

Emission Standards for Non-Road Diesel Engines

Recently there has been much discussion and debate on Stage IIIB of the European Directive on the emission standards for non-road diesel engines. The implementation of Stage IIIB depends upon the net power of the engine and is to be phased in over the next year or so, as shown in the Table 1 below:

Cat	Net Power (P) (kW)	Carbon Monoxide (CO) (g/kWh)	Hydrocarbons (HC) (g/kWh)	Oxides of Nitrogen (NOx) (g/kWh)	Particulates (PT) (g/kWh)	Implementation Date
L	130 kW ≤ P ≤ 560 kW	3.5	0.19	2.0	0.025	01/2011
M	75 kW ≤ P < 130 kW	5.0	0.19	3.3	0.025	01/2012
N	56 kW ≤ P < 75 kW	5.0	0.19	3.3	0.025	01/2012
P	37 kW ≤ P < 56 kW	5.0	4.7*		0.025	01/2013
* Sum of hydrocarbons and oxides of nitrogen (HC+NOx) (g/kWh)						

Table 1
Stage IIIB – Emission Standards for Non-Road Engines

It is also recognised that to meet the limit values of Stage IIIB, it is anticipated that engines will have to be equipped with some form of particulate filters, which is currently only available for a select number of **new piling rigs**, which have been manufactured outside the EU. Furthermore, in accordance with Directive 2004/26/EC, an equipment manufacturer may use the 'Flexible Scheme', which allows them to purchase engines from their engine manufacturer during the period between two successive Stages that do not meet the requirements of the current Stage but comply with the previous Stage (Stage IIIA).

Over the past few months, a number of clients are specifying the use of Stage IIIB engines in equipment, some are also specifying Cat P engines comply with Stage IIIB now, when it only becomes effective from Jan 2013. At present, **no** FPS member has piling equipment with engines that meet the limit values of Stage IIIB, however, they are being requested to modify existing engines and equipment to meet the limit values of Stage IIIB. Piling rig manufacturers are experiencing difficulties with this request, in fact, several of their engine manufacturers have stated that any modification to existing engines to enable them to meet the limits values of Stage IIIB **will not** be approved. Each category of engine is specifically designed to produce a specific power output and any modification without further investigation, design and analysis will inevitably result in problems, such as an increase in exhaust back pressure, which could cause a catastrophic engine failure.

As one of its goals, the FPS has always been a driving force in assisting equipment manufacturers with the design and safety of equipment; consequently, our members have asked equipment manufacturers to investigate the feasibility of modifying existing engines/equipment to allow them to meet the limit values of Stage IIIB. Whilst their response for **new equipment** is encouraging, modifying existing equipment is somewhat more difficult for a number of well documented reasons, for example; incorporation of additional components for exhaust after-treatment and cooling systems, the fitting of such components having a detrimental effect on the performance of the machine and the potential catastrophic failure of an engine. A number of equipment manufacturers have also stated that the design, testing and evaluation of such modifications could take several months and without any guarantee of a successful outcome.

In light of the above, the FPS would remind and ask clients that:

1. Under the 'Flexible Scheme' new equipments may still be provided with Stage IIIA engines.
2. Any modification to the engine/equipment to meet the limit values of Stage IIIB, which is carried out by a FPS member **will not currently** be approved by either the engine or equipment manufacturer, who are ultimately the design authority.
3. Engine and equipment manufacturers are only just starting to investigate the feasibility of modifying existing engines and equipment, but this may take several months with no guaranteed outcome.
4. Until the above issues are resolved or time has elapsed to the point where a Stage IIIB engine has to be used, clients are requested to afford FPS members dispensation when meeting the limit values of Stage IIIB for **existing engines and equipment**.

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