

www.intertechdevelopment.com

Instrumentation

Air Test Systems

Helium Test Systems

Hydraulic Test Systems

Functional Test Systems

Integrated Assembly & Test

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Ensuring Your Fuel Filtration System Is On Par With Today's Engines

The Challenge:

Today's diesel engines and related engine parts must maintain the high-performance levels that both laws and the market require. Common rail fuel injectors, for example, operate at increasingly higher pressures, today up to 2,000-3,100 bar/ 30,000-45, 000 psi. At the same time, emissions regulations are more stringent than ever before, and if anything, will become more demanding in the coming years.

These diesel engine considerations – for smooth operation and emission controls – require clean fuel, and the highly functional fuel filter technology that ensures it. If fuel filters are not on par with engine systems, clean fuel becomes elusive. In turn, that means expensive repairs and unplanned downtime for engines, fuel injectors and fuel pumps.

Oil and fuel filter designs are continuously improving. Perfecting functional, leak and other tests to ensure both the integrity of filters, as well as optimal testing efficiencies during production, requires a deep bench of test engineering expertise steeped in the nuances of how these related parts – engines, fuel injectors, fuel pumps, and fuel and oil filters work.

The InterTech Solution:

InterTech Development Company has been the source of choice for the A-list of global diesel engine and fuel filter innovators for decades. This work has included both partnering with diesel engine and oil and fuel filter design engineers developing prototypes, as well as manufacturing engineers seeking production line efficiencies.

InterTech's patented solutions for faster mass flow testing of large volume parts – especially its LeanTest™ technology and the Ex-Heat™ innovation that replaces cumbersome filler blocks – are widely considered as the route to optimizing production line efficiencies. InterTech's expertise is also called in to play when it comes to related fuel filter parts testing such



as dimensionally gaging fuel filters with tight tolerances for parallelism and height so that filters can be properly mounted and hose connections made. Measurements for threading allow proper attachment and easy replacement of filter elements. InterTech's solutions for functionally testing valves in a wide swathe of applications are also applied for filter designs using an anti-drain back valve to prevent fluids inside the filter from

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returning to the engine (pump) when the engine is turned off.

Benefits:

- **Accuracy:** Patented InterTech Mass Flow Sensors provide more accurate test results by eliminating the inherent errors of two-step indirect measurements used in other leak test methods. Test R&R meets automotive requirements of less than 20%.
- **Productivity:** Automatic testing eliminates direct labor and increases production runs. Quick change-out tooling reduces tooling changeover time with test parameters for families of parts selected automatically.
- **Reliability:** Proven InterTech leak test instrumentation and fixture designs ensure production efficiencies. Patented bias leak technology assures fail-safe operations.
- **Superior Data Handling and Storage:** Test results are stored for future analysis and test curves are displayed for each instrument to streamline SPC and other quality control

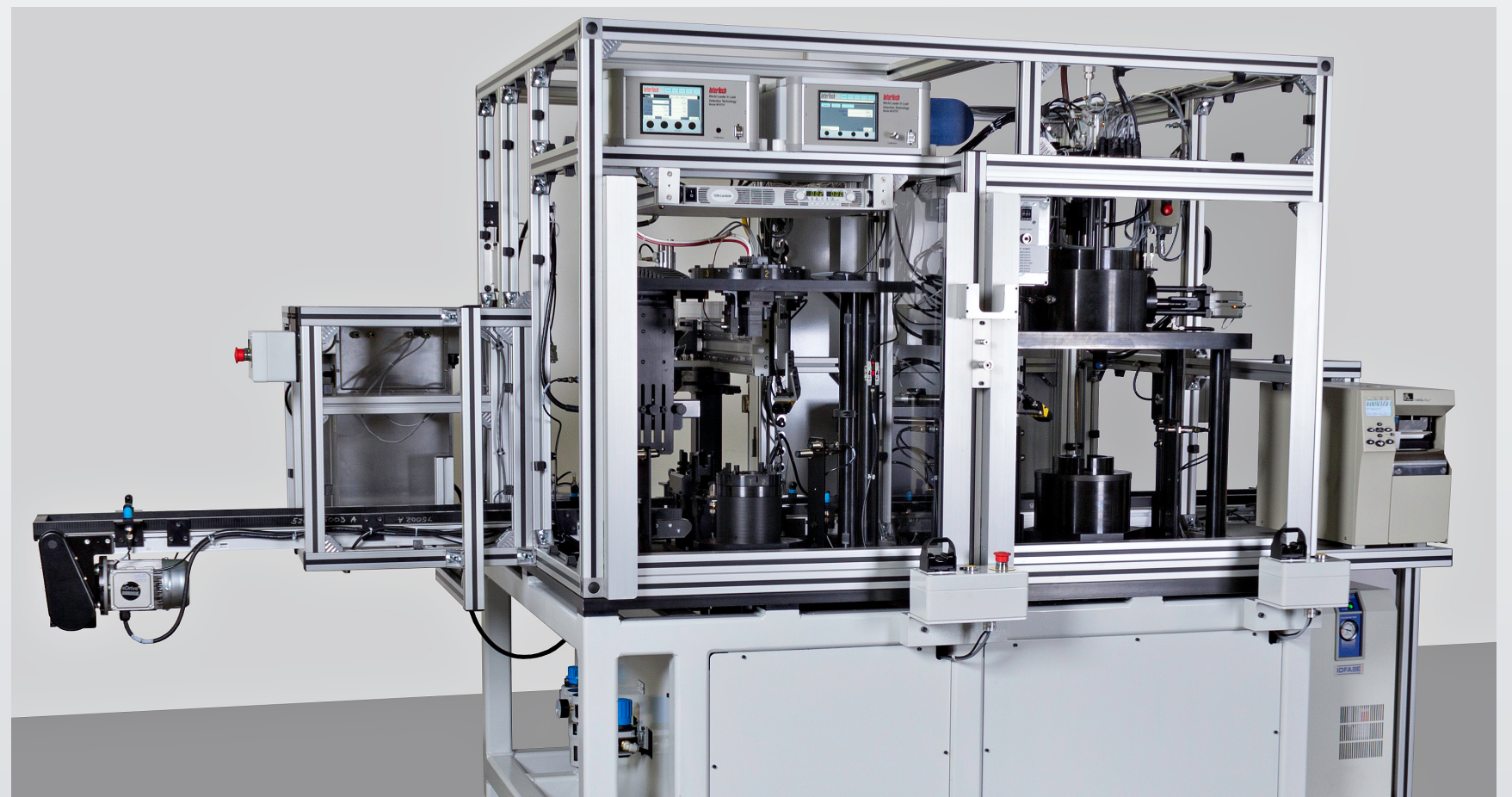
methods. InterTech's Ethernet IP compliant test systems are integrated into customer's quality control system to ensure traceability and compliance with ISO requirements.

- **User-friendly:** Automated R&R mode facilitates scheduled machine qualification and audit traceability.

Case studies:

Dual Station Fuel Filter Functional/Leak Test Cell – 90 parts per hour.

- InterTech M1075 Mass Flow Leak Detector controls the leak test cycle using patented downstream mass flow leak detection technology for fast and accurate testing of filters



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and temperature compensation within 10°C of ambient.

- 8 Filter models are leak tested to a 2.0 sccm limit at 7 bar.
- InterTech M1075 Electrical Function Tester controls the electrical tests, and heater sensor, NTC output resistance and water in fuel sensor are measured.
- Filters are automatically unloaded to accept/reject conveyors, with accepted parts marked at the unload conveyor.

In-line Filter Integrity Test Stand leak tests and gages a family of oil filters – 720 parts per hour.

Two InterTech M1075 Mass Flow Instruments control the test cycle.

- Testing of 4 filter families (29 models) includes:
 - Leak tests to a 20 sccm limit at 5 kPa (20" H2O).
 - Vacuum tested for blocked anti-priming circuit.
 - Dimensionally gaged for parallelism, height, and thread presence.

