

## **Worldbank – International Finance Corporation**

General concerns and recommendations to the final version  
of the General Environmental, Health and Safety Guidelines  
(April 30, 2007)

***Position Paper – June 2007***

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**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, commercial marine and seagoing vessels, workboats and pleasure boats, rail traction, lawn/garden and recreational equipment, 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 non-road and marine industry sector.

For further information about our Association please refer to our Annual Report 2003 or pay us a virtual visit at <http://www.euromot.org> – your bookmark for engine power worldwide.

## 1 Introduction

This position paper summarises the common position of stationary engine manufacturers organised in Euromot relating to the final version of the General Environmental Health and Safety (EHS) Guidelines published on April 30, 2007.

In general engine manufacturers assess the final General EHS Guidelines as positive reflecting the existing infrastructure (fuel, etc.) around the world and technical development quite well and thus built on sound IPPC (Integrated Pollution Prevention Control), GIIP (Good International Industrial Practice) and BAT (Best Available Technology) principles. However, there are still some issues that have to be improved in our opinion. Our major concerns are:

- The missing effective implementation date of the Guidelines
- The limit values for the Ambient Air Quality are too strict
- The noise limits in the control room are too strict considering other national and international standards
- Other aspects such as interruption in gas supply, emission measurement verification load span, emission bonuses, etc. have to be improved in the final version of the General EHS Guidelines

The primary reasons for this position is on the one hand the fact that the above issues have an enormous economic impact although the benefits resulting from the EHS Guidelines are low and on the other hand that there are other internationally known, used and accepted standards that fit better to be mentioned in the General EHS Guidelines.

The background paper to this position offers an exact explanation of our concerns and mentions all related sources that we have taken into account for this position.

## 2 Major concerns

### 2.1 Effective implementation date of the Guidelines

Power plants sold before April 30 2007 but not yet commissioned or projects which were in a late sales stage when the final EHS Guidelines had been published are in a difficult situation. There are problems in sales negotiations (plant performance etc.) because a clear information in the new General EHS Guidelines about their implementation is missing.

Furthermore stationary engines are sold out and delivery times are long. A part of the already sold stationary engines will be delivered and commissioned in 2010. Engines used in stationary applications are very similar to those installed on sea-going vessels. IMO is expected to enforce the next step asking for more stringent emission requirements on January 1 2011 (keel laying of the vessel), which correlates with an engine delivery in summer 2011. The final IFC/World Bank Guidelines are thus ahead of the IMO requirements and some kind of a harmonization is needed.

#### **Recommendation:**

Based on above (business situation, New Thermal Power Guidelines, IMO ruling, technique, etc. development statuses) situation we propose following clarification wording for the General EHS Guidelines in order to get a smooth transition towards the new Guidelines:

**For sales contracts done at the latest on December 31 2007 provided that the power plant is commissioned latest December 31 2010 the World Bank "Thermal Power – Guidelines for New Plants" 1998 /2/ shall apply.**

## 2.2 Ambient Air Quality limits

Applying the WHO Air Quality Guidelines (AQGs) in combination with the “general 25 % rule” in the General EHS Guidelines leads to a too strict regulation for the Ambient Air Quality. This will lead to very strict stack limits (much stricter than those in table 1.1.2 in the final Guidelines) even for a small power plant in an unpolluted rural area. Primary emission abatement methods in combination with a reasonable stack height will then not be enough (see example calculation in background paper). Immission figures vary enormously between different regulations and therefore a “universal” “increment rule” will lead in most cases to big unnecessary problems without enhancing the environment.

Furthermore we explain on which facts our concerns are based (please see also the background paper with more information, sources and example calculation):

- California is known for strict environmental rules. State immission standards were designed to protect the most sensitive members of the population. Even the Californian SO<sub>2</sub> 24-hour value is about 5 times higher than the WHO corresponding value, also the NO<sub>2</sub> standard value is higher in California.
- The basis for some of the pollutant limits in the WHO AQGs seem to be vague. One basis for reducing the SO<sub>2</sub> 24-hour Guideline value substantially in the new AQGs were results of a Hong Kong study (please see background paper) : on page 18 in /5/ is stated “There is still considerable uncertainty as to whether SO<sub>2</sub> is the pollutant responsible for the observed adverse effects or whether it is a surrogate for ultra-fine particles or some other correlated substance.” Also in a poster (see source /6/ in background paper) presented in a recent HEI (Health Effects Institute) meeting the uncertainty with the SO<sub>2</sub> contribution to the health effect was pointed out: “However uncertainty remains about the independent effects of individual pollutants: on whether the effects seen in Hong Kong were related to the concomitant change in particulate composition and whether there had been a long term benefit that is significant for public policy”.
- WHO AQGs do not include short-term percentiles for most components as can be found in other national AQGs and has thus a “never to exceed approach”. Percentiles are necessary for considering unusual meteorological conditions, etc.
- WHO has also as pointed out in their own publication (please compare source /5/ in the background paper) not to recommend their AQGs to be used as legally binding standards
- WHO AQGs are stricter than national ambient air guidelines (EU, US EPA NAAQS) and thus they are not suitable to come into force if a national regulation is missing. It is not a correct way to introduce a “general increment rule” of 25%.

### Recommendation:

Therefore we recommend to take out the WHO AQGs from the final version of the General EHS Guidelines and in absence of national AQGs to refer only to other internationally recognized AQGs such as those of federal US EPA (see source /3/ in background paper). Moreover macroscale testing and consideration of natural sources that have an impact on the Ambient Air Quality should be taken into account (compare source /4/ in background paper).

We furthermore propose to change the text for the “general rule” as mentioned below:

**“The incremental rule(s) (if defined) in the applicable air quality standards shall be honoured to allow additional future sustainable development in the same airshed”.**

## 2.3 Control Room Noise

The noise limits (45-50 dB) for the control room in the final General EHS Guidelines are too strict.

We understand the scope of such a value to be guaranteeing a sufficient speech communication environment between control room operators. The main references in the literature with background noise level values conforming to the new EHS Guidelines value 45-50 dB are the WHO Guidelines for Community Noise and the International Electrotechnical Commission standard IEC 60964 - Design for Control Rooms of Nuclear Power Plants. In our opinion these regulations are not representative for applications described in the General EHS Guidelines.

The construction of separate or otherwise extremely insulated control rooms does affect the overall construction costs of a small thermal power plant by 5-15 %, depending on the application and the local conditions at the site of installation. The incurred additional costs are prohibitive for smaller installations.

We compared the EHS Guideline values with current legislation, standards, other guideline values and very often used "practical state-of-the-art" values.

In our opinion the IFC EHS guideline values of 45...50 dB for power plant control room noise are too stringent in reference to

- Available techniques to mitigate noise
- Current applicable guidelines
- Research results concerning the annoyance and interference of low frequency noise with speech communication
- Practical safety signal audibility and communication requirements.

### **Recommendation:**

We recommend to set the limit for control room noise 65-70 dB according to the result of our literature survey in the current legislation (see background paper). This limit is common in standards and other guidelines.

This would be appropriate regarding the fact that the new version of the General EHS Guideline is the first one where any noise limit values for control rooms are set. A less stringent initial requirement would allow for field experience to be gathered and adaptation of technical measures best suited for each power plant case.

## 2.4 Other concerns and recommendations

In this chapter some items are briefly covered. Most of them have been already raised in the Euromot Position relating to General EHS Guidelines from November 2006 and has been also discussed between Euromot and IFC/World Bank in the Washington meeting on January 25 2007. However we feel the need to summarise these additional concerns.

### • **Stack emission verification load span**

In the General EHS Guidelines the engine loads at which the verification measurements will be conducted are not defined. We recommend to consider other definitions e.g. from USA (90-100%) and India (85-100 %) maximum continuous rating of the individual engine at steady state load conditions. Start-ups and shut-downs are excluded (praxis worldwide).

- **Liquid effluent limits**

We recommend to include an liquid effluent limit for smaller power plants in the General EHS Guidelines. Euromot stated already that a power plant with a small liquid effluent stream such as a radiator cooled stationary engine plant should have a leaner standard than e.g. a big steam power plant.

- **Interruption of gas supply**

Some stationary engine types are of multi-fuel type (they can operate in gas or liquid modes) and in the Genral EHS Guidelines it is not explained how to act in case of a gas supply interruption. In order to avoid “unnecessary investments” we recommend to introduce a similar approach like in EU Directive 2001/80/EC. In this regulation it is defined that Large Combustion Plants (stationary engines are exempted) can use other fuels for at most 10 days.

- **Emission bonuses**

Except of the NO<sub>x</sub>-value for liquid fired engines (bore < 400 mm) emission bonuses for high efficient engines have not been taken into account in the final EHS Guidelines.

In USA output emission limits are used, by adding the recovered heat to the gross energy output. In this case a big efficiency bonus is granted. In year 2008 the first Kyoto Period starts and it should therefore be logical to see more sustainable impacts in the General EHS Guidelines.

We recommend therefore grant efficiency bonuses to all prime movers based on the single/combined cycle, combined heat and power (CHP) efficiencies or usage of a renewable and sustainable fuel.

- **Engine type definitions**

In the General EHS Guidelines the follwing engine types are listed:

- Spark Ignition
- Dual Fuel
- Compression Ignition

Nowhere in the document is given an exact description of these different engine types. We recommend to add an technical definition to each engine category according to the description text from CIMAC document /35/ page 4 “chapter (“2.1 Engine types & fuel options”) (see background paper). In the current Guideline “Thermal Power - Guidelines for New Plants” “Engine – Driven Power Plants” techniques are shortly described in annex A. We recommend to do the same in the General EHS Guidelines.

- **“Variance principle”**

The definition of the “variance principle” is missing in the Genral EHS Guidelins. This will in practise lead to a strict implementation of the EHS Guideline values without flexibility of external institutions following EHS Guidelines due their own environmental policy. In order to correct the situation we recommend to add an addendum to the EHS Guidelines where the milestones and actions needed for the “variance principle” usage are explained.

- **Emission verification in a multi engine plant**

A stationary engine plant can consist of several engine units. In plants where all the installed engines are of the same type and model and have also similar operation profiles and fuel the emissions of the individual engines are expected to be similar.

We recommend therefore in order to achieve a cost-effective, practical and time saving measurement only to conduct measurements on some selected units and not on all e.g. 3 units of 6, etc. In this kind of power plant it should be logical to define the emission as an average emission of the power plant and not per individual engine.

In plants consisting of different engine types or models or engines operated on different fuel types emissions for the different engine types and fuel modes should be honoured and no plant average emission approach used.

- **Correction proposal in Annex 1.1.2 (pages 14 -15) in the EHS Guidelines**

The techniques described in annex 1.1.2 (reduction efficiencies, etc.) are valid only for boilers. Therefore “for boiler power plants” should be added in the header of the table in order to avoid misunderstandings.

In document /4/ (see background paper) on pages 19 – 21 some stationary engine features in context with secondary abatement techniques (particulate/SO<sub>2</sub>/NO<sub>x</sub> abatement) were given.

Vaasa - Frankfurt/M, 2007/06/29

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