

FIELD MEASUREMENT OF FUEL FILTER OPERATING CONDITIONS

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Protection of high-pressure common rail fuel injection components from particle damage & water are the main functions of diesel fuel filters. Previous published studies discussed the general lack of relationship between laboratory testing performed under simulated vehicle conditions vs. typical lab testing to ISO & SAE standards. Current industry standards typically used for fuel filter testing (SAE J1985, ISO16889) do not subject test filters to simulated vehicle & operational conditions. Development of new standards such as ISO19612 WD, is underway to address the need to evaluate filter performance under test conditions more closely representing on-vehicle operation.

To quantify the conditions fuel filters must operate under when in actual service, Donaldson Company Inc. selected a range of on & off-road vehicles with different engine & powertrain configurations for evaluation. Fuel filter accelerations and filter element flow were measured along with CANBus data, GPS and web cams to establish relationships between vehicle operation & fuel filter conditions.

This presentation reviews & summarizes the field test results obtained. Formation of vibration & variable flow profiles for use in field representative lab testing are discussed.