according to claims 3 or 4, wherein said rechargeable battery is housed within the space defined by the fire-fighting access panel formed by a pair of spaced apart glass panels.
6. A fire-fighting access panel signage assembly according to claims 4 or 5, wherein the external power source can be from AC/DC power supply, coin or lithium battery.
7. A fire-fighting access panel signage assembly according to any of claims 1-6, wherein printed conductive line, copper tape or etched ITO (indium tin oxide) circuitry on glass is used to supply power to the light emitting element.

8. A fire-fighting access panel signage assembly according to any one of claims 1 to 7 comprising a controller to control the light emitting element.
9. A fire-fighting access panel signage assembly according to claim 8 wherein the controller is programmed to cause the light emitting element to blink, change color, change intensity or remain continuously lit.
10. A fire-fighting access panel signage assembly according to claims 8 or 9 whereby the controller is activated by a sensor.
11. A fire-fighting access panel signage assembly according to claim 10, wherein the sensor is a photocell sensor, photo transistor light sensor or smoke detector.