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FIRE PROTECTION

THE GLOBAL VOICE FOR PASSIVE AND ACTIVE FIRE PROTECTION



TLX Technologies Liquid Level Sensor for fire-suppression systems

Fire-suppression systems are critical for keeping people and assets safe from fire hazard. Some fire-suppression systems utilise high-pressure sprinkler systems to extinguish a fire, such as in hotels and office buildings. However, because water can irreparably damage critical assets, gaseous systems that starve a fire of oxygen are often employed by places such as libraries, data centres, art galleries and many manufacturing facilities.

The suppressive agent utilised by these gaseous systems is stored in liquid form in a pressurised tank. When the system activates, an actuator releases the agent into the protected area. This smothers the fire by reducing the heat or oxygen content to the point where combustion is no longer possible.

These fire-suppression systems must be supplied with the appropriate amount of suppressive agent to be effective. If the system is not charged with the correct amount of suppressive agent, it may fail to extinguish a fire. Therefore, periodically checking the amount of suppressive agent in the fire-suppression system's storage tanks is critical to ensuring the system operates correctly at the critical moment.

How to best measure the amount of agent in a storage tank is not as simple as it might seem. Installing a simple float similar to what is found in an automobile fuel tank is an inadequate solution. A simple float lacks the sensitivity for accurate readings and is negatively influenced by tank pressure. If the amount of agent is too low, even by just a small margin, the system may be unable to release enough agent to extinguish a fire in a given size room. Therefore, several different systems are currently being used to ensure a precise measurement of the level of suppressive agent in these storage tanks.

One system requires weighing the fluid in the tank. Subtracting the known weight of the tank from the total weight will provide the weight of the suppressive agent. This process can be time consuming and dangerous for technicians because the tank needs to be removed from the fire-suppression system, posing a risk of injury. Removing

► High resolution, thermally compensated liquid level measurement on digital display.



the tank also temporarily disables the fire-suppression system and increases the risk of accidentally discharging the suppressant agent.

Dip-tape measuring is another method used to determine the fluid level in a tank. This is similar to checking the oil level in a vehicle. A measuring tape is pulled up out of the tank through a brass or stainless-steel tube until it engages with a magnetic float that is mounted alongside the tube inside the tank. The technician reads the liquid level on the tape and then converts the measurement to weight using a conversion chart. This method is prone to error because the technician must consider several different factors when making the conversion. Temperature must be part of the technician's calculations to account for thermal expansion of the suppressant agent, and the resolution of the chart must also be considered. Any error in temperature reading or interpreting the measurement of the dip tape may result in an inaccurate fluid-level reading.

Ultrasonic technology has also been pressed into service. An ultrasonic device is placed on the outside of the tank at various levels and then calibrated. Then the device is moved up and down the tank until the fluid level is detected and shown on a display on the device. This solution might seem

◀ Data communication customized based on system requirements.



ideal, but correctly calibrating the device is necessary each time a reading is taken. Once the fluid level is determined, the technician must still take a height measurement to accurately determine the weight of the suppressant agent in the tank, introducing an additional potential source of error.

Weighing the tank is accurate, but it is also time consuming and potentially dangerous for technicians. It may also require the fire-suppression system to be temporarily disabled during the weighing process. The dip tape and ultrasonic systems are safer for the technician because they do not require removal of the tank from the fire-suppression system, and the fire-suppression system need not be disabled to take a reading. However, they may not deliver consistently accurate measurements. A better solution is desirable. The best solution would deliver consistently accurate readings without needing to remove the tank from the fire-suppression system.

TLX Technologies has developed a

system that would safely, consistently and accurately measure tank fluid levels without the need to temporarily disable the fire-suppression system or require technicians to interpret and convert measurements. The result of this work is the Liquid Level Sensor.

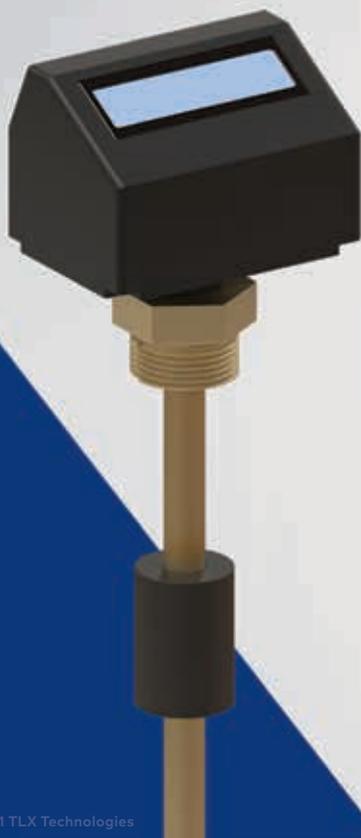
The Liquid Level Sensor satisfies all requirements. It provides consistently accurate thermally compensated weight readings that are not subject to interpretation by the technician, without disabling the fire-suppression system.

Like the measuring-tape system, the Liquid Level Sensor uses a sealed tube with a magnetic float mounted on the outside of the tube. This tube is installed in the tank prior to being filled with the suppressant agent. Instead of using a measuring tape to engage with the magnetic float, there is another magnetic float inside the tube that interlocks with the float outside the tube, providing an accurate measurement of the fluid level inside the tank. At the end of the tube at the top of the tank is a sensor that registers the position of

the float. The sensor sends float position data, as well as temperature data, to a microcontroller, which is pre-programmed with a conversion table for that specific tank and suppressant agent configuration. The conversion table data is automatically displayed as weight on a digital display. The technician does not need to read a measuring tape or make any calculations. A simple press of a button correctly displays the amount of fluid in the tank.

Maintaining the correct level of suppressive agent in a fire-suppression system's storage tanks is crucial to ensuring that the system will operate properly. Extant systems for measuring the level of agent in a system's storage tanks can expose technicians to safety hazards and are prone to inaccurate readings due to human error. The Liquid Level Sensor developed by TLX Technologies is safer and more accurate than other systems currently on the market.

 For more information, go to www.tlxtech.com



New for 2021

LIQUID LEVEL SENSOR FOR FIRE SUPPRESSION SYSTEMS

- + Accurately measures levels of extinguishing agent
- + High resolution of +/- 1mm of liquid level
- + Eliminates need and variability of human interpretation
- + Provides feedback on-site or remotely of current tank levels
- + Thermally compensated
- + Customizable to match tank requirements
- + Can be a direct replacement for current manual measurement device

Contact us about your fire suppression needs.



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