



INDUSTRY POSITION PAPER

01 July 2011

Nonroad Machines & Local Air Quality Action Plans

It is recognised that Member States have been obliged for some years to monitor local air quality and, where there is a risk of exceeding the EU limit values ⁽¹⁾, draw up action plans to reduce the risk or limit the duration of such an occurrence. 'Such plans may, depending on the individual case, provide for measures to control and, where necessary, suspend activities, including motor-vehicle traffic, which contribute to the limit values being exceeded' ⁽²⁾.

The measures in the previous EU Directives ^(1,2) have been replaced by those of Directive 2008/50/EC ⁽³⁾. This Directive makes clear that Member States shall ensure that the concentration in ambient air of certain pollutants, including the mass concentration of very small particulate matter (PM₁₀ and PM_{2.5}), does not exceed certain limit values. The Directive additionally sets a 'National exposure reduction target' to reduce ambient concentrations further by 2020.

The emissions from newly purchased non-road machines used for construction, agriculture and industrial activities (such as diesel-powered excavators, loaders, tractors, harvesters, telescopic handlers, etc) within the EU have been progressively reduced since the publication of the first non-road engine emission limits in 1997. The manufacturers of these non-road machines and their engines are committed to continue with this environmental improvement: Commencing 1st January 2011 a further very aggressive reduction in the overall mass emissions of particulate matter (PM) is being progressively provided by the phased introduction of new stage IIIB machines. These new machines will reduce these emissions by around 90% compared with 2010 limit values, in addition to reducing the emissions of oxides of Nitrogen (NOx) by as much as 50%. Then, starting in 2014, an additional 80 to 90% reduction in NOx is planned through the introduction of Stage IV.

Nevertheless, it is recognised that there are considerable quantities of older machines that will still be in use throughout the EU for many years more. Those Member States or local authorities considering the

EUROMOT

The European Association
of Internal Combustion
Engine Manufacturers

President:
Michael G Hawkins

General Manager:
Dr Peter Scherm

Lyoner Strasse 18, ZIP 60528
Frankfurt/M., Germany

Tel (+49) 69 6603-1354
Fax (+49) 69 6603-2354
E-mail info@euromot.eu
Web www.euromot.eu

ENGINE IN SOCIETY

Office registered in
Frankfurt/M., No.VR4278

introduction of controls on the use of non-road machines as part of local air quality action plans should recognise the air quality benefit of the use of new machines (which will also meet all the latest safety and noise emission requirements). Consequently, such use controls should encourage, and not limit the use of the newer machines that meet the latest EU emission requirements.

In the event that regulation of the use of existing non-road machines is considered, then, prior to drawing up such a scheme, a careful review of the principles outlined in this document is recommended. The industry associations named on this document would be available to discuss these principles and provide advice on their implementation.

⁽¹⁾ Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air

⁽²⁾ Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management

⁽³⁾ Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe

Guiding Principles for Local Air Quality Action Plans relating to the Use of Nonroad Machines

1 General Requirements

- Where Government programs to address local air quality issues are necessary, they should seek emissions reductions through a rewards-based, incentivized program that leverages the resources of large-scale European programs (such as the introduction of stages IIIB & IV).

Programs should encourage, and not limit, the use of machines meeting the latest EU emissions requirements. They should therefore pro-mote and incentivize the purchase of new machines and equipment and should not set additional requirements for these new products:

- Recognizes the investment made for the purchase of new engine and machine technology complying with current emissions & safety requirements.
- Placing additional requirements on new engines and machines discourages investment in new cleaner engine technology and encourages the continued use of older, higher-emitting technology.
- Programs should place a high priority on reducing emissions from inadequately maintained engines.
- Programs should also recognize that repower and rebuild solutions are available today that can reduce emissions whilst offering benefits to the end user in the form of improved fuel consumption and productivity, extending the useful life of the machinery at a fraction of the cost of a new machine.
- Where programs are intended to promote the retrofit of additional emissions control devices, such as particle filters, to existing older machines, or to promote the replacement of existing engines with lower-emitting versions, such programs need to overcome a key impediment to widespread implementation: A lack of funding to pay for such upgrades and the lack of a direct benefit to the user from the upgrade.
- Additionally, such programs should ensure that compliance to the essential health and safety requirements is maintained (see section 4. below).
- To be successful, an incentive-based program will need to provide a practical and a realistic business justification to owner / operators.
- Retrofit programs should provide all of the following:
 - Sustainable, adequate and stable source of long-term funding.
 - Real, measurable, and enforceable emission reductions.
 - In-service checking of retrofitted machines to ensure that non-original equipment solutions are in conformity, fit for purpose and robust.

- Minimized restrictions on equipment utilization by location.
 - Rewards and/or incentives to users (e.g. fleets, owners). Examples could include: direct funding, tax incentives/relief, market-able credits.
 - A formula that prioritizes the available awards/incentives in a way that provides the most cost-effective emission reductions.
 - A broad definition of retrofit that includes re-powers (with new engines), re-builds (of existing engines with engine upgrade kits), use of after-treatment technologies, use of cleaner/ alternative fuels and technologies.
 - Harmonization between member-states and localities on the technical requirements and methodology for assessing and approving retrofits (see section 3. below).
- The program should provide stability for manufacturers of control options, certainty for end users, and sufficient notice to all stake-holders:
 - Manufacturers of emission control technologies need market stability to achieve a return on their investment in the development of the technology.
 - End-users should not be burdened with constantly shifting emissions requirements e.g. once equipment has been brought into conformity, it should not face additional requirements as technology advances.
 - The program should recognize that:
 - Not all existing engines can be retrofitted.
 - On-road solutions outpace off-road solutions.
 - One retrofit solution does not fit all.
(See sections 2. & 4. below)

2 Machine Installation – Requirements & Performance Limitations

- Local Air Quality Action Plans should recognize that retrofit could include re-powers (with new engines), re-builds (of existing engines with engine upgrade kits), use of after-treatment technologies and use of cleaner/ alternative fuels and technologies.
- There should be recognition that certain types of retrofit solutions will not function correctly across the wide variety of non-road machine types using that engine or are not effective across all possible usage patterns of the machine that the engine is used in
- A performance-based approach is preferable to a design-based approach and the program should not “pick winners” or specify a technology solution. The requirements and conditions on retrofit system performance should be formulated so that it is neutral for the technical point of view in order to progress innovation by competition.

- It should be noted that certain types of retrofits, if not installed correctly, may negatively impact the reliability and durability of the engine. Incorrect installation also includes cases where the safety of the machine is negatively affected. If correct installation is not addressed, this will lead to widespread fear of all retrofits – even those that are installed correctly.

3 Retrofit Device – Performance Verification

- Local Air Quality Action Plans that promote the use of retrofit devices should require the use of products and technologies that have been adequately demonstrated to be effective for the application, via existing European or US verifications to avoid the un-necessary expense of extraordinary or duplicative testing.
- Currently there is an ongoing Retrofit Emissions Control (REC) activity organized under the UN ECE WP29 GRPE that is tasked with developing an EU-wide regulation for the verification of retrofit aftertreatment devices. It is proposed that, once finalized, this regulation would provide the required benchmarks for verifying such devices.
- Local governments should not establish separate, additional, verification processes.

4 Machine Installation – Essential Health & Safety Requirements

- Local Air Quality Action Plans that promote the use of retrofit devices must recognize that safety is paramount, and must respect the need to maintain operational safety of machine and its operator, in terms of visibility, guarding of hot surfaces, installation of new control displays, modifications to the electrical/ electronic systems, installation of fuel lines and burners, etc.
- For this reason it may not be possible to retrofit all machines and this must be acknowledged.
- The first concern about retrofit installation on machinery is about maintenance of compliance to the essential health and safety requirements defined in the Machinery Directive (2006/42/EC).
 - Such an installation is not to be classified as the placing on the market of a new machine, but it may be rather considered as the modification of existing machine as provided for in Article 5.2.b. of Directive 2009/104/EC on the use of work equipment.
 - As reference here below the relevant part of the EC Guide to application of the Machinery Directive:

§140

...

The provisions of Directive 2009/104/EC are applicable to machinery in service in workplaces. During the lifetime of the machinery, the employer must take the measures necessary to ensure that machinery in service is kept, by means of adequate maintenance, at a level such that it complies with the provisions that were applicable when it was first made available

in the undertaking or establishment. This does not mean that the machinery must be maintained in an “as new” condition, since it is subject to wear. But the necessary maintenance must be carried out to ensure that it continues to comply with the applicable health and safety requirements. Thus machinery that was subject to the provisions of the Machinery Directive when it was first made available must be maintained in a state of conformity with the essential health and safety requirements of the Machinery Directive that were applied when it was first placed on the market or put into service.

This also applies whenever machinery is modified by the user during the course of its lifetime, unless the modifications are so substantial that the modified machinery must be considered as new machinery and be subject to a new conformity assessment according to the Machinery Directive – see §72: comments on Article 2 (h).

...

- This sets the responsibility for the correct retrofit installation on the user, i.e. the machine owner.
 - It is clear that, given the normally limited knowledge of the users, it will be important that the local air quality action plan requires that the retrofit manufacturer supplies adequate instructions and recommendations for the correct installation and maintenance of the conformity of the machine to the essential health and safety requirements.
 - In particular, the retrofit installation must avoid or protect against new risks that may be created by the retrofit, such as, for example, the risk of contact with hot surfaces or risks due to reduced visibility from the driving position.
 - The workshop performing the installation is to be considered as a contractor of the user and as such cannot relieve the user of his/her responsibilities.
- On the conformity to the electro-magnetic compatibility Directive 2004/108/EC, the electric or electronic system of the retrofit device may be considered as apparatus and it should therefore be sufficient to guarantee the compliance of that device to this Directive.
 - For the outdoor equipment noise directive (2000/14/EC) there is no provision for alterations or modifications, but, as a first approach, the considerations valid for the Machinery Directive could also be applied.

List of Relevant Legislation

- Directive **97/68/EC** of the European Parliament and of the Council of 16 December 1997, as amended by Directive 2001/63/EC of 17 August 2001, Directive 2002/88/EC of 9 December 2002, Directive 2004/26/EC of 21 April 2004, Council Directive 2006/105/EC of 20 November 2006, Regulation (EC) No 596/2009 of the European Parliament and of the Council of 18 June 2009 and Commission Directive 2010/26/EU of 31 March 2010, relating to measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery.
- Directive **2000/25/EC** of the European Parliament and of the Council of 22 May 2000, as last amended by Commission Directive 2005/13/EC of 21 February 2005 and Council Directive 2006/96/EC of 20 November 2006, concerning the emission of gaseous and particulate pollutants by engines intended to power agricultural or forestry tractors.
- Directive **1999/30/EC** of the Council of 22 April 1999, as last amended by Commission Decision 2001/744/EC of 17 October 2001 and Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008, relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air.
- Council Directive **96/62/EC** of 27 September 1996, Regulation (EC) No 1882/2003 of the European Parliament and of the Council of 29 September 2003 and Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008, on ambient air quality assessment and management.
- Directive **2008/50/EC** of the European Parliament and of the Council of 21 May 2008, on ambient air quality and cleaner air for Europe.
- Directive **2000/14/EC** of the European Parliament and of the Council of 8 May 2000 amended by Directive 2005/88/EC of 14 December 2005 and Regulation (EC) No 219/2009 of 11 March 2009, on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors.
- Directive **2006/42/EC** of the European Parliament and of the Council of 17 May 2006, on machinery.
- Guide to application of the Machinery Directive 2006/42/EC 2nd Edition – June 2010, European Commission, Enterprise and Industry.
- Directive **2009/104/EC** of the European Parliament and of the Council of 16 September 2009 concerning the minimum safety and health requirements for the use of work equipment by workers at work.

CECE – CEMA – EUROMOT, 2011-07-01

For more information please contact:

Internal Combustion Engines – EUROMOT:

Dr Peter Scherm, (+49 69) 6603-1354, peter.scherm@euromot.eu
EU Transparency Register ID number: 6284937371-73

Construction Equipment – CECE:

Stephan Belaen, (+ 32 2) 706 82 25, stephan.belaen@cece.eu
EU Transparency Register ID number: 60534525900-25

Self-Propelled Agricultural Machinery – CEMA:

Ivo Hostens, (+32 2) 706 82 27, ivo.hostens@cema-agri.org