

Application Report | Sensor Testing

innomatec meets and exceeds throughput goals on temperature sensor leak test station with semi-automated turnkey design

innomatec's turnkey leak test station design equipped with the LTC-902 two-channel leak tester made it possible to deliver the most accurate leak test while also boosting throughput and seamlessly communicating with the manufacturer's proprietary data traceability system.

Sensors are an important part of so many products and systems across a variety of industries, including automotive, EV, HVAC, household products, and more. These sensors, including temperature sensors, fuel sensors, pressure sensors, position sensors, airflow sensors, and more, ensure the proper and safe function of assemblies and products in the field.

innomatec was recently approached to design a leak test for two types of sensors housed within a new type of electric motor for a leading luxury automotive brand. The sensors, a **static temperature sensor** and an **oil temperature sensor**, needed to be reliably leak tested to ensure quality performance in the field. If defective sensors made it into the field, it could lead to overheating, electrical shorts, and oil spills.

Faced with higher-than-anticipated demand, the manufacturer was under pressure to meet high throughput goals. They needed a leak test system that would be fast, but also provide the most accurate leak test to ensure product quality for their customer. They also needed the new leak test system to be able to communicate with their proprietary SQL-based traceability system for quality control and record keeping. **The accuracy and flexibility of innomatec's leak test solutions and design-build expertise proved to be the perfect combination to meet their needs.**



LTC-902 Twin

Designing a flexible, semi-automated turnkey leak test system for two different part designs using innomatec's LTC-902 Twin leak tester

The manufacturer's initial request was a manually operated tabletop leak test solution. However, as they were faced with higher throughput requirements, they needed a way to make the process faster while still ensuring an accurate leak test. **innomatec innovated a solution; their system required automation and a two-channel test system to achieve their throughput goals.**

This new semi-automated system would be composed of a full test bench solution, including a fixed base frame, turntable, light screen, and a separate PLC. An operator would load and unload the parts into a fixture, with the rest of the process being automated to make a faster processing time possible.

To accommodate testing two different part designs on one machine, the test was built with exchangeable fixtures (complying with SMED guidelines of <15min) and an identification system built into the bench to ensure the correct test settings as each new batch of parts was scanned into the system.

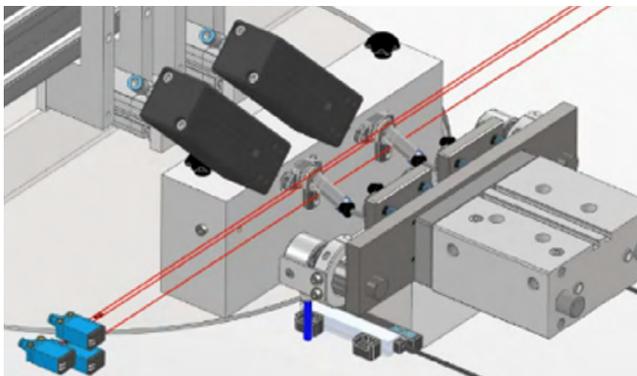
How it works:

1. To start the leak test, the operator places parts (of the same type) into the two front-facing test fixtures on a rotary table. The automated turntable then rotates 180 degrees

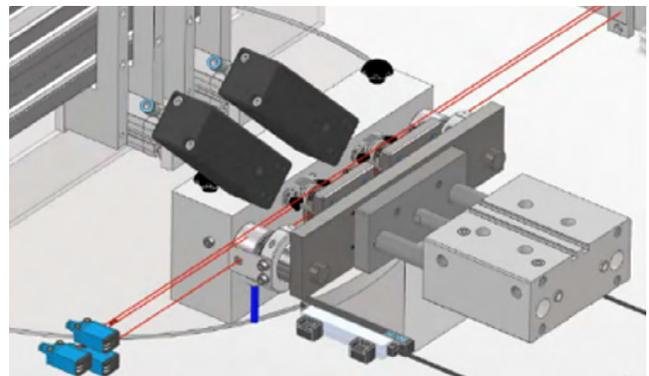
to the rear position. In this position, the fixture moves the test parts into the test enclosures, connected to the leak tester. Once the parts are placed in test position, the turntable rotates back to start so that the operator can place the next set of parts in the tray, allowing for ultimate throughput efficiency.

2. The leak test is then performed using the **LTC-902 Twin (two-channel circuit) leak tester**. First, the closed test enclosure is dosed with overpressure to locate any gross leaks (using the closed component leak test method, or dosing leak test method). If the parts pass the gross leak test, the system then automatically engages the fine leak test. Using the pressure differential method, the parts are leak tested against a reference volume with a relative pressure of 5 bar at a leak rate of 1 ml/min.
3. Once the leak test is complete, the passed/OK test parts are punched with innomatec's **innoMarker** for future reference and moved to the next process on the line by an operator. The failed/NOK parts are automatically pushed out of the test fixture into a red bin under the machine and results are automatically communicated to the manufacturer's traceability system.

Home position



Work position



A combined nest with a specific leak test dosing adaptation to the test parts, an innoMarker, and a function to automatically discard NOK parts into a reject bin.

Meeting—and exceeding—throughput goals with semi-automated leak test system

Using innomatec's semi-automated leak test system, the manufacturer is now testing parts at a rate of less than 20 seconds per part—meeting and exceeding their throughput goals!

Due to the platform's flexibility, the manufacturer could use the same machine design for different parts in the future, requiring only simple changes in fixturing. They also have the ability to easily integrate innomatec leak test computers into other machines across their line, providing the same accurate leak testing across production and a common, user-friendly UX platform for their operators.

Discover innomatec's proven, turnkey solutions for manufacturers across the globe

The accuracy and flexibility of innomatec's LTC instruments is a leading reason manufacturers across the globe continue to choose innomatec. innomatec has over 40 years' experience working with the biggest manufacturers, helping them solve leak test challenges on their manufacturing lines to ensure production efficiency and the highest product quality.

Do you need help with your leak test?

Contact the experts at innomatec!