



Industry-Leading Test Solutions

Market Application Case Study:

ENGINE FINAL ASSEMBLY LEAK LOCATING

Market driver:

Manufacturers use Leak Location Systems to isolate exterior leaks when standard Engine Assembly tests detect unacceptable pressure loss in the systems. Leak locating systems should be easy to operate, locate the leak quickly, and provide a relatively low cost method to pinpoint external sealing problem and/or identify a defective component.

Test requirements:

When an engine fails the leak test customers need a system to identify gross external leaks with accuracy and simplicity. The system must be non-contaminating and provide flexibility to detect small, medium, and large leaks. The leak locating system should be portable, self-contained, and packaged allowing the system to be positioned close to the Engine Assembly test location and its overall physical size is important.

CTS solution:

The CTS TracerMate CS Leak Location Solution is a low-cost atmospheric sampling hydrogen detection system providing a range of sensitivity (1×10^{-4} scc/sec and up) to isolate leaks in assemblies or components. This leak locating system is a perfect fit for production and repair loops to inspect failed assemblies and find missing or leaking seals and/or leaking components. The TracerMate system uses 5% Hydrogen with 95% Nitrogen mix for charge gas leak detection – a dry system that is non-contaminating and quickly identifies a leak location to allow the part to be fixed or discarded.



View of the TracerMate CS Leak Location System

The systems consist of three main components:

the benchtop TracerMate CS charge gas management and test system, the INFICON Sentrac hydrogen gas leak detector, and a vacuum pump. The controlling factor of this system is TracerMate instrument; it is essential for controlling evacuation, supplying repeatable pressurized tracer gas, and monitoring the testing sequences. The Sentrac hydrogen gas leak detector uses the calibrated hydrogen sensing probe to detect the hydrogen leak. Both the TracerMate and the Sentrac are calibrated for high sensitivity hydrogen sensing. The vacuum pump is used by TracerMate to evacuate gas in the part prior to hydrogen pressurization.

The integration of the TracerMate and Sentrac instruments utilizes a manually positioned Hand Held Probe to detect leaks. The probe monitors for hydrogen in the air around the part using an electronic hydrogen sensor calibrated to detect concentrations of hydrogen gas higher than normal background. Detected hydrogen leaks are reported by leak rate volume, audible alert, and a color status light.