

AUTOMOTIVE FUEL COMPONENTS

APPLICATION BULLETIN #123

Mass Spectrometer Leak Test Application

Verify final gas tank assemblies with all component subassemblies

Leak test to meet new fugitive emissions standards for hydra-carbons

Protect integrity of components during test process



Car and Truck Gasoline Tanks

Application

Because of formulation changes in gasoline to meet the requirements of fuel injection engines and new emission standards, leak test standards for fuel components are becoming significantly tighter. In addition automobile manufacturers are converting materials from metal to lighter weight plastics. In order to meet these stricter emissions regulations, part assemblies must be reliably tested for smaller leaks.

Problem

The new leak specification for fuel components is 1×10^{-3} sccs and lower at a specified pressure. The testing process needs to confirm that the complete component assembly does not emit more than 1×10^{-3} sccs or lower helium level (based on the static pressure condition of a car). The leak rate specification is based on detecting a certain size hole or the allocated accumulative leak from a component.

Solution

To production test complete component assemblies reliably at these new lower leak rates requires helium mass spectrometer technology utilized within a vacuum chamber. The charge pressure will vary by component based on their typical static and operating pressure. Gasoline tanks provide a unique challenge because of the relatively low differential pressure that the assembly can withstand during the test process. The test stand must control the differential pressure to less than 1.5 psi during the entire test process including chamber pump-down, part charge and test, and chamber vent. The entire test for a gasoline tank takes from 50 to 60 seconds depending on the tank and vacuum chamber size.



Cincinnati Test Systems, Inc.

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Cincinnati Test Systems' Service Capabilities

Service is a very important business function at Cincinnati Test Systems. We believe that living up to our mission statement: "the world leader in the design and manufacture of production test systems" requires a market leadership position in service as well. Our highly qualified problem solving specialists are employed to provide unmatched service on all equipment manufactured by Cincinnati Test Systems. Each service engineer travels with their personal laptop computer for trouble shooting or tuning a test stand via interfacing with the PLC controller. Our service engineers are also equipped with instrument or system repair cases containing the most common replacement parts for quick repair of various manufacturer's mass spectrometer instruments. Their goal is to always be prepared to solve problems and get the customer back into production as quickly as possible. Backing up our service technicians is a support team of project and mechanical engineers. Each of our test stands has a complete array of backup documentation including drawings, programs, manuals, and pictures to assist in resolving any service or performance issue. It is very important to Cincinnati Test Systems that we provide all the required service to keep our customers "in production".

24 Hour Technical and Emergency Service

A Cincinnati Test System service technician can be reached 24 hours - 7 days a week for normal or emergency service.

Normal business hours 513-513-202-5108

(8:00 AM to 5:00 PM Eastern time, Monday through Friday)

A service technician will answer basic questions and provide guidance on resolving problems. All our documentation is available to research problems and find solutions. Basic spare parts for commonly used systems are available for immediate shipment.

After normal business hours 513-202-5174

(Direct cellular service phone)

Our on-call technician is prepared to answer customer service questions or determine the nature of operational problems explained by caller. He will suggest corrective actions for the maintenance or engineering personnel and remain available for follow-up calls.

If in-plant service is required, a service engineer will be contacted who can visit the customer's facility within 24 hours of the next normal business day whenever possible. Emergency service will be provided at reduced rates for customers with a service contract.

In-Plant Service

In-plant service visits can be requested to troubleshoot operation problems, perform maintenance, and/or conduct training per customer's requirements. CTS makes every effort to schedule the next available service engineer within 24 hours or within your scheduling request.

Start Up Service (On contract per customer requirements)

Start up service is quoted as an option with most pressure decay, mass flow, and mass spectrometer test systems. This service usually involves the following activities :

- Install and/or checkout initial wiring and plumbing connections
- Turn on power to equipment and assure proper operation
- Optimize test system performance within production constraints
- Perform in-plant validation or runoff if required
- Train operators, engineers, and maintenance personnel

Service Contracts

In order to assist our customers in keeping their equipment operating economically and at peak performance, we offer preventive maintenance contracts. The frequency of visits is established based on operating conditions and duty cycle. Extra non-warranty service visits are provided at the reduced contract rate.

In-House Repair Service

Our in-house service saves our customers travel time and expenses whenever it is possible to take equipment out of service and send to us. After evaluation of the problem(s), we can recommend corrective solutions. Per customer authorization, repairs can be made and equipment shipped back in minimal time.

Warranty Service

Cincinnati Test Systems' warranty covers repair time and material costs for defects in material and workmanship for one year from the time of shipment. The warranty of the purchased materials on our systems is also transferred to the owner. If warranty repairs are required, either return the system to Cincinnati Test Systems or contact our service department for a plant visit. Customers are responsible for travel time and travel expenses for instrument warranty service.

Direct Contact with Service Department

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