



Fuel & Oil Filtration Laboratory

Laboratory Capabilities

FACILITIES OVERVIEW & MISSION

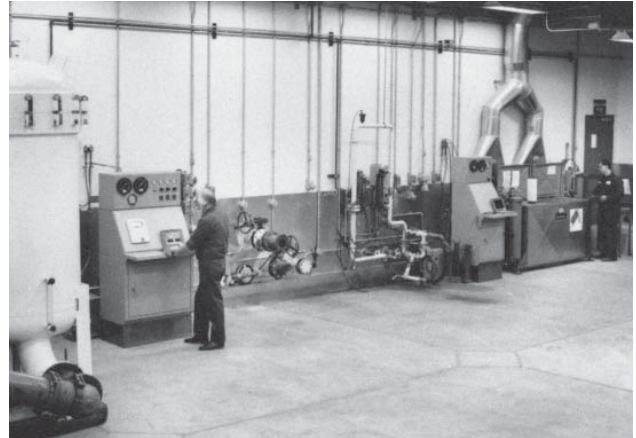
The Dinius Product Development Laboratory at Velcon Filters, Inc. is one of the company's most important assets. Numerous state of the art fuel and oil filtration products have been developed and qualified here. They include the widest range of fuel filtration products available to the aviation industry. The lab is located in a 9,000 square foot facility at our headquarters facility in Colorado Springs, Colorado and is the largest indoor jet fuel testing lab in the world.

Its missions include:

- New product development
- Qualification testing to the highly demanding requirements of civil and military aviation fuel filtration specifications
- Quality conformance testing of raw materials and finished products to support our manufacturing operations
- Analysis of customers' fluid samples to determine the best clarification method
- Testing filter cartridges returned from the field

These missions are carried out by a well qualified Technical Services team consisting of two product development engineers and the support of three test technicians. This core group is aided by other engineering and marketing functions throughout the company. Decades of cumulative experience are focused on our missions.

The testing facility consists of three main labs: jet fuel, industrial/utility, and the analytical lab.



JET FUEL FILTER LAB AND AVIATION PRODUCT TESTING

To meet the critical requirements of the aviation industry, two separate computer-instrumented test loops gauge our products' ability to remove water and dirt from jet fuel. One loop is equipped for full-scale tests up to 2,500 gpm. The other loop is suitable for single element tests up to 150 gpm. These loops are designed to comply with the latest editions of jet fuel filtration and separation specifications including:

- API/IP Publication 1581
- IP 1583 Specification for Absorbent-Type Elements
- MIL-F-8901
- MIL-M-81380 (AS) Fuel Monitor Specification
- MIL-PRF-52308J Filter Coalescer Element Specification
- MIL-PRF-32148 Filter Separator Elements Naval Shipboard

Two sets of clay filters, micronic filters, and filter/separators are used, along with a fuel storage capability of 45,000 gallons. Refrigerated heat exchangers, additive blending tanks, large pumps, and a wastewater treatment system are also present. A custom, state of the art data acquisition system is included to handle the data gathering tasks.

In addition to the test loops, a separate open coalescing tank is used for visual examination of coalescing performance, and a burst chamber for determining cartridge burst and collapse strength.



ANALYTICAL LABORATORY

The Analytical Lab houses a wide range of capabilities to support jet fuel filter testing, in-house quality control, and industrial and utility filter testing. In addition, customers' fluid samples are analyzed to determine the best filtration solution.

Key equipment includes:

- **FTIR (Fourier Transform-InfraRed) Spectrometer** analyzes both liquid and solid materials, using infrared light to determine molecular composition. (pictured at left)
- **Micro-Separometer[®]** for determining the MSEP (WSIM) of fuel per ASTM D3948
- **Tensiometer** for measuring interfacial tension (IFT) per ASTM D971
- **Analytical Balances** for measuring gravimetric contamination per ASTM 2276
- **Test Cell with Electrometer** for measuring electrical conductivity per ASTM 2624
- **Titration** for determining water content (Karl Fischer method) per ASTM D1744
- **Breakdown Voltage Tester** for measuring insulating oil dielectric strength per ASTM D877 and D1816
- **Particle Counter** to determine particle size distribution in accordance with the multi-pass filter test method, ISO 4572

Other equipment is available to conduct these additional ASTM tests: D974, D1298, D1796, D88.

INDUSTRIAL AND UTILITY PRODUCT TESTING

Velcon products are also used in a wide variety of industrial fluid clarification applications. Our industrial product development focuses on problem solving; innovating a cost effective solution to a customer's specific problem and applying it to related industries. The unique **Aquacon[®]** water absorbing filter elements evolved as a result of this approach.

In addition, a line of products is specifically targeted to clarify electrical insulating oil. The focus here is to remove sub-micron carbon particles and water to low ppm levels.

A significant portion of the Velcon test facility is dedicated to industrial and utility product development with the following equipment available on-site:

- **Burst Chamber** for determining cartridge burst and collapse strength
- **MultiPass Filter Test Stand** for precisely evaluating particle removal efficiency and contaminant capacity of industrial filters
- **Insulating Oil Filter Test Stand** to determine water and carbon removal and characteristics of cartridges used in dielectric oil clarification
- **Differential Pressure Test Stand** to study the effects of varying oil viscosities on filters



Velcon[®]

Velcon products are sold and serviced by a world-wide representative network. To order, contact Headquarters or your **LOCAL REPRESENTATIVE**:

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