



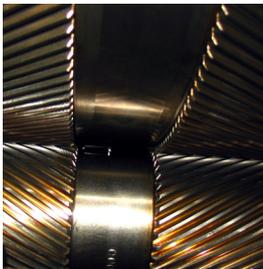
# Our Comm

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monitoring innovation

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## Now simple on-site oil condition monitoring

Testing your oil for wear debris places you in complete control, enabling you to identify wear trends as early as possible. Realize the predictive maintenance practices, avoid failures, decrease downtime and insure productivity and profit.



Almost all equipment gives early warning prior to functional failure—such as changes in lubricant wear debris, temperature and vibration. Condition based maintenance (CBM) may timely tackle this engineering challenge.

The chief concern is the ongoing rate of wear generation, i.e. the Rate-of-Change (ROC). The engineer can make decisions based on ROC alarms, about the lubricant's long term surface protection characteristics.

The ANALEXfdMplus is a highly accurate instrument designed to measure the level of ferrous wear debris in an oil or grease sample. Reporting in parts per million, the unit can be used to measure ferrous wear debris in many sample vessels from a variety of machinery types.

Results are provided in a sophisticated reporting, in a tabular display and graphical trending by equipment number. Alarms can be set and results downloaded on a PC.



The equipment is small and fully portable, with a robust construction to ensure high reliability in harsh environments.

Kittiwake Prod# FG-K17144-KW

## Lower ECA sulphur limit causing fuel quality changes

November 5, 2010

A global trend for a link between low sulphur fuel oil (LSFO) and a rise in the levels of the bunker fuel contaminant aluminum and silicon (Al+Si) has been exacerbated by the lowering of emission control area (ECA) limits, according to DNV Petroleum Services (DNVPS).

"We had suspected that there would be an increase in cat fines in low sulphur fuel oil (LSFO) when the ECA limit fell from 1.50% to 1.00%," Gunnar Kjeldsen, DNVPS Regional Manager, Middle East & Africa, told Bunkerworld.

Kjeldsen has been monitoring DNVPS data on concentrations of Al+Si, a highly abrasive contaminant also known as catalyst fines or cat fines, in LSFO in 2010 to determine the impact of regulatory changes.

The company has previously noted a clear correspondence between a growth in sales of LSFO and increasing concentrations cat fines. The global Al+Si average for all heavy fuel oil samples tested by DNVPS in 2009 was 26 mg/kg, up from 19 mg/kg in 2005 and 17 mg/kg in 2001.

It is thought the increase in cat fines stems from the blending materials, or cutter stocks, used to reduce the overall fuel sulphur content to meet regulatory limits. Blending of LSFO has also been associated with other quality issues, such as an increase in unstable fuels and reduced ignition and combustion quality.

According to Kjeldsen, the lowering of the ECA sulphur limit to 1.00% on July 1 this year has had tangible impact on the global average, and a substantial impact on cat fine levels in some of the biggest bunkering ports.

Looking at global trends for LSFO in the 251 to 400 centistokes (cSt) viscosity range up to October 2010, the average Al+Si levels for fuels with average sulphur at 1.01% to 1.50% was 30 mg/kg, according to DNVPS data. The corresponding figure for LSFO with 1.00% sulphur or less was higher at 33 mg/kg.

When breaking the data into the period January-July and July-October, however, the 1.00% or less sulphur product saw a rise in global Al+Si of 3 mg/kg to 34 mg/kg. Conversely, cat fine levels in fuels with 1.01% to 1.50% sulphur content actually fell from 30 mg/kg in the January-July period of 2010 to 26 mg/kg between July 1 and October 1.

Kjeldsen agreed that the global average changes in cat fine concentrations were not that dramatic, which he said was partly due to fuels in some parts of the world, such as South America, remaining relatively unchanged as they did not require additional blending to meet the lower sulphur limit.

There have also been a couple of large ports, notably Algeciras and Gibraltar, where cat fines concentrations have actually fallen since July 1, even as sulphur content fell.

The Al+Si average in Algeciras dropped to 33 mg/kg after July 1 for samples with 1.00% sulphur or less, compared to 46 mg/kg in the January to July period for fuels with sulphur content in the 1.01 to 1.50% range. The corresponding Al+Si figures for Gibraltar dropped from 38 mg/kg prior to July 1 to 35 mg/kg after July 1.

Kjeldsen said the improvement in cat fines in these two ports, combined with changes in the density of the LSFO, could point to a product coming from a change in the feedstock at the local refinery to crude oil with lower sulphur content.

Data from the world's two biggest bunker fuel markets, however, showed marked increases in cat fines after July 1.

The Amsterdam-Rotterdam-Antwerp region and Singapore both have a large number of suppliers and are more likely to blend fuels from a larger number of blend materials.

Comparative cat fine levels in the 2010 periods before and after July 1 showed an increase in Singapore's average LSFO Al+Si from 43 to 55 mg/kg.

In the ARA, Amsterdam Al+Si averages in LSFO jumped from 40 to 51 mg/kg, Rotterdam saw an increase from 39 to 48 mg/kg on average, and Antwerp's LSFO average values for Al+Si rose from 33 to 41 mg/kg.

Kjeldsen highlighted one port with a very good record for low cat fines in the LSFO, probably because the product was typically straight run fuel oil from Russian refineries.

St. Petersburg LSFO averaged less than 15 mg/kg Al+Si prior to July 1, and has seen no change after July 1, according to DNVPS data. There has, however, been a drop in the average viscosity from 318 cSt when the sulphur limit was 1.50% to 280 cSt after the limit dropped to 1.00%, he noted.

Kjeldsen also pointed out that at less than 15 mg/kg, these fuels would meet the recommendation of engine manufacturers for Al+Si levels in the fuel at the engine inlet.

Most fuel oils require pre-treatment to reach a safe operational level of cat fines. The latest revision of the ISO 8217 marine fuel specification, ISO 8217:2010, has reduced the maximum Al+Si limit in the most common residual fuel bunkers to 60 mg/kg, down from 80 mg/kg in ISO 8217:2005.

In an interview with Bunkerworld earlier this year, DNVPS managing director Tore Morten Wetterhus said the limit had been lowered in recognition that fuel treatment systems were less efficient at removing cat fines than previously assumed. ☞

