

E x p e r i e n c e

I n n o v a t i o n

T e a m w o r k



**VIC
Leak
Detection®**

Are efficiency and reliability
**goals of your
manufacturing operations**

Aerospace
Air Conditioning/Heating
Appliances
Automotive
Chemical
Electronics
Food
Medical
Optoelectronics
Packaging
Pharmaceutical
Refrigeration
Semiconductor
Utilities
Vacuum



Industrial Leak Detection + Air Leak

Product performance, reliability, **total customer service**, and process application support are the cornerstones of VIC Leak Detection...

Vacuum Instrument Corporation (VIC) is the world's largest company devoted solely to the research, design, manufacture, distribution, and service of leak detectors and complete leak detection solutions. VIC's staff of engineers, system design personnel and applications specialists constitute the most experienced body of leak detection experts in the world.

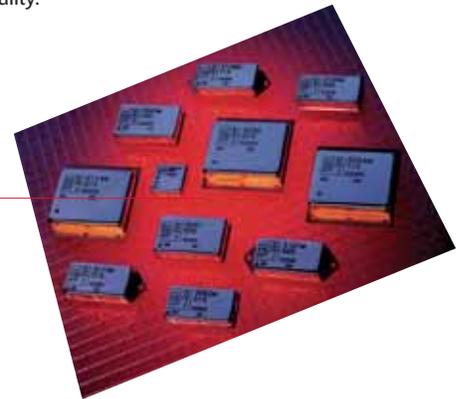
VIC Leak Detection therefore offers an unparalleled breadth of applications knowledge and gas handling experience along with the

fastest, simplest, and most sensitive leak detectors in the industry. Over one billion products have been tested with portable vacuum-type helium sniffers, general purpose helium leak detectors, mass flow and pressure decay systems, and complete turnkey leak detection solutions from three divisions that comprise VIC Leak Detection.

The Industrial Leak Detection Division offers advanced custom design leak detection solutions that are flexible, reliable, and cost-effective. The Air Leak Testing Division offers high

speed leak and flow restriction testing using mass flow, pressure decay, and differential pressure methods. VIC's Advanced Leak Metrology Division offers precision portable and console leak detectors with higher sensitivity, faster cycle times and ease-of-use.

All three divisions combine their expertise to provide extraordinarily cost-effective turnkey solutions that improve customer manufacturing yields, productivity, and product quality.



**VIC
Leak
Detection®**

Expertise

"Our engineers offer a truly unique level of application expertise because we have been developing and refining the leak detection process across all industries since 1946. In fact, VIC is the world leader in leak detection technology because leak detection is and always has been the core business of all three divisions."

—Fritz Ewing, President

Testing + Advanced Leak Metrology = Unparalleled Application Expertise for Leak Test Solutions

A whole world
of leak test
solutions



VIC Milestones

- First commercial leak detector
- First leak detector for production floor

- First portable helium leak detector

- First fully automatic industrial leak detector
- First leak detector with auto-tuning, auto-ranging, digital display
- Thermal Mass Flowmeter patented for air and other gases
- First industrial leak detector
- First in setting leak test standards traceable to NBS
- First direct reading leak detector
- First gross-area leak detector

1945

1950

1955

1960

1965

1970

1980

The highest resolution mass spectrometers are built by
VIC Leak Detection



Vacuum Instrument Corporation makes turnkey leak detection systems as well as the leak detection instrument on which those systems are based

Helium Mass Spectrometry

A Fortune 50 clientele requires cutting edge Research and Development: While VIC is refining the science of helium mass spectrometry, the company also participates with Argonne National Laboratory and University of Michigan in the development of next generation technologies such as Speed of Sound sensing technique and Photo Acoustic technology, both under the auspices of the National Center for Manufacturing Science (NCMS).

Thermal Mass Flow

Ultra Sensitive Atmospheric Sampling

Another collaboration with Brookhaven National Laboratory yielded Ultra Sensitive Atmospheric Sampling (USAS™). This revolutionary technology can test to hard vacuum leak rate specifications without any need for costly vacuum components. The patented USAS detector, developed and manufactured by VIC Leak Detection, is 10,000 times more sensitive than existing helium mass spectrometer leak detectors. It is also smaller, easier to maintain and use, and one-third the cost.

Automated Test Technologies

The new USAS design also offers an efficient gas recovery subsystem that permits the testing of about 15,000 standard components with only one pound of SF₆ gas, so that tracer gas costs are typically half that of helium. Current industrial applications for USAS include automotive, air conditioning, and refrigeration components, gas meters, fire extinguishers, and high voltage switch gear, with more to come.

Photo Acoustic Technology

Speed of Sound Sensing

While one group of VIC engineers is developing next generation leak test technologies, another team is automating the leak test systems in order

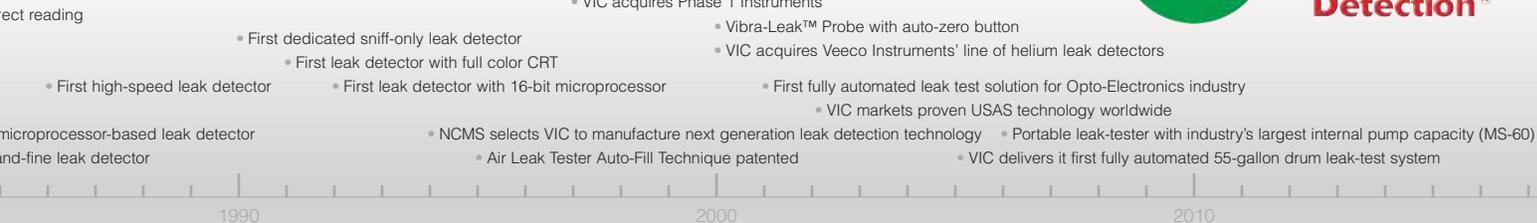
to provide more efficient and more reliable manufacturing operations for its clients. For example, VIC created the first fully automated production line leak test system for hermetically sealed devices: The OptoLeak 4000.

This is the first mass spectrometer leak test system to offer magazine-to-magazine testing of devices loaded in standard Auer® boat carriers, with complete data acquisition automatically provided by bar code scanners. For the first time, precise leak testing of mass produced semiconductor and optoelectronic devices can be achieved without operator intervention in a high-speed production environment.

VIC continues to develop and refine its industry standard leak detectors, gas handling equipment and accessories with the new high-performance MS-60™ portable helium leak detector, industrial solutions such as The Real Sniffer™ (MD-490S) with SmartCharge™ (“the genius in tracer gas backfill equipment”), test stands, and ultra-efficient industrial air leak testers such as the AT-2100 Series.

Innovation is the soul of success, and VIC Leak Detection is the world leader in its field. That means that VIC engineers can select the best existing tool—or design a new state-of-the-art tool—for current and future needs, regardless of complexity or manufacturing environment.

The right tool for the job



Innovation

“Innovation is the heart of technological leadership. VIC Leak Detection engineers design mass spectrometers. They build gas handling systems. They design and build complete state-of-the-art leak detection systems that are truly cost-effective.”

Case Studies in Teamwork

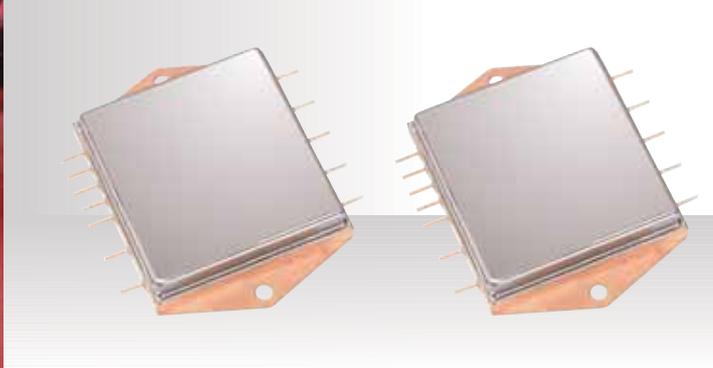
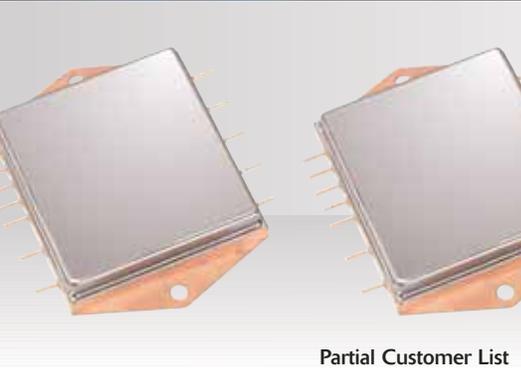
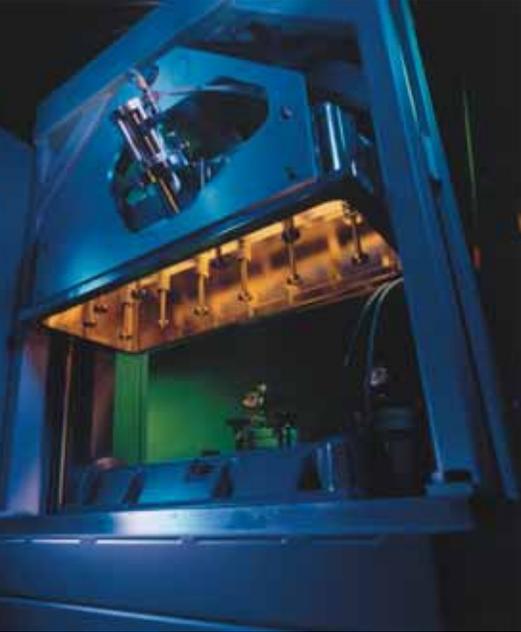
1,000,000 laser diodes per year

VIC's Advanced Leak Metrology and Industrial Leak Detection divisions combine expertise to create the first fully automated leak testing system for laser diodes...

A manufacturer of hermetically sealed tunable laser diode modules purchased the MS-50 Leak Detector from VIC's Advanced Leak Metrology (ALM) division, based on its established reliability, performance specifications, and full-screen interactive CRT to help the operator identify failures in the prototype and pilot production processes.

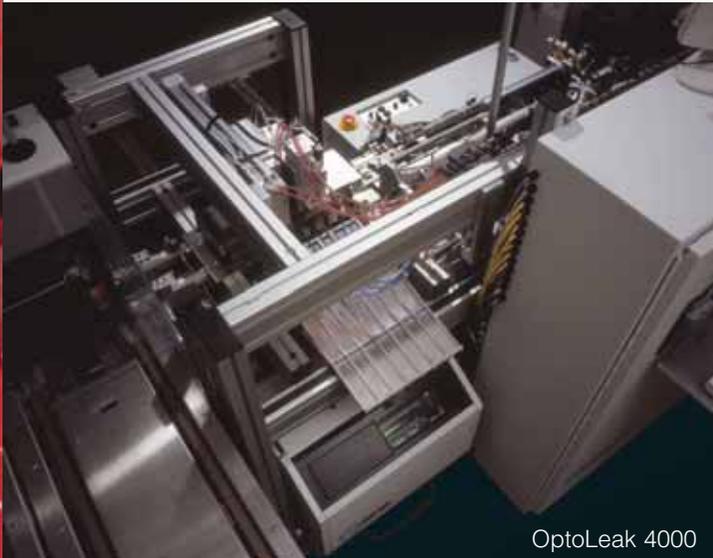
Problem—Production goals quickly grew to 1,000 lasers per week, projected to reach one million per year. A fully automated system with no operator intervention would be required to meet this production goal.

Solution—VIC's Industrial Leak Detection (ILD) division designed and built a turnkey leak test system that provided the



Partial Customer List

- Arrow International
- Bosch Rexroth
- Caterpillar
- Cummins
- Eaton
- Embraco
- Emerson Electric
- Ford Motor Company
- General Dynamics
- Getrag
- Greatbatch Technologies
- Honeywell
- Medtronic
- NASA
- Raytheon
- Siemens
- Texas Instruments
- TI Automotive
- Valeo
- Visteon



OptoLeak 4000

most efficient solution: The new OptoLeak 4000 is the first fully automatic leak detection system to offer magazine-to-magazine testing of devices in standard Auer® boat carriers. The OptoLeak 4000 employs the MS-40 leak detector for accurate testing, and bar code scanning for complete data acquisition.

Government imposes stringent new standards for fuel handling systems

VIC's Industrial Leak Detection and Air Leak Testing divisions team up to meet rising regulatory standards...

A manufacturer of automotive fuel handling systems had been using standard products from VIC's Air Leak Testing (ALT) division for years.

Problem—To satisfy stringent new regulations, a more sensitive leak detection technology must be deployed, learned, and integrated into the manufacturing process—*quickly*.

Solution—VIC's ALT division provided the new leak detector technology from ILD's existing product line of helium leak detectors. Compliance to new regulations was achieved quickly because VIC's ALT division was already familiar with both the customer's needs and the technology available from its colleagues in ILD. Manufacturing downtime was therefore minimized, and VIC's customer could continue to do business with the same reliable vendor with whom they have been working for years.

Air comes to the rescue when hoses pose a problem for helium

VIC's Air Leak Testing division creates a system to test the hoses that connect helium tested A/C components

A manufacturer of air conditioning

systems asked the ILD division to build an efficient system to leak test condensers, evaporators, and compressors in which these components are first charged with helium, then tested in a vacuum chamber.

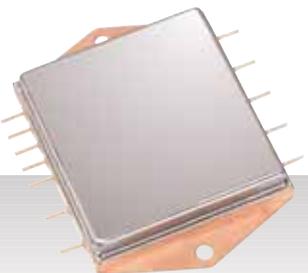
Problem—These components are interconnected with a wide variety of hose assemblies that would preclude a cost-effective helium leak testing solution.

Solution—VIC's Air Leak Testing division designed a mass flow system to leak test the hose assemblies at the desired leak rate requirement without need for a vacuum chamber. This solution provided the customer with a simple, cost-effective way to ensure product integrity for the components and the hose assemblies—all from the same reliable manufacturer.

Teamwork

"Teamwork yields cost-effective solutions.

Advanced Leak Metrology. Industrial Leak Detection. Air Leak Testing. These three divisions share their different knowledge and application expertise in order to design, build, install, and service the most efficient leak detection tools for each individual customer."



The right team for the job

VIC Leak Detection®

Worldwide Sales, Service, and Support

“Total customer service and application support are as important to manufacturing operations as product performance and reliability. VIC Leak Detection, with the world’s largest base of installed leak detectors, provides total customer support.”

- **Single source for sales, service and support:** VIC engineers design both the leak test instrument and the system in which that instrument is used, so a single service call supports every aspect of every installation
- **Unparalleled process application experience and assistance** by factory trained specialists who can help to improve their customers’ manufacturing yields, productivity, and product quality
- **Every system designed, built, and tested by our own dedicated staff** Customer training and service by factory trained specialists is available worldwide
- **Training,** custom tailored to individual needs, either in-house or on-site
- **Maintenance** contracts, and service plans customized to individual needs
- **Worldwide telephone support and quick-response service** directly from the factory for the leak test instrument, the leak test system, and the application integration
- **One call to one company** for sales, process application assistance, training, and service—total customer support



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Principal sales and service locations are listed below



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and a complete list of factory representatives