



Technical Topic

Optimizing Your Drain Intervals for Gas Engines

The natural gas industry embraces ideas that increase efficiency and reduce costs in today's competitive environment. The Equipment Builders/Original Equipment Manufacturers (OEM) look for ways to optimize your oil drain interval without compromising equipment and/or component life. A few of the methods used are: increasing sump capacities, adding "spinner" filters, and improving engine controls through advancement in micro-processors. Another way to optimize your resources is through lubricant technology.

A History of Gas Engine Oil Performance

We have been a leader in the development of advanced Gas Engine Oils (GEOs) for decades. The recent introduction of Mobil Pegasus 1005 is the latest advancement in high performance gas engine technology, which enables increased oil drain intervals. Mobil Pegasus 1005 is formulated with highly refined base-stocks and with customized additive technology that results in fewer deposits, improved oxidation and nitration stability. Compared to standard GEO technology, Mobil Pegasus 1005 has optimized oil drain intervals in a field test engine in a gas compression application. This product can achieve lower costs through less oil consumption and higher equipment reliability.

Achieving Optimized Drain Intervals

One way to optimize gas engine owner resources is to extend the drain interval of the lubricant. These extended drains can result in lower costs through reduced lubricant consumption, reduced labor hours, reduced disposal costs and increased production revenue. The optimum drain interval will depend on operating conditions, hours on the engine, fuel and maintenance philosophy.

To achieve the extended drain interval

Measure the base line:

- Collect engine operating data
- Collect past Used Oil Analysis (UOA) results
- Collect maintenance history (service and inspection reports)

Identify a few engines to test the potential for extended drains:

- Representative of your fleet operating conditions

Conduct "side by side" comparison of extended life oil versus current oil:

- Compare used oil analysis results



- Validate engine conditions are acceptable through borescopic inspections.

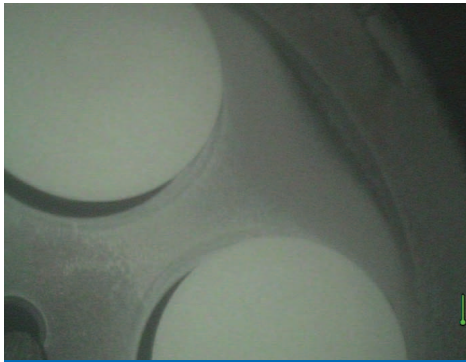
A successful extended oil drain interval will reduce operating costs and increase engine reliability.

Guidance for Engine Inspections during extended oil drain testing

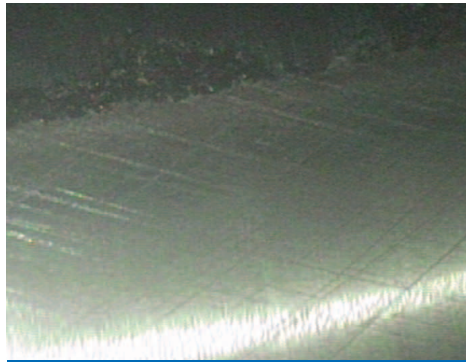
Routine inspections that document the condition of the engine should be part of your maintenance program. The photographs below provide feedback on your optimum drain interval for your engines. For successful engine inspections:

- Review Used Oil Analysis
- Borescope engine components (typically around 6 months)
- Check oil filters for abnormal deposits during scheduled filter changes
- Check crankcase for cleanliness during scheduled oil drains
- Check valve decks during scheduled adjustment of valves
- Optional step - during the engine overhaul, inspect the components to validate drain interval and your proactive maintenance program

Examples of Engine Inspections Photos



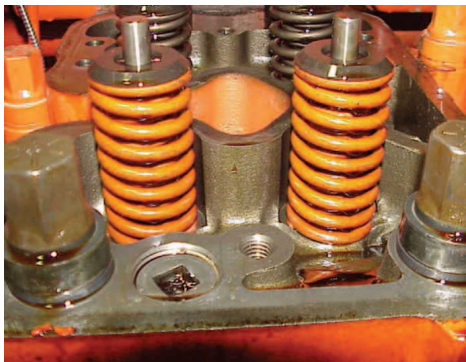
Power Valves - Proper Amount of Sulfated Ash (Borescope)



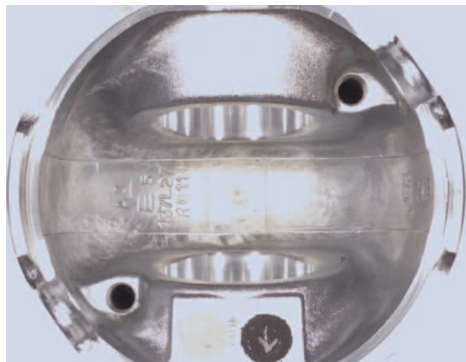
Upper Liner Cross-Hatch - Excellent Condition (Borescope)



Valve Face - Excellent Condition (Borescope)



Valve Deck - Clean



Piston Under-Crown - Clean



Piston - Clean

Pegasus 1005 for Natural Gas Compression

Laboratory test engine* data has resulted in more than double the projected drain interval. Compared to current GEO technology, the results showed:

- Reduced viscosity increase over the test period
- Reduced levels of oxidation over the test period
- Reduced levels of nitration over the test period

Field test engine** data in field gathering service has shown:

- 150% less nitration in the used oil analysis data over the test period
- 60% less oxidation in the used oil analysis data over the test period

- 10% less viscosity increase in the used oil analysis data over the test period

(Note: Test data was developed in the same engine under the same operating conditions.)

For further information on Mobil Pegasus 1005 and the Mobil Signum Used Oil Analysis program, contact us at www.mobilindustrial.com or call us at 1-800-MOBIL-25.

* ExxonMobil proprietary Caterpillar natural gas engine.

** Caterpillar G3516 natural gas engine

www.mobilindustrial.com