Euromot

New emission regulation for gas engines in the Netherlands

The Euromot Position

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The European Association of Internal Combustion Engine Manufacturers
President:
Dr Manlio Mattei
General Manager:
Dr Peter Scherm

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Frankfurt/Main

Lyoner Strasse 18
60528 Frankfurt/Main

fon 0049 69 6603-1354
fax 0049 69 6603-2354
eMail euromot@vdma.org
web www.euromot.org

EUROMOT
Engine-in-Society

Euromot is the **European Association of Internal Combustion Engine Manufacturers**.

We represent the leading manufacturers of internal combustion engines used in a broad range of nonroad and marine applications (construction, mining and material handling equipment, trucks and buses, agricultural and forestry equipment, lawn/garden and recreational equipment, commercial marine and seagoing vessels, workboats and pleasure boats, rail traction, power generation).

Euromot has been working for many years with international regulatory bodies, eg European Union, the UN Economic Commission for Europe (UNECE), the UN International Maritime Organizations (IMO) and the Central Commission for the Navigation on the Rhine (CCNR). In addition, we are seeking an open and fair dialogue with national governments to provide reliable know-how on advanced internal combustion engine technologies in general and, in particular, on the feasibility of environmental as well as cost-effective product regulations. To achieve a pro-active engagement of all stakeholders in international harmonisation of regulations affecting engines and equipment, we coordinate our activities worldwide with trade associations of the nonroad and marine industry sector.

For further information about our Association please pay us a virtual visit at **http://www.euromot.org** – your bookmark for engine power worldwide.

1. Introduction

The following position paper represents the opinion of the engine manufacturers organised in Euromot. It describes the main concerns of Euromot relating to the ongoing emission regulation process in the Netherlands. In our position paper we consider on the one hand technical difficulties and on the other hand the economic impact of the proposal to reduce the NO_x limit to 30 gr/GJ for new installations and 80 gr/GJ for existing installations to new and existing gas engine installations.

2. Gas engines fired with renewable fuels

Gas engines fired with renewable gases (biogas, sewage gas, etc.) are predestinated for CO_2 reduction and thus reduction of global warming and climate change. They offer a huge potential to reduce CO_2 and to deliver heat and power if they are used in the CHP-mode (combined heat and power) without using fossil fuel. Experience shows that a gas engine can work in CHP-mode even with an efficiency of 90%. Thus gas engine are very important to fulfil the future demands according to the Kyoto Protocol.

In respect of the Kyoto Protocol gas engines operated in CHP-mode should be promoted in order to decrease specific CO_2 emissions. The contribution of the high efficiency of engine power plants to reduce CO_2 ("the most important green house gas") is however not honoured by stipulating a NO_x-limit of 30 gr/GJ for new engines. Therefore we recommend to set a separate NO_x limit for gas engines fired with renewable gases.

On April 2 2007 U.S. Supreme Court ruled that US EPA must regulate CO_2 emissions (have the right to regulate auto emissions of carbon dioxide) and in US many states have adopted GHG (Green House Gas) emission curb measures. In year 2008 the first Kyoto Period starts and it should therefore be logical to see more sustainable impacts also in the new Dutch regulation.

Furthermore Euromot would like to highlight that SCR installations for gas engines fueled with renewable gases are not available. The components in the exhaust gases (trace elements) of gas engines fired with renewable gase are destroying the oxidation catalyst.

The engine industry is working on technical solutions but at the moment there are no viable, durable and cost-effective solutions available.

Thinkable is to implement gas cleaning installations before the renewable gas is burned. But this technology is not proven. These installations will have an enormous economic impact and will be a huge financial burden for the engine operators. Euromot estimates that additional costs between 80000,- € for engines in the 1MW segment and 110000,- € for engines in the 2 MW segment are to be considered for gas cleaning installations for engines fired with natural gas. The costs for engines fired with renewable fuels will be fundamentally higher. This is not according to BAT (NEEC).

3. Gas engines fired with natural gas

The greenhouse industry uses a lot of gas engines fired with natural gas and has an enormous demand for CO_2. This industry needs CO_2 as fertilser. Therefore this industry implements SCR technology due to the fact that the CO_2 has then an adaquate quality for the use in the greenhouse.

This is not the case for other CHP markets. As these markets also are barely cost effective at the moment they will be stopped completely when SCR is forced upon them without any financial compensation by introducing the new NO_x limit of 30 gr/GJ. The consequence will be that this efficient technology will not be used in applications outside the greenhouse industry. This will increase the output of the emissions of big power plants and boilers that will then deliver heat and power instead of high-efficient gas engines. Especially the total emission of CO_2 will be much higher compared to the cogeneration with gas engines.

We would like to highlight that it is technically possbile for new engines to meet reduced NO_x limits. However, in order to meet these reduced NO_x values gas engines will have an increased fuel consumption, higher maintenance costs and higher emissions of methane. Furthermore an increased fuel consumption means more CO_2 emissions.

Please note that reduced NO_x values are technically not reachable for all existing engines.

Euromot therefore recommends not to introduce the NO_x limit of 30 gr/GJ for new gas engines in CHP-mode fired with natural gas and operated in other than greenhouse applications. Furthermore we recommend not to introduce 80 gr NO_x/GJ for existing gas engines.

4. General concerns

Euromot recommends not to mention the LCP Directive 2001/80/EC as reference in the ongoing discussions in the Netherlands. This Directive does not cover the following installations (please see page 3): “Plants powered by diesel, petrol and gas engines shall not be covered by this Directive.”

BREF (LCP) and BAT: The BREF’s are for installations >50 MW thermal input. SCR installations for gas engines in the range of 100 kW up to some MW electrical output is not BAT. For small gas engines costs for SCR installation (investment and maintenance costs) will be prohibitive and disproportional high unless the new NO_x limits are accompanied by a good support scheme. Note that not only the equipment costs but also installation costs, maintenance costs and the costs for the extra space have to be considered.

Many existing sites do not have the space available required for the equipment needed to reach the 80 gr NO_x/GJ or the 30 gr/GJ in case a new engine has to replace an existing one. This will increase the costs considerably.

The engine industry is constantly improving the performance of the engines. This is obvious from the improvements in efficiency and accompanying improved emissions. Future engine generations will show further increased efficiency and reduced emissions. Methane slip means loss of efficiency and therefore the reduction of methane slip would be an important factor in the development of gas engines even when the environment would not be considered. Drastic reductions however are only possible with costly after treatment. Again this would require subsidies to keep the industry alive. Afterburning is only known applicable for gas turbines to increase the energy in the exhaust gas. This is used when a boiler or process using the exhaust gas requires more heat and/or higher temperature than the turbine or engine delivers.

It should be considered that gas engines play an important role in the European and especially the Dutch electricity production. In the Netherlands several thousands MW of peak production is delivered with gas engines. The heat is stored in buffers to be used in the colder periods. This means that the efficiency is very high especially as engines typically do not cause the huge transport and transforming losses that big power plants do. In the case of peak power this is even more important as peak power other wise is delivered by older power plants that show bad efficiency and higher emissions per kWh delivered. Engines typically use a comparatively minimal amount of energy and time for starting. This will become even more important with the growing amount of wind and solar power. These clean energy sources by nature show big and unpredictable swings in their production. Engines will be required to balance this. All this means that the effect of engines on the environment and on the total emissions in the Netherlands is much more positive than the bare emission number per kWh_{el}.

Euromot Working Group on Stationary Gas Engines
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Michael Wagner
Chairman WG Gas Engines

Panagiotis Daskalopoulos
Technical Manager