DOT.FAST® Service

Optimize the efficiency of your engines with fast, accurate drip oil analysis
Why should your fleet use Drip Oil Analysis?

“Continuous monitoring of drain oil samples is a good way to optimize the cylinder oil feed rate and consumption and to safeguard the engine against excessive wear. The fastest way to evaluate the corrosive behavior of an engine and optimize the feed rate is to do a stress test, a so-called sweep test. It can also be used in the ACC familiarization period to find the suitable lube oil feed rate for your particular engine, operating pattern and lube oil used.”

— MAN Diesel A/S

“Measuring the total iron content of piston underside drain oil with Chevron’s DOT.FAST® Service provides very valuable feedback of the piston running conditions in each cylinder, and allows operators to optimize cylinder oil feed rates for a specific set of operating conditions.”

— Wärtsilä Switzerland
DOT.FAST® Service

Modifications in the design of marine slow speed engines of the latest generation and new modes of operation such as slow streaming have led to more corrosion sensitive combustion conditions. On top of that the variety of fuels of different quality and sulfur levels (distillate, Low and High Sulfur Residual Fuel, LNG) makes it even more complex.

For this it is now more important than ever to better understand and balance conditions in your engine.

Drip oil analysis can give you the answers and is recommended by all major slow speed 2-stroke engine OEMs (MAN Diesel and Turbo, Wärtsilä). Analysis of unburned cylinder oil which has passed through the combustion chamber and past the pistons and liners in the main engine is an effective way to monitor engine wear.

“It is MAN’s experience that, in addition to regular scavenge port inspections, drip oil analysis can be a very useful tool to monitor combustion and cylinder conditions.

“Drip oil analysis can detect changes in cylinder liner wear and help with cylinder oil feed rate optimization programs.

“Chevron’s DOT.FAST Service makes it possible to monitor, both onboard and onshore, the total amount of adhesive, abrasive and corrosive wear.”

— MAN Diesel A/S
The DOT.FAST® Service provides your fleet with both onboard and onshore analysis of drip oil, and measures total iron wear including corrosive wear.

Everything you will need for a full year is supplied with your first order, and the service can be extended for subsequent years as required.

Onboard Analysis

The benefits you may receive from onboard analysis include:

- Reliable onboard wear measurement with laboratory accuracy
- Immediate feedback on cylinder running conditions
- Optimized cylinder lubrication at different engine operating modes
- Early indication of elevated engine wear, both abrasive and corrosive
- Minimized build-up of abrasive deposits and engine fouling
- Reduced risk of scuffing
- Minimized cylinder oil consumption by optimizing cylinder oil feed rate
- Easy compliance with engine builders’ recommendations
- Better engine protection while fuels of varying quality are in use
- Increased time between overhauls
- Predictive maintenance and less downtime, i.e., Condition Based Monitoring (CBM)
- Monitoring of running-in of new units
- A valuable complement to regular engine inspections
- Optimized operations

Onshore Analysis

The additional benefits of onshore analysis may include:

- Testing of drip oil samples via highest industry standards in a quality certified laboratory
- Comprehensive reporting with to-the-point commenting considering the full picture
- Recommended for onboard Sweep Testing
- Monitoring effectiveness of fuel purification through measurement of CAT Fines
- Identifying excessive system oil leakage (for example, through stuffing box glands)
- Monitoring of piston ring groove wear
- Indication of blow-by

Recommended sampling frequency for Onboard Drip Oil Analysis (or each time the vessel switches to a new batch of HFO):

- 250 hours

Recommended sampling frequency for Onshore Drip Oil Analysis:

- 1,000 hours
The DOT.FAST® Service was evaluated in cooperation with operators and equipment builders in the marine and power generation industries. In field tests onboard Wallenius Marine’s M/V Undine and Suisse Atlantique’s M/V Général Guisan, lubrication engineers and crew members found the DOT.FAST Drip Oil Analyzer to be both effective and easy to operate.

Field experience

Chevron’s laboratory provides complete analysis of your samples with review and comments by technical experts.
The Sulphur/Base Balance

High sulphur fuel oil burns to produce oxides of sulphur (SOx) during combustion. In the presence of water, these SOx form sulphuric acid which causes corrosion in the engine; different levels of sulphur in the fuel oil contribute to varying levels of acidity. One task for the cylinder oil is to protect the engine from acidic corrosion. This is achieved by the alkalinity of the cylinder oil, defined by its base number (BN) and its feed rate. Too much alkalinity however, will result in the formation of excessive abrasive deposits on the piston crown top lands, ultimately leading to increased liner wear and scuffing.

It is important to maintain the correct sulphur/base balance. This balance can be achieved by changing to a cylinder oil with an appropriate BN, by adjusting the cylinder oil feed rate or a combination of the two. Chevron Marine Lubricants offers cylinder oils with a very wide BN range, going from 25BN to 100BN (Taro Special HT LF, Taro Special HT LS 40, Taro Special HT 55, Taro Special HT 70 and Taro Special HT 100).

The total iron content measured by DOT.FAST® indicates the total corrosive and abrasive wear taking place in the engine, enabling you to make any necessary adjustments.

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DOT.FAST Onboard Drip Oil Analysis provides accurate measurement of total iron wear including corrosive wear

Iron Content as Function of BN

This graph is based on real time data and will vary from engine to engine.
Onboard Analysis

The DOT.FAST® Drip Oil Analyzer is unique and innovative in the industry and delivers onboard test results with laboratory accuracy. The DOT.FAST Drip Oil Analyzer comes with everything you need to prepare and test samples, including a custom-designed DispoRack and software to record, process and interpret results.

Using the Drip Oil Analyzer once every two weeks ensures effective management of your engine’s lubrication. It can also be beneficial to do onboard drip oil analysis after changing to a new batch of fuel oil or to monitor the running-in process of new overhauled units.

Onshore Analysis

Samples sent to Chevron’s laboratory are fully analyzed (base number, iron and all other elements). The results are tabulated and reviewed by technical experts. Recommendations are reported back to the ship. Historical data is maintained and can be accessed via a password-protected Internet site.

Subscribers to the DOT.FAST Service may send a full set of samples for analysis once every two months.

Always confirm that the product selected is consistent with the original equipment manufacturer’s recommendation for the equipment operating conditions and customer’s maintenance practices.

Extensive testing has shown that the DOT.FAST Drip Oil Analyzer provides unbiased results compared with ICP-AES used in a laboratory setting.

Correlation Between Onboard and Onshore Analysis
Always confirm that the product selected is consistent with the original equipment manufacturer’s recommendation for the equipment operating conditions and customer's maintenance practices.

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