

Fact Sheet

Baghouse Maintenance and Troubleshooting Filter Testing and Filter Test Reports

Filter tests are performed to provide practical information for making informed decisions about the maintenance of industrial filtration systems. Testing helps identify problems and can be part of a smart maintenance plan.

When to Test

Predictive maintenance: For most key process-related dust collectors, Parker Hannifin's recommended best practice is to test filters once per year. Testing could occur during a scheduled outage, or six or more weeks in advance to help with outage planning.

Problem identification: If unexpected filter failures occur, testing can provide valuable troubleshooting data.

A filter test can:

- ✓ Analyze current filter state relative to a new filter.
- ✓ Identify suspected general causes of failure and begin to outline potential specific causes, which can help identify potential solutions.

Examples

The structure of reports may vary, but here are some of the key things to look for and what they provide.

Sample Information

Basic documentation of the basics about your filter sample, including application, particulate collected, filter media and construction, temperature exposure, service life of the sample and other information

Background Details

Application	Boiler
Particulate collected	Sample
Filter media	22 oz. Fiberglass Heat Cleaned with 10% PTFE Finish with Expanded Microporous PTFE Membrane
Reported temperature exposure	300
Service life of sample	2 years
Customer reference	1234
Filter construction	Pulse Jet Bag
Objective of test	Example

What to Expect

A filter test provides a snapshot of filter condition at a point in time. Filter testing should be just one element in a thorough troubleshooting or preventive maintenance plan. A comprehensive strategy may include engineering inspections, consulting with filtration experts, evaluating different filtration solutions, and more.

A filter test cannot:

- ✗ Analyze current filter state relative to a new filter.
- ✗ Identify suspected general causes of failure and begin to outline potential specific causes, which can help identify potential solutions.

Visual Analysis

Photographs may be taken to visually record the filter media "as received." Images can help document wear, potential failure points or other information helpful for troubleshooting.



Bag #1. Circular hole along filtration side of the bag. Hole appears to have been formed from the exterior. Large chunks of contaminant adheres to the outside of the bag. Large areas of peeling membrane.

Bag #2. Hole at the top of the bag at the seam of the snapband cuff, peeling membrane.



Top interior with apparent thermal damage. Media exhibited stiffness/brittleness in this area.



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Test Data

Data from specific tests provides information about the condition of the sample being tested compared to new filter specs. Tests that help analyze filter performance and life can be particularly useful for troubleshooting and maintenance planning, as described in the following examples.

Air permeability testing results are compared to new filter media specs to evaluate airflow and differential pressure.

Mullen burst testing indicates the strength of the media (compared to new), which can help estimate expected remaining filter life.

Prepared for	Power Company	Control Number	12345678		
Test Date	01/05/2013	Tested by	J. Doe		
Customer Reference	1234				
Application	Boiler				
Filter Media Type	22 oz. Fiberglass Heat Cleaned with 10% PTFE Finish with Expanded Microporous PTFE Membrane				
Filter Type	Pulse Jet Bag				
Filter #1		Top	Middle	Bottom	Specification (New)
Air Permeability (cfm @ 125 Pa)	As Received	0.58	1.25	7.00	4-7 cfm
	% Retained	15%	31%	> 100%	
	Cleaned	1.37	2.47	5.44	
	% Retained	34%	62%	> 100%	
Mullen Burst Strength (psi)	Cleaned	600	800	> 1000	800 psi
	% Retained	34%	34%	> 100%	
Other Testing	No additional physical testing required				

Microscopic Analysis

Microscopic images can show tremendous detail, such as possible penetration of dust that may have migrated into the filter media. Comparing images with air permeability test results may assist in identifying specific problems, such as dust bleed-through, dust bypass, or high differential pressure across filter media.

Recommendations, information and sample images are intended as examples for general reference only. They are provided without any representations, warranties or guaranties of any kind whether express or implied.

Stereo Microscope



Dust penetration due to membrane cracking.

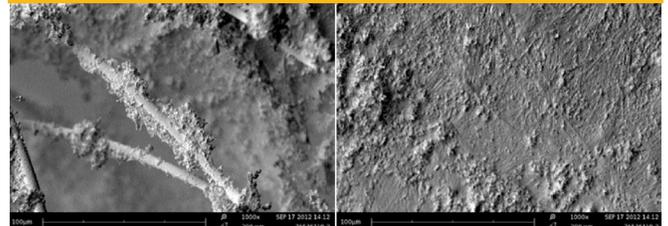


Bag 2 cross section is packed with dust.



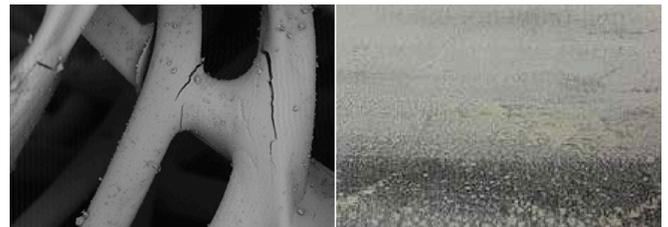
Cross section shows some dust penetration ~50% into the depth of the fabric.

Scanning Electron Microscope



Clean Side of media, 1000x. Evidence of Heavy Dust Penetration.

Dirty Side of media, 1000x. Pore structure of fine filtration layer barely visible through oily dust cake.



Fiber cracks, 1400x.

Membrane delamination at top of bag 2.

