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Technical Topic

DW-10 Injector Coking Test

The DW-10 Test was developed to evaluate the detergent effectiveness of both Clean-Up and Keep Clean in the multi-event injectors installed in High Pressure Common Rail [HPCR] engines.

Today's injectors pulse six times per combustion cycle and operate under the extreme pressure of 30,000 PSI as well as high temperatures using ULSD. The untreated, or base-line testing, revealed the tendency to produce external carbon deposits and Internal Diesel Injector Deposits [IDID's] that form sticky deposits on the internal fuel metering valve. The IDID's cause the fuel metering valve to stick open/closed or to open and close slowly. The formation of both the external and internal deposits result in power loss, increased smoke and emissions, reduced fuel economy, and increased soot loading of the DPF.

The DW-10 test requires repeat cycles followed by a hot soak between cycles. The total test time is 60 hours followed by injector removal for flow testing.

The standard detergent packages available ineffectively remove these deposits so new detergent technology has emerged to compensate for this deficiency. These detergents are tested to determine the specific treat rate to Clean-Up and then dosage drops down to a Keep Clean treat level.

These detergent packages are very robust and need to be used all year. Continuous treatment:

- *Improves fuel economy*
- *Improves engine performance*
- *Reduces maintenance costs*
- *Reduces forced regen and passive regeneration*
- *Reduces emissions*
- *Maximizes engine life*