



When designing a new filter system or investigating an unexpected drop in filter performance, filter users often request analyses to determine the quantity and quality of the contaminants in the fluid they filter or plan to filter. Critical Process Filtration offers customers analytical services to learn what inorganic particles, bacteria or other organic particulates are present in their fluid. We can also test various filtration solutions to determine the most efficient and effective combination for your fluid. Then you can make an informed decision about the filters to use for the most cost-effective filtration.

- Quantify the inorganic and organic particle load in your fluid**
- Characterize the particle size distribution and nature of the contaminants**
- Identify potential contaminant sources and ways to reduce contamination**
- Test the throughput for multiple filter combinations**
- Develop filtration system options that are the most cost-effective**

Analytical Methods - Overview

There are two types of tests that can be performed using the fluid you plan to filter. The first type is testing to characterize the contaminants in the fluid. That includes tests that determine the sizes and number of particles, without regard to their nature as organic or inorganic or living organisms. It also includes tests to identify what the particles actually are – such as bacteria, inorganic sediment, or even large protein molecules.

The second type of test is aimed at determining the “filterability” of the fluid, also called “throughput testing”. These tests actually pass a small sample of fluid through various filter media to determine the amount of fluid that any specific media can filter before reaching its particle holding capacity. Often multiple media are used in series to simulate possible multi-stage filtration configurations.

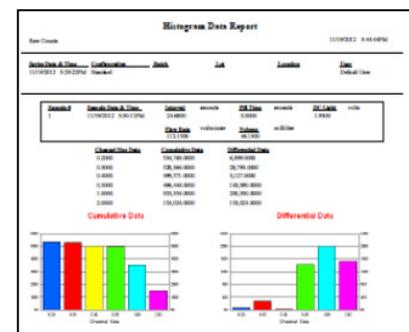
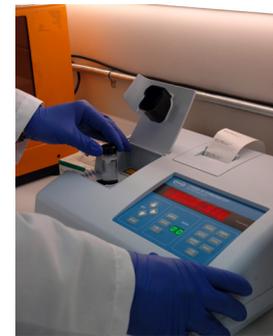
The tests are described in more detail below.

Particle Analysis

Critical Process Filtration laboratories use the latest particle size analysis tools to determine the number of particles in a fluid as well as their size distribution.

A test report is provided (see Figure 1) showing both in table and graph form the size and number of particles in various size ranges. The data will show the amount of potential contamination that filters of various ratings will have to remove. This data will show if there is a large particle load at sizes larger than the required rating of the final filter in a system, which alerts the user to the need for prefiltration to protect the final filter from premature fouling.

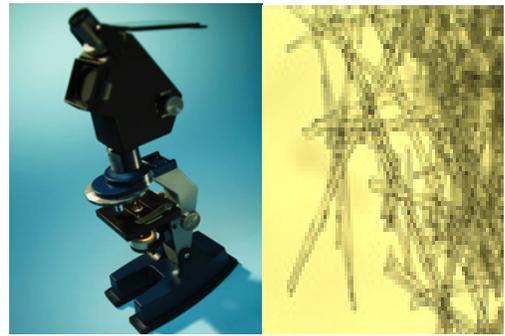
The Critical Process Filtration application support team uses this data to suggest possible filter configurations that can provide you with the most cost-effective filtration solution.



Contaminant Identification

Particle size analysis will give the user the number and size of the particles in a fluid, but will not inform them of the particle materials. This information is critical to filter performance, as well as to the quality of the final fluid product after filtration.

Our laboratory staff captures contaminants on filter discs then, using optical imaging technologies examines the contaminants for initial identification as inorganic or organic. If bacteria are present, then we use outside experts to identify the bacteria. Identifying inorganic particles or unknown organic substances can be done using advanced chemical analyses at local academic and commercial laboratories.

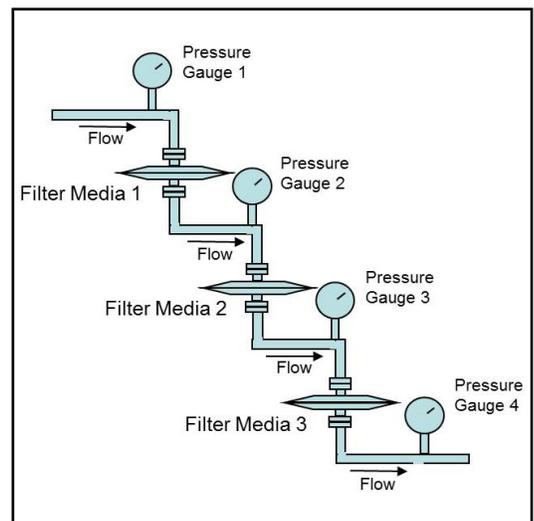


Throughput Testing

A critical goal when designing a new system is maximizing the life of the filters chosen. Of course, the nature of the fluid and the amount of contaminant to be removed have a great effect on filter life, but there is no established way to predict filter life other than doing small scale filtering tests. These tests, often called “filterability” tests, pass actual fluid through filter media to determine how much fluid can pass through before the filter media becomes clogged.

Using the results of the particle size analyses and contaminant identification processes, our filtration experts will choose the media and membrane options that are likely to last the longest and produce the fluid quality desired in the most cost-effective manner. Using a setup similar to the one shown on the right, fluid is pumped at a constant flow or pressure through the chosen media until the pressure drop across the media reaches a defined level. The amount of fluid is recorded. The filtered fluid is captured in a clean container and may be filtered again. This simulates the conditions that may be found in a single or multi-stage filter systems. Critical Process Filtration reports the results of the testing for various filter options and recommends the option that is most effective and efficient.

Possible Throughput Test System



Quality Standards

Our goal is to ensure our customers the greatest possible value for their filtration dollar. Our state of the art manufacturing facility and quality management system are certified to meet ISO 9001:2008 standards. Each operation from assembly and test to cleaning, drying, and packaging is done in appropriately rated clean rooms. A sophisticated MRP system collects and processes real time data from manufacturing centers and inspection points. This allows variable and attribute data to be quickly and easily analyzed driving constant improvements in both quality and cost.

Total Performance

Critical Process Filtration, Inc. is a vertically integrated manufacturer of filtration products for industries in which filtration is considered a critical part of the manufacturing process. We supply a complete line of products and services to help you cost effectively satisfy all your filtration requirements from a single source.

Contact our **Technical Service Department** to learn more about these and other services available from Critical Process Filtration.



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