

Cameras



Monochrome or color cameras



Particle counting FILTREX

Analysis of oil products

Controlling particle contamination in oil products, such as fuels, hydraulic fluids and lubricants, is critical for all of the system components.

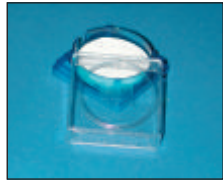
Cleaning of mechanical parts

Numerous technologies require the use of fluids and parts free from particle contamination. Component cleanliness is particularly important in the automotive and aerospace industries and for instrumentation in general.

Particle Counting by Image Analysis

Standardized tests using microfiltration membranes have been developed to control the fluids in use easily and with great precision. The membranes retain at their surface all of the particles present and are examined under a microscope, where the particles are counted and their sizes measured in order to determine the pollution class of the fluid or solvent used to clean the parts.

Sample Preparation



Millipore membranes and filter holders



I.F.T.S material

Cleaning systems using solvent or rinsing solution and high pressure.



Millipore material ®



Membrane filtration system

Applications - Systems



From 2.5 microns

Counting from 2.5 microns can only be done with a compound microscope. The microscope can be provided with an encoded objective turret for automatic calibration and both transmitted and reflected lighting. Optionally, the microscope turret and focus can be motorized and controlled by the software.

Qualification and calibration



Calibration pattern for validating the counting and sizing. Random dispersion of particles and chrome fibers laser-engraved on glass.



Certified calibration rule for calibrating the system

Technical specifications

Acquisition	Monochrome or color camera
Optics	Microscope or stereo microscope or scanner
Movement	Compound microscope, stereo/zoom microscope or scanner
Computer	Pentium PC, 1GB RAM, Windows 2000 or XP

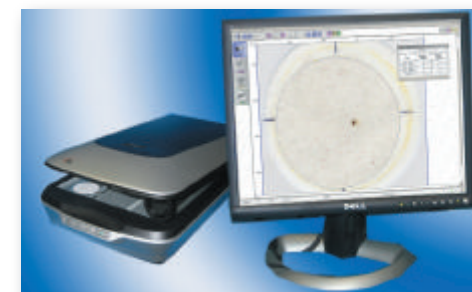
From 10 microns

The fully-motorized zoom microscope (magnification and focusing) may even be used from 5 microns. The complete analysis of a membrane using a 50 micron threshold is possible in two minutes. Two fiber optic light sources provide transmitted and reflected illumination.



From 100 microns

A scanner offers an economic solution for rapid analysis of particles 100 microns and larger. The membrane is acquired in a single pass at 1200 dpi. The software memorizes the calibration factor automatically and counting takes place in under three minutes.

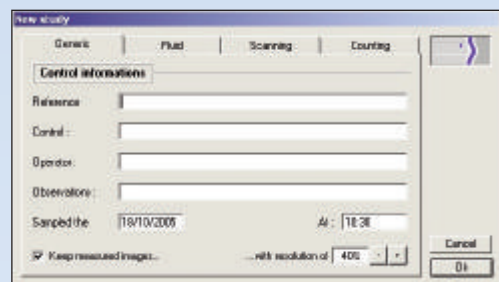


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Particle contamination control: *FILTREX*

Counting parameters

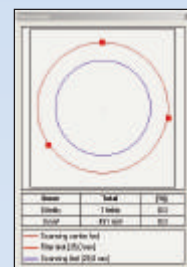
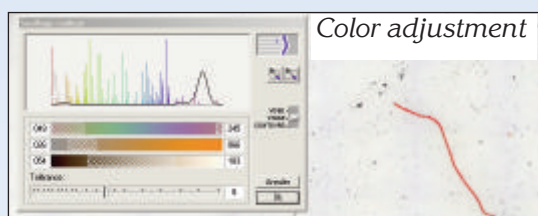
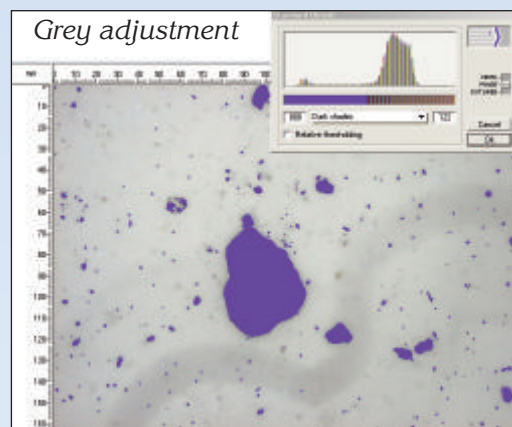


Counting parameter inputs :

- Type of counting: fluid or washing
- Choice of the standard (i.e. ISO 16232)
- Frequency of automatic focusing
- Diameter of the membrane
- Diameter of the scan area
- Classes definition, fibers ratio
- Edge effect settings

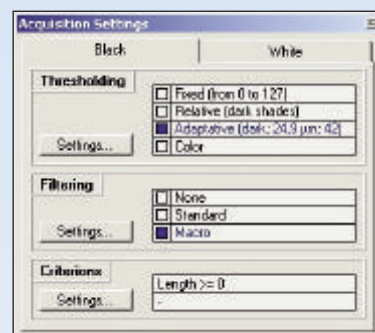
Image acquisition

The image of the membrane, obtained with a color camera connected to the lens, is digitized and displayed on the screen in real time.

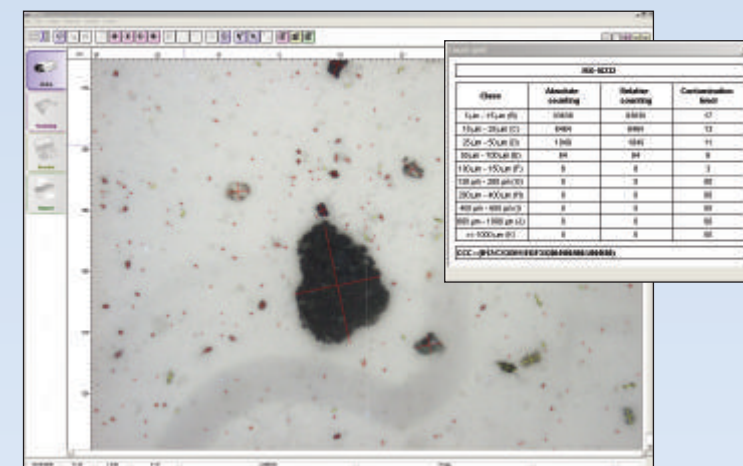


Three-point centering to circle the filtered area.

Adjustment of the detection settings for the particles and fibers

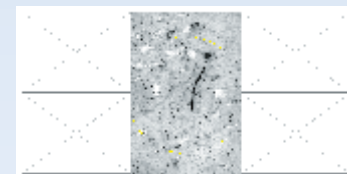


Measurements

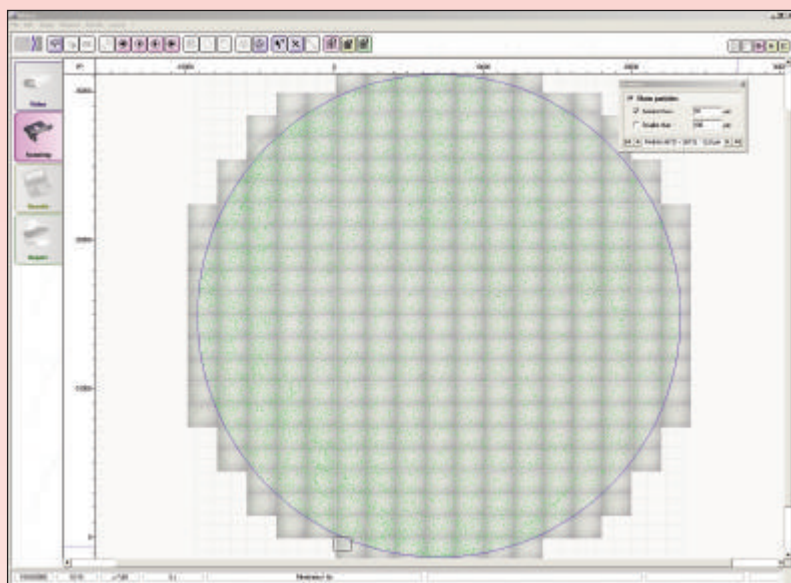


The longest length of the particles is measured

Filtrex detects and reconstructs the objects intersecting the edges of the images



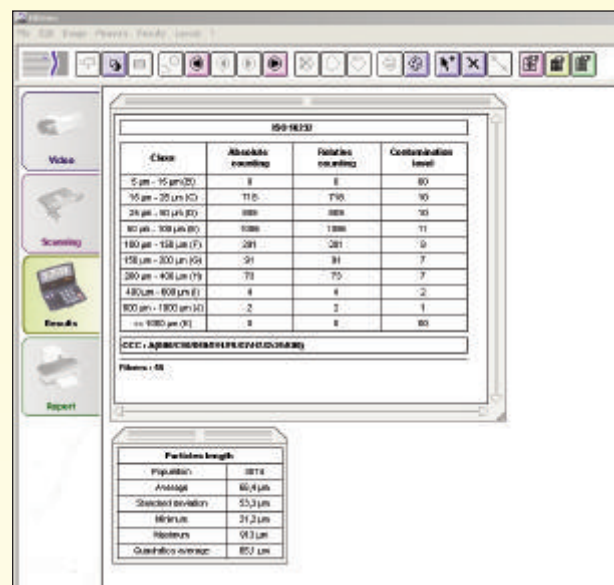
Mapping and overview



The analysis stage consists in scanning the entire membrane. The overview allows you to check and verify the counting. When you select an area, the system repositions itself on the measured field for any necessary manual corrections.

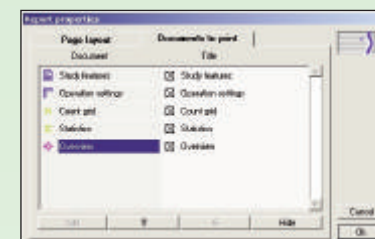
Results

The counting results are displayed in a pre-defined order. Depending on the standards, the results indicate a cleanliness index or class and a global cleanliness index.

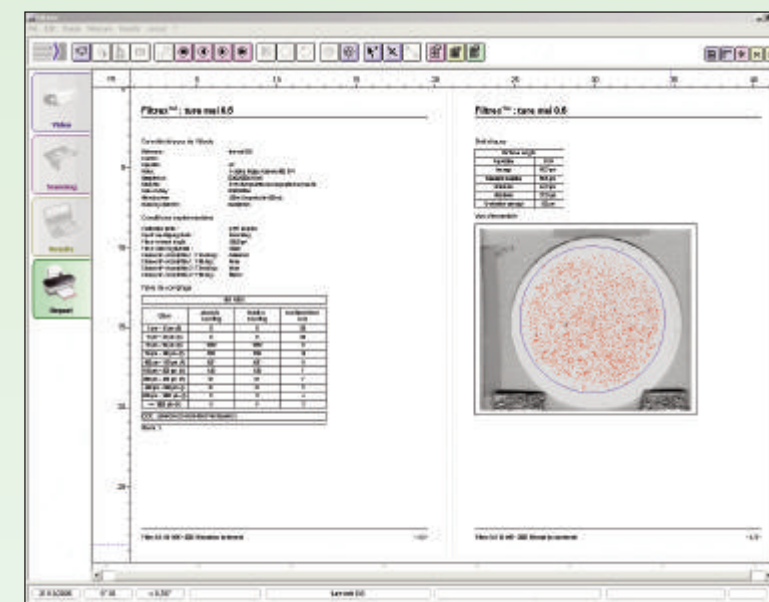


Counting table and statistics exportable to Excel.

Reports



Customized adjustment of the elements in the report with the option of being able to insert a logo.



Creation of the Study report in real time.