

# TECH TIPS

## HYDRODYNAMIC TESTING

### Standardized Testing For Structural Integrity.

Liquid filters used in today's engine and hydraulic applications must remove those solid particulate contaminants from the fluid stream that may cause premature system component wear.

The filter must be designed to remove the contaminants that have been identified by the system manufacturer as harmful to the system components.

Equally as important is the structural integrity of the filter. The filter must be designed to withstand extreme system working conditions and operating environments of each specific application.

To ensure that each filter maintains structural integrity while in service, Baldwin performs a number of industry standardized laboratory tests that introduce the filter and/or its components to severe operating conditions. It's part of the design failure mode analysis.

Hydrodynamic, or Pressure Impulse testing, is one type of structural test performed. In this test, fluid is introduced to the filter under sustained cyclic internal pressure loads until filter failure (leakage). At that point, the test equipment automatically shuts down and the number of cyclic pressure loads to it took to cause filter failure is recorded. Engineering then determines pass/fail based on the specific filter application requirements.

Baldwin performs several pressure impulse tests including:

- ISO 10771-1 – Fatigue pressure testing of metal pressure-containing envelopes
- ISO 4548-5 – Test for cold start
- SAE HS806 – Oil Filter Test Procedure / Pressure Impulse Fatigue

It is critical that the filter not only removes harmful contaminants from the fluid stream, but is structurally sound to withstand extreme system working conditions and operating environments of the application.

Impulse testing 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.

