

# TECH TIPS

## MULTI-PASS FILTRATION TESTING

### Using Standardized Testing On Filters.

Oil, fuel and hydraulic system components are sensitive to solid particulate contaminants carried to those components by the fluid. Presence of these contaminants produces component wear, which results in loss of system efficiency, shorter component life and subsequent unreliability. The cost to repair these systems can be very high.

Liquid filters are designed to remove those particulates that may lead to system component wear. Each filter is designed to specifically protect the system for which it is intended to be used on.

International Standards Organization (ISO) Multi-Pass testing is used to identify the filters':

- Efficiency in removing solid particles of specific sizes (in microns)
- Contaminant holding capacity
- Differential pressure

A continuous flow of test contaminant entrained in the test fluid is routed through the filter until the filter reaches a specified terminal differential pressure. The specific test contaminant and fluid are per the ISO standard.

On-line particle counters are used to determine the number of solid particles of a specific size that enter and exit the filter. These particles typically range in size from 4 to 50 microns; however, new procedures are being developed to include measurements of particles down to 1.5 microns. A ratio of these particles entering/exiting the filter is then determined.

Baldwin uses several multi-pass tests including:

- ISO 4548-12 for lube filters
- ISO 19438 for fuel filters
- ISO 16889 for hydraulic filters

It is important that standardized tests are used to properly determine the performance characteristics of a filter. The Multi-Pass test helps to determine if the appropriate filter is being used. ISO testing is also used by all filter companies to make a fair comparison of different filters.

