

LEGISLATIVE UPDATE



On 31 January 2007, the European Commission (EC) published the Directive on the Quality of Transportation Fuels, COM(2007)0018, amending the 1998 directive that sets common EU specifications for petrol, diesel and gasoil used in a variety of vehicles and non-road mobile machinery (NRMM). These new standards for transport fuels will reduce their contribution to climate change and air pollution, including greater use of biofuels.

The proposal sets a schedule for mandatory introduction of ultra-low sulphur diesel (ULSD, 10ppm S) for non-road mobile machinery, prior to the Stage IIIB introduction date of 1 January 2011. This decision has been intensively lobbied by the engine and equipment industries. Euromot, with its partner associations EMA, CECE and CEMA, has used the consultation process to explain to the Environment Directorate the extremely serious technical implications and cost aspects of any delayed ULSD schedule in Europe.

Exhaust gas recirculation is one of the specific issues – the present 1,000ppm sulphur level of non-road fuel is not suitable for safe EGR operation. Anything above 350-500ppm will cause condensation problems with sulphuric acid in EGR coolers and intake manifolds and hence excessive corrosion and engine wear.

Passive regeneration mode of PM filters and continuous regenerating trap systems also need to be considered – 10ppm S fuel will allow many pieces of equipment to operate for extended periods with passive regeneration. Avoiding active regeneration will greatly reduce systems costs and also enable reduced fuel consumption. Based on a joint Euromot-EMA study, approximately 50% of all NRMM applications will use passive regeneration modes.

What will the lifetime and durability of the catalytic components in PM filters be? Lower sulphur content is directly correlated with less sulphur poisoning of the catalytic active sites. This will result in

for the global market. A big time difference between the EU and the USA in introducing ULSD puts an unnecessary burden on them, as the misalignment will result in additional development work and require different product placement strategies.

The final consideration is the urgent need for an early introduction of non-road ULSD due to the special infrastructure for supplying fuel to NRMM. It is necessary to introduce new fuel qualities two years prior to the introduction dates of new stages. Off-highway machinery cannot usually use the road fuel distribution network, and typically relies on large job site fuel tanks. Whatever the size of these tanks, it will take several refillings to move the sulphur concentration from 1,000ppm to 10ppm. Furthermore, the time to renew the whole fuel chain will depend on how frequently end users fill up their fuel tanks. It will also take much more time in the case of seasonal works such as agricultural harvesting machines.

The proposed new non-road fuel sulphur limits satisfy these requirements. However, it is not clear when the EC will finalise the co-decision procedure, thereby enabling the mandatory and harmonised introduction of 10ppm S fuel according to EN 590 as from 1 January 2010. Any delay in this date has potentially severe consequences for Stage IIIB-compliant engines.

The International Fuel Quality Center provides international diesel rankings based on sulphur limits in on-road diesel on its website (www.ifqc.org). The top 100 countries are ranked for sulphur levels based on national and local/regional standards, year of implementation, and actual market sulphur levels. Sweden is at the top, with the earliest implementation of the lowest sulphur limits, followed by Germany and Japan. All EU countries are within the top 50, Canada is ranked 33, followed by the USA. Nearly

SULPHUR, SO GOOD?

IF YOU'RE GONNA DO IT, DO IT RIGHT, SAYS DR PETER SCHERM, GENERAL MANAGER AT EUROMOT, IN RESPECT OF THE FORTHCOMING ULSD REQUIREMENTS

longer maintenance intervals and less-frequent total replacement of filters, reducing operational and life-cycle costs. 1,000ppm S fuel will give unacceptably low catalysed particulate filter life.

Misalignment of specifications of test fuels and market fuels could pose a problem. Certification at Stage IIIB requires a reference fuel of <10ppm S, and a misalignment between the test fuel specifications and the NRMM market fuel means engines in the field will not comply with the limits as they have to operate under notably higher sulphur content.

The US EPA regulation introducing 15ppm S by 1 June 2010 means that many off-highway OEMs need to produce one product

100% market penetration of 10ppm S on-road diesel is expected in the EU in 2009. In the top ULSD countries, full market penetration of 10ppm S on-road diesel is aided by market drivers, but this is not a back-up solution for non-road ULSD in case the Fuel Quality Directive rulemaking is finalised too late for the introduction of Stage IIIB NRMM equipment. Although 10ppm S diesel would be required in new equipment only, there is nothing that prevents accidental or intentional misfuelling in mixed fleets. Most locations will have pre- and post-Stage IIIB equipment for some time. Multiple levels of low or ultra-low sulphur in the fuel, and different fuelling requirements for the same applications on the same jobs, would need a huge and costly effort to develop guidelines on labelling and operator manual instructions to ensure consistency in the field between brands and to reduce operator confusion.

The current fuel sulphur level of 1,000ppm S for non-road gasoil came into force on 1 January 2008. Delaying universal introduction of ULSD would put the use of cooled EGR systems and catalysed PM filters at risk, hamper early introduction of environmentally advanced Stage IIIB technologies, and unnecessarily burden OEMs due to its misalignment with the US EPA regulations.

Euromot has had profitable talks with the EC's Environment Directorate and Environment Committee and will continue to lobby on the grounds that high-sulphur fuel would be incompatible with Stage IIIB engine technologies and its use will result in fatal engine and machinery failure, as well as in a failure of the required Stage IIIB emission reductions and consequent air-quality improvements. **ivt**

Worldwide
implementation
schedule of ULSD

DIESEL (ppm sulphur)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	following
EC											
onroad fuel	50		10								
nonroad fuel	2000	1000		10							
marine fuel – EC proposal	2000	1000		300		10					
marine fuel – EP proposal	2000	1000		10							
US EPA											
onroad fuel	15										
nonroad fuel	500			15							
rail & marine	500					15					
nonroad, rail & marine: small refiners	500							15			
US CARB											
nonroad, rail & marine	15										
CERTIFICATION FUEL											
EU	350			10							
US EPA	500			15							