

Your Global Leak and Function Test Solution Experts

World-Class Leak Test Solutions

BROADEST LEAK TESTING PORTFOLIO IN THE INDUSTRY



cincinnati-test.com







Cincinnati Test Systems (CTS) is a world leading designer and manufacturer of standard and custom leak test systems and leak detection equipment. We've gained loyal customers all around the world by providing engineered leak detection equipment, leak test instrumentation, and air flow devices that operate accurately and reliably.

PARTNERS IN THE TASI GROUP, PRODUCT INTEGRITY DIVISION

Cincinnati Test Systems' partnership with Sciemetric and innomatec provides our customers with the industry's most comprehensive test portfolio. Manufacturers worldwide can lever the combined products and expertise of Sciemetric, CTS and innomatic for leak test and other in-process test solutions for the manufacturing line through one cohesive sales and support team.

INDUSTRIES WE SPECIALIZE IN:



Test Solutions / Technologies

Cincinnati Test Systems (CTS) designs and manufactures the industry's most technically advanced, best-performing leak test systems, leak detection equipment, tracer gas systems, helium reclaim equipment, and related components.

From benchtop leak test devices to custom-engineered solutions, CTS has the right technology for your testing requirements.



Pressure Decay

Pressure decay is a highly effective leak test method.

Pressure decay air leak testing monitors the internal pressure of a part. The part is filled to a preset test pressure. Then pressure loss is measured over a specific time to indicate that the part is non leaking or has a leak above specification. The sensitivity of pressure decay testing depends on the total volume of the part being tested, as well as the test time and the resolution of the pressure transducer. In general, this testing method is easier to perform than many other processes for leak rates as low as 10⁻² scc/s.

Benefits of Pressure Decay Leak Testing

- Sensitive enough to detect very small leaks
- Can test in pressure or vacuum environments
- Determines a leak rate based on pressure or vacuum
- Can be calibrated to a volumetric flow
- Can report pressure or flow loss (psig or scc/min)
- Provides a simple and highly effective leak test method

Types of Pressure Decay Testing

- Traditional pressure decay
- Differential pressure decay
- Sealed device leak test
- Occlusion
- Proof test
- Burst test





Vacuum decay is a simple, highly repeatable leak test method.

Vacuum decay testing is essentially the opposite of pressure decay testing. Instead of pressurizing the part, it is evacuated and monitored for any increase in pressure caused by test media entering the part. Vacuum decay air leak testing is more sensitive and precise than pressure decay testing and is less affected by temperature changes or other environmental factors. However, the pressure difference applied to the part during test cannot be greater than 14.7 psiv.

Prime candidates for vacuum leak testing include:

- Underwater sensors or housings
- Outdoor electrical housings
- Sealed components
- Components associated with vacuum sources



CTS offers sealed device leak testing with IP rating specifications. Your business' product quality, warranty cost and overall reputation all depend on your ability to ensure your sealed components are sealed from contamination or leakage. CTS offers a highly accurate solution for leak testing your sealed components, allowing you to focus your valuable attention elsewhere.



Mass flow is ideal for testing small parts with high leak rates.

Mass flow systems measure the volumetric flow of air passing into or through a product per unit of time. During flow testing, pressure is held constant. If the flow rate is above the predetermined leak rate, a leak is present.

Flow testing is ideal when testing a small part with a high leak rate and when part to part volumes are not consistent. In these cases, flow testing increases accuracy and repeatability as compared to traditional pressure decay testing.

Flow testing is used for the leak testing, blockage (occlusion) testing and functional testing of devices.





Functional testing is critical to ensure product quality.

Functional testing is utilized to measure the performance of complex assemblies. A functional test system applies force and power to the part under test to measure its output compared to its tolerance to ensure that it performs within its specification.

CTS' expertise crosses multiple business sectors, allowing us to provide customers with test solutions designed for their specific market or application. We offer a variety of integrated technologies including:

- Equipment calibration systems
- Flow testing solutions
- Fluid and air burst test systems
- Hydrostatic leak test systems

Tools integrated in CTS functional test systems are certified for National Instruments and Sciemetric sigPOD/QualityWorx.





Tracer gas leak testing finds micro-leaks in the range of 1x10-2 to 10-9 scc/sec.

Tracer gas leak testing is a simple and highly-efficient method of leak detection that provides high sensitivity, accuracy, and repeatability. A tracer gas leak test is used to test parts with very low leak rates that are outside the range for conventional air-flow pressure decay and mass flow testing, and to replace bubble test methods.

Benefits of Tracer Gas Leak Testing

- Leak location
- Enhanced sensitivity and resolution for increased leak test accuracy
- Capability to detect micro-leaks down to 1x10-9 scc/s
- Faster test times than air-flow leak testing technology
- Non-temperature dependent test accuracy
- Significantly reduces false leak failures

The chart below shows the different sensitivities for air leak testing vs various types of tracer gas testing.

	S	Manufacturing Production Leak Rate Maximum Limits by Instrument Sensitivity							
1.E-09	1.E-08	1.E-07	1.E-06	1.E-05	1.E-04	1.E-03	1.E-02	1.E-01	1.E+00
								N	lass Flow
Conventional Vacuum and Pressure Air-Flow Leak Rate Test Systems							Differential Mass Flow		
							Pressure Decay		
						Differential Pressure Decay			
						Bubble/Dunk Test Systems			
						Accumulation Tracer System			
Trace	er Gas Le	eak				Atmospheric Sniffer System			
Rate	Measure	ement			Carrier Gas Systems				
Testi	ng Rang	es		CTS Patented Purging Clam Shell Systems					
Hard Vacuum Helium Mass Spectrometer Systems									



Types of Tracer Gas Testing

Helium Sniff Testing

Helium sniff testing not only locates the leak point, it is also highly sensitive (down to 10-5 scc/s). However, as it generally requires manual operation, it offers slower throughput than some other air leak testing methods, and its effectiveness is limited in environments where background air flow reduces the concentration of tracer gas or in areas where there is a high concentration of helium near the test site.

Helium Spray Testing

Helium spray air leak testing can accurately locate a leak and is highly sensitive (down to 10-6 scc/s). However, multiple leaks may be "masked" if they are located too close to each other, and throughput is generally low.

Helium Accumulation Testing

Helium accumulation air leak testing offers good sensitivity (down to 1x10-4 scc/s, depending on enclosure size), high reliability, and good repeatability, and is not susceptible to temperature.

Nitrogen Purge Testing

CTS' patented nitrogen purge testing instrument is a localized, sniffer-style tester with superior background control that reduces the chances of false leak failures. Our nitrogen purge testing technology can detect leaks as low as 10-6 scc/s.

Hard Vacuum Testing

Vacuum testing is extremely sensitive (down to 10-8 scc/s), highly repeatable, and provides reliable and quantifiable results. It can be fully automated and integrated into a production line for fast throughput.

Helium recovery reduces tracer gas costs.

Helium recycling systems are perfect additions for large parts and high pressure tests with high throughput production rates where large amounts of helium are used. Helium reclaim systems reduce helium tracer gas costs by recycling the helium for reuse in your plant.

Instruments

Our popular, high performance family of leak detection instrumentation includes a range of solutions that makes it easy to find the right leak test device for your unique needs.



Sentinel Blackbelt Pro

This advanced test instrument has up to 4 independent test ports that allows synchronous and asynchronous testing. It also allows for concurrent, sequential and conditional testing. It is available in a benchtop or wall mount enclosure for medical and industrial applications. It supports 21 CFR Part 11 and EU Annex 11 for storing and protecting electronic medical records. The Blackbelt Pro is ideal for leak, flow, vacuum and pressure decay test.



Sentinel Blackbelt

The Sentinel Blackbelt is designed to medical industry standards, providing up to 4 test port sequential testing, and configurable with a broad range of pressure, vacuum, and flow tests. This is available as a benchtop instrument.



Sentinel I28

The Sentinel I28 is the most advanced multi-function test instrument on the market. The I28 features a standard valve manifold design tested with over 40,000,000 cycles. The I28 is available for absolute pressure testing, mass flow testing or differential pressure testing.



Sentinel C28

The Sentinel C28 is a single test port instrument configurable to pressure decay, vacuum decay and occlusion testing. It offers fast repeatable results in a benchtop or compact wall mount package.





Sentinel MH

The Sentinel MH is an advanced, multi-function differential pressure leak test instrument designed to achieve high-resolution measurements with fast and repeatable results in a compact footprint.



Sentinel C20

The Sentinel C20 is a low cost, high performance, pressure decay leak test instrument that integrates easily into production lines for many applications.



TracerMate II

The Sentinel TracerMate II is a highly versatile trace gas instrument, able to conduct a pressure decay leak test and transition to a gas management device interfaced with a trace gas leak detection device conducting evacuation, charge, test, and exhaust.



LPC 528

The LPC 528 is a compact benchtop instrument specializing in the use of differential pressure decay technology.



Sentinel 3520

sigPOD

The Sentinel 3520 leak tester single unit tester that is multi-test configurable for pressure decay and mass flow testing. Its ability to test parts with volumes ranging from less than 1 cc to 1,000,000 cc and its ultra-fast fill capabilities make it a great solution for testing large parts.



sigPOD delivers real-time pass-fail feedback and advanced defect detection capabilities to catch quality issues fast using advanced signature analysis and process signature verification. sigPOD is integrated with the 3520 series for leak testing. Implement sigPOD for in-process testing at quality-critical assembly stations across the production line.

Custom Machines

CTS integrates the right technology into a custom manufacturing station that does exactly what you need it to.

Custom Machine Highlights:

- Single and multi-station configurations
- Progressive fixturing
- Automated part testing capability
- Semi-automated and fully automated part load
- Automated part clamping and port sealing

Here's an example of CTS custom capabilities:

- Integrated CTS leak test instruments
- Programmable Logic Control sequencer
- Industrial frame with safety interlocks
- Efficient and compact modular designs

CTS Custom Solution Speeds Productivity for Electric Drive Assembly Test

A customer needed a way to leak test their automotive electric drive assemblies. The parts were completely sealed, meaning that certain testing processes were not feasible. As a solution, CTS provided a volumetric fill/pressure decay leak tester that is designed specifically to test sealed parts.

To maximize the customer's testing throughput, CTS built a two-station, manual loading system that enables two tests to be run simultaneously. The design allows for loading/ unloading of a part in one station while the other is performing a leak test; both stations can perform tests at the same time, if needed. Part loading and unloading is quick and easy, taking just a few seconds per part. These factors combine to give the customer nearly double the productivity of a single-station tester.

Data Management

Data management tools increase productivity and advance quality.

Together CTS and Sciemetric improve your manufacturing processes through data management.

To achieve Industry 4.0, manufacturers need to make the most of their production line data, for higher first-time yields and quick problem solving when quality issues arise. This is particularly true for leak testing. Practical and integrated tools are needed to make more effective use of data and ensure this crucial quality assurance process is reliable, repeatable and quick enough to keep pace with production.

Our products make it possible to:

- Collect and store data
- Analyze and report
- Act and improve

QualityWorX CTS DataHub

This turnkey solution collects, stores and analyzes data from CTS Sentinel instruments and the Sciemetric sigPOD. Sciemetric Studio is used to analyze waveforms from leak and other tests to allow you to optimize test limits, cycle time and more.



QualityWorX and Sciemetric Studio

Go from leak test to any test with QualityWorX. Extend your quality solutions for leak test and monitor multiple processes on your production line! Unlike the DataHub that limits the number and type of connections possible, a full QualityWorX solution enables you to collect and analyze data from a broad range of processes on the production line.

CTS Connect and Leak Standards

CTS Connect

CTS is also a trusted source for a complete line of standard pneumatic and manual sealing connectors, Luer connectors, tube seals for inside diameter, outside diameter, and more. To fit your irregularly shaped seal surfaces, we can custom-manufacture specialty pneumatic and manual seals. All of our connectors and fittings are manufactured for long wear and are resistant to all types of fluids and chemicals.



Leak Standards

Cincinnati Test Systems provides certified, high performance air flow leak standards and tracer gas leak standards. Our leak standard units are precision manufactured to match your unique flow and pressure requirements. All leak standard calibration is performed in-house in our A2LA accredited and ISO 17025 certified lab. We provide an NIST-traceable calibration certificate with every leak standard.



Service and Support

TECHNICAL ASSISTANCE

CTS offers both factory and on-site instrument and test system support as well as a 24/7 service and support via our call-in center. With 24/7 access, your personnel will get advice from a technician as they learn what may have caused the problem and supply directions on how to fix it. If additional CTS support is required, our call-in center can help you schedule an on-site CTS service visit.

INSTRUMENT CALIBRATION SERVICES

CTS performs precision pressure calibration and flow calibration of every one of our leak test instruments during the manufacturing process. However, for many users, annual instrument recalibration is required to keep their quality standards up-to-date and to ensure that the parts they ship meet specification. We offer factory and on-site calibration services and all instruments are calibrated to A2LA Accuracy standards.

Other Services Offered:

- Preventative maintenance programs
- Factory and on-site CTS customer training
- Leak standard recertification
- Replacement of industrial seals







BETTER TOGETHER

CTS, innomatec, and Sciemetric are subsidiaries of the TASI Group, within TASI's Product Integrity Division. We are unified by the fact that we are "Better Together". Together, we deliver the broadest leak test portfolio in the industry. Together, we serve our customers through a global network of offices and partners. Together, we will harness the power of the Industrial Internet of Things and bring all of its potential to industrial companies worldwide.

INDUSTRIES WE SPECIALIZE IN



CINCINNATI TEST SYSTEMS

Corporate Headquarters 10100 Progress Way, Harrison, OH 45030 513.367.6699 www.cincinnati-test.com

INNOMATEC

Am Wörtzgarten 14 D-65510 ldstein / Taunus Germany +49 (0) 06126 / 95 98 66 - 800 www.innomatec.com

SCIEMETRIC

359 Terry Fox Drive, Suite 100 Ottawa, Ontario K2K 2E7 1.877.931.9200 www.sciemetric.com