

Underground leak location using the LACO XRS9012

SCOPE

- This application note explains how to use the LACO XRS9012 Portable Leak Locator to find leaks in cables, pipes and tanks that are buried underground.

BACKGROUND

- While Helium is traditionally used as a tracer gas in leak detection and location, it has become difficult to obtain and expensive to use when, and if, it can be found. Primarily due to helium's scarcity, alternative methods of leak detection and location have been developed. The XRS9012 uses a tracer gas of H₅ (forming gas) which is available everywhere and is less expensive than helium.
- This method uses a mixture of 5% Hydrogen/95% Nitrogen, an abundant and inexpensive tracer gas, to fill the underground item and then locate any leaks with the XRS9012. Although hydrogen exists in the air, there is about 100,000 times more of it by volume in the tracer gas. Notwithstanding this increased presence of hydrogen, the tracer gas is quite safe and not flammable due to the overwhelming amount of nitrogen in the mixture
- It is important to realize that leaking gas will penetrate the surrounding earth through the principle of diffusion rather than buoyancy, so it is necessary to wait a suitable period of time before attempting to locate the leak to allow the tracer gas to make its way to the surface of the ground. If you suspect the leak is not large, it may be necessary to fill your item and wait several hours before testing.
- Unlike other leak location tools, the sensitivity of the XRS9012 is not compromised by humidity. Additionally, the XRS9012 is highly gas specific so the presence of other gasses will not affect the sensor.

METHODOLOGY

1. Verify the location of the underground item.
2. Isolate the underground item into the smallest possible sections for speed and accuracy of testing.
3. If necessary, using compressed air, purge the underground pipe, cable or tank that you want to test.
4. Connect your bottle of forming gas to the underground item with an appropriate manifold and fill it to a low pressure, being careful to never exceed the design pressure of the system.
5. Wait a suitable amount of time for the tracer gas to escape the leak, diffuse through the ground and be detectable. No holes need to be drilled through asphalt or concrete to locate leaks that might be buried, beneath. The porosity of paving materials, and cracks that may exist, combined with the extremely small size of a hydrogen molecule, make it possible to detect leaks through these materials.
6. Using the XRS9012, systematically scan the testing area using the response of the LEDs to determine how close you are to the leak.
7. Continue to test various locations around the spot where you first obtained a signal, to home in on the actual leak location. If the signal maxes out with all LEDs, reduce the sensitivity of the unit and continue to test to determine the best place to dig.