LDAR Leak Detection & Repair Technology

1 What is LDAR?

LDAR (Leak Detection and Repair) is a comprehensive engineering approach used in petrochemical and chemical enterprises to control raw material leakage throughout the entire production process. This technology employs fixed or mobile monitoring equipment to detect the leakage of volatile organic compounds (VOCs) from various sources, including reactors, raw material transport systems, pumps, compressors, valves, and flanges. When leaks exceed a certain concentration, they are promptly repaired to mitigate the environmental pollution caused by raw material leaks. Currently, LDAR represents the most advanced technology in the world for detecting chemical waste gases.

2 Why do you need LDAR?

In urban and regional air quality management and pollution control, the study and prevention of atmospheric VOCs are essential. Beyond addressing traditional organized emissions, it is crucial to consider the volatile nature of VOCs and focus on controlling fugitive emissions from unregulated sources. In industries like petrochemicals, more than 70% of VOC emissions can come from fugitive sources. Equipment and pipe valve leaks represent the second largest source of fugitive VOC emissions, following storage and transportation.

3 How to carry out LDAR?

If the number of sealing points is large, the enterprise can either purchase its own testing equipment and, after verification, perform LDAR according to relevant standards, or hire a third-party organization to conduct the process. The general steps for performing LDAR are as follows:

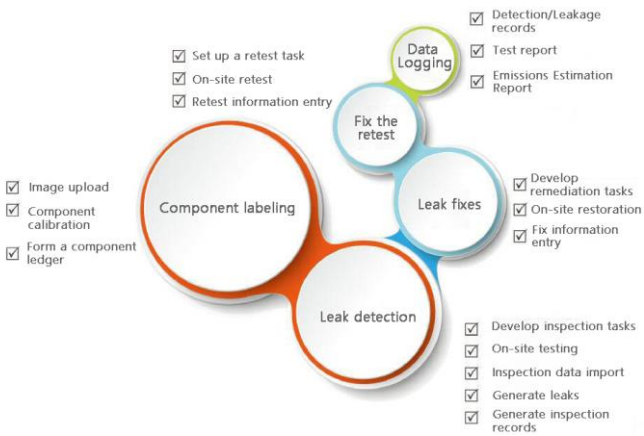
a) Component Labeling: Assign a unique identification number to each sealing point within the LDAR scope and record this in a database to create a component ledger.

b) b) Leak Detection: Detect leaks at the sealing points using both sensory judgment and instrumental testing. Sensory judgment involves using sight, hearing, and smell to detect leaks. If the instrument reading exceeds the "leak concentration value," the sealing point is considered to have a leak.

c) Leak Repair: Repair the sealing points identified as leaking.

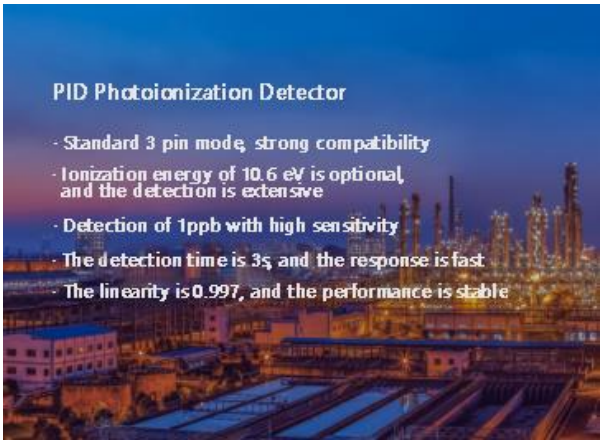
d) Repair and Retest: According to the "Volatile Organic Compounds Fugitive Emission Control Standard," except for instances requiring delayed repairs, the initial repair should be made within 5 days of discovering the leak, with completion within 15 days.

e) Data Logging: Record all data and documentation from the above steps in the archives and retain them for at least 3 years. Due to the large volume of data generated by LDAR, electronic files are typically used unless there are very few sealing points to manage.



4 LDAR detection technology and equipment

The methods for detecting leaked gases during LDAR (Leak Detection and Repair) include gas chromatography (GC), infrared spectroscopy (FTIR), flame ionization detection (FID), and photoionization detection (PID), among others. Among these, the photoionization detector (PID) is one of the most widely used technologies for detecting volatile organic compounds (VOCs) and certain inorganic gases.



HT-Nova’ s PID sensor is designed with a standard 3-pin configuration, making it compatible with the photoionization sensors of mainstream brands and easily adaptable to various handheld, mobile, or fixed gas detection equipment. With key advantages such as compact size, high sensitivity, fast response time, and comprehensive shielding, our PID sensors are easily integrated into a range of gas detection devices. These sensors are suitable for use in diverse environments, including industrial, commercial, and residential settings, ensuring safe and efficient gas detection.

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