

## Advanced Leak Testing: Static and Dynamic Leak Detection Using Signature Analysis

### Highlights:

- “Dynamic” fill checks
  - Path restrictions
  - Folded tubes
  - O’ring blemish
  - O’ring cuts
  - Gross leaks
- “Static” leak checks
  - Pressure decay
  - Low leak
- Detection techniques
  - Pressure decay
  - Challenge chamber
  - Differential pressure
  - Vacuum
  - Mass flow
- Short cycle time
- Statistically “learned” curves
- Barcode traceable
- PLC & network server provisions
- InspeXion® operating system

Traditional leak test systems historically focused on the pressure decay or “static” period of the waveform which occurs after the dynamic fill cycle. While this traditional method will detect 80% of the typical leak defects, the other 20% missed leaks will represent 80% of the after sale warranty cost impacts.

Sciometric Instruments offers a superior approach for detecting both static and dynamic leak defects. In order to achieve high production rates, the fill cycle is usually accelerated by use of an accumulator device to force fill the vessel as quickly as possible. This “dynamic” period will bring out certain defects, which are not observable in the static time period. Devices such as transmission valve bodies with “narrowed” castings in the hydraulic fluid path will exhibit improper shifting techniques especially under demand situations as “passing gear” activities. Although the time to fill is the same, the curve exhibits more “Bend” (non-linearity) to achieve shut off pressure (detected by slope, 3s envelope, area under curve). Some O-rings have a blemish or cut which causes a slight “blip” in the fill curve due to the deflection under the dynamic pressure. This condition is easily detected by the use of InspeXion® mathematics on the sensor waveform making the nearly un-observable “blip” easy and stable to detect.

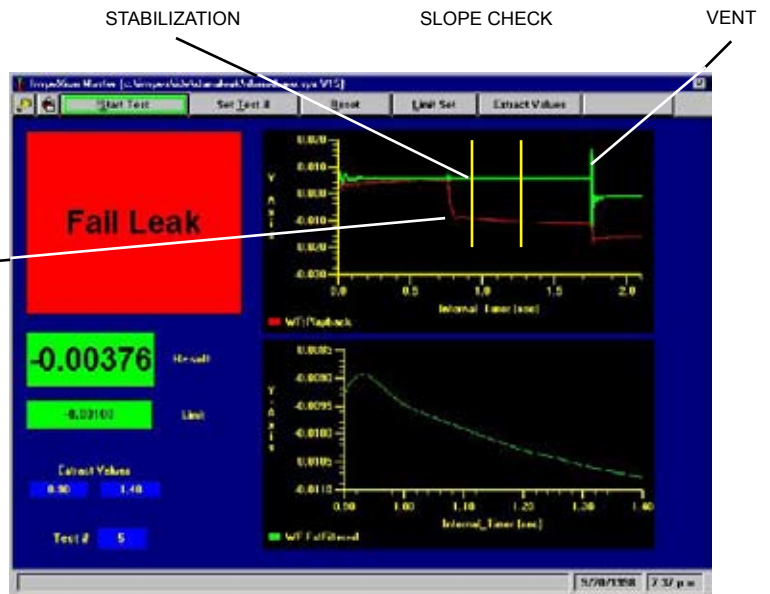
The valve control box (shown above), which includes sensor, solid state control relays, regulator, power supply etc. is designed to work with all standard Sciometric products. Please feel free to contact Sciometric directly or the nearest agent for a full in depth analysis of your production leak test requirement.



VALVE CONTROL BOX



SHAFT SEAL



InspeXion® Screen showing Signature Analysis used to Detect Leaks