Study on the experience in the implementation and administration of Directive 2000/14/EC relating to the noise emission in the environment by equipment for use outdoors

FEM[i] Initial Comments on the NOMEVAL Technical Report presented by TNO 05/11/2007

Following the publication of the NOMEVAL study on 28 September 2007, FEM wishes to make initial comments before publication of the final Article 20 Report by the European Commission. FEM hopes that all stakeholders will be given sufficient time for analysing and assessing in detail the full report once published, in order to actively and properly contribute to the impact assessment foreseen in the course of 2008.
After some general remarks, the FEM input is structured according to the 4 points to be presented in Article 20 of the directive to structure the Commission report.

General comments

The report presented by TNO is well structured and includes a lot of very useful documentation. Nevertheless, FEM wishes to seek clarification on some points, make general comments, as well as detailed comments on the report's chapters and the parts referring to FEM products.

FEM is of the opinion that much information is still missing from the NOMEVAL report, and that it consequently remains incomplete as an accurate basis to revise Directive 2000/14/EC, in particular the current limits or the introduction of new limits. Indeed, the Article 16 Database, on which the NOMEVAL report is partly based, does not give a clear and accurate picture of the situation relating to FEM equipment today, especially for equipment-fitted engines complying with Stage IIIA of Directive 97/68/EC on emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery. In addition, there are no technical data available concerning the impact of the future generation of engines (Stage IIIB and Stage IV under Directive 97/68/EC) and it will only be possible to obtain such data when those engines become available.

For the finalisation of the Article 20 report, FEM asks the Commission to carefully consider the daily technical challenges faced by companies, and the fact that these challenges led the FEM Industrial Trucks and Cranes Product Groups to request postponement of Stage 2 limits during the last revision process in the course of 2004.

FEM is firmly convinced that the proposed economic analysis needs to be completed, and we would be ready to provide information at our disposal in order to contribute to this completion. Moreover, FEM believes that such economic data must be brought into

perspective given today's open markets and global competition, in order to accurately measure the full impact of potential additional constraints on European manufacturers.

FEM would also ask the Commission to consider Directive 2000/14/EC in a broader regulatory context and agenda, and in particular within the set of directives already applying to FEM products and setting environmental and safety requirements, the legislation yet to be implemented or prepared such as the engine emission directive, new Machinery Directive, the REACH regulation, as well as the revision of the New Approach.

Finally, FEM again fully supports the statements relating to the lack of market surveillance and the need for such surveillance. In this sense, FEM wishes the Commission to seriously balance the future technological challenges and investments triggered by a new modification of Directive 2000/14/EC, with the fierce competition faced by our industry. Foreign manufacturers freely enter the European market, fear no or few controls on the final products or spare parts they import, and hamper the efforts and adversely affect the image of EU manufacturers by simply not complying with European legislation.

a) Review of the noise data collected in accordance with Article 16 and other appropriate information

- *Page 3: Assessment of the Article 16 database*

FEM cannot confirm that the data for equipment types and models, mainly lift trucks and tower cranes, are correct (see our comments on chapter 2 statistical analysis).

- *Page 3: "Uncertainty is an issue which manufacturers would like to have clearer rules for and would prefer to handle it themselves".*

This statement needs clarification as the manufacturers handle uncertainties themselves. The current work on uncertainties is handled by the notified bodies, in order to have coherence in their actions. Some market surveillance authorities are also interested in having clear rules.

- *Page 4: "For many equipment types and for new ones, improvements to the test cycles or test codes have been made*."

This statement needs clarification as the report does not specify to which type of equipment it applies.

Pages 13 to 35 Statistical analysis (Chapter 2)

General comments

As previously mentioned, the statistical analysis given by the NOMEVAL report is very questionable as the Article 16 database, on which TNO based itself at the time of drafting the report, is not complete and contains many errors. The analysis therefore gives an erroneous picture of the present market for FEM products. The report says that additional data from other sources have been used, but no further details are given on these sources. Therefore it is not possible to know if they were used to correct existing mistakes or complete the available data, nor is it possible for FEM to assess and comment in detail on the figures.

For example, as far as FEM products are concerned, it appears that many lift trucks covered by Article 13 of the Directive are listed as covered by Article 12 in the database. For tower cranes, some data have been introduced in the construction winches CE driven, which gives a totally wrong picture for both products.

For mobile cranes some data is also missing however, representation seems sufficient and reflects the experiences of the manufacturers.

As a conclusion, the statistical analysis cannot be considered today as a reliable basis for any further decision on the evolution of the Directive. However FEM strongly supports the development of Article 16 database as a single and reliable statistical reference tool, and would recommend reviewing, assessing and completing the database as an immediate action. The NOMEVAL report could then be itself assessed and eventually completed on the basis of accurate information. FEM and its members are committed to assist the Commission in this process.

Detailed comments

- *Page 19: The general approach for limit proposal can be expressed as follows:*
  Llim,new = Lx% + 2 (2.1)
  Llim,new is the new limit, either as a single value or as function of the technical parameter. Guaranteed levels are checked against this limit.
  Lx% is the curve below which x% of the measured data lies. This curve is either given as a single value (horizontal line) or as function of the technical parameter, usually resulting in a stepped positive slope. The 2 dB margin is to produce a limit level that can be compared with the guaranteed level.

This statement is not justified. A fixed value of uncertainties is not in line with the current Directive 2000/14/EC which gives responsibility to the manufacturers to determine their own uncertainties. In some cases, it is less than 2 db, but it is also largely dependent on the complexity of the machine, the method used… Additionally, ISO 4871 indicates 3 dB as an average value for uncertainties. Finally, the prescription of Directive 2000/14/EC relating to round values needs to be taken into account.

Page 232: EC declaration of conformity

FEM would recommend making a clear distinction between the declaration of conformity which is a document delivered with each machine, and the declaration of the manufacturer to be sent to the Commission and national authorities to supply information for the data collection / Article 16 database.

The declaration of conformity is specific to each piece of equipment and may include information relating to other directives. The model proposed in the NOMEVAL report may be misleading as it can be incomplete for some types of machines. For example, in the case of aerial work platforms, one must add the name and address of the notified body used in accordance with the requirements of Directive 98/37/EC on Machines.

Pages 9 to 11: Appendix A 5.2.7 Calculating uncertainty K

FEM is not in favour of the detailed method to calculate the uncertainty K in Directive 2000/14/EC. It should remain the sole responsibility of the manufacturer.

b) A statement of the need for revision of the lists in Articles 12 and 13, especially whether new equipment should be added in either Article 12 or Article 13 or equipment should be transferred from Article 13 to Article 12;

- *Page 4: "For the other equipment with indicative stage II noise limits, such as lawnmowers, lawn trimmers, vibratory plates, **lift trucks** and compacting screed paver finishers, the technical impact is considered moderate, as noise control solutions are considered feasible although not always straightforward*."

See further comments on particular type of product.

- *Page 5: New in* Article 13*: "Mobile waste breakers and sieves (screens) (after 5 years), Mobile cranes for harbours and terminals (bridge/gantry cranes), Road sweepers without aspirators."*

The terms "mobile cranes for harbours and terminals (bridge and gantry cranes)" need to be clearly defined because the wording differs throughout the document.

- *Page 48: Dutch MIA/VAMIL incentive programme*

Only very few pieces of equipment follow the VAMIL limits, and it is generally recognised that such machines have a regional restriction or lower performances.

- *Page 50 Blue angel environmental mark*

See comment as for Dutch MIA/ VAMIL.

- Page 58: *the CALM recommendations, amongst which the ambition to halve the noise from outdoor equipment by 2020.*

The CALM recommendation is to reduce the noise annoyance from outdoor equipment, which is different from the noise from the equipment.

Pages 78 to 96 Environmental impact assessment (Chapter 4)

The environmental impact is based on an analysis which is totally new to FEM. More background information is necessary to better understand this approach. FEM cannot rely on it as some results are questionable, in particular:

- *Pages 91 and 95*

More information is necessary to understand the ranking of lift trucks and bridge gantry cranes (harbour and portal cranes) and mobile cranes.

Pages 97 to 105: Review of test cycles and procedures (chapter 5)

- *Page 99, 5.2.7:*

Directive 2000/14/EC does not specify the way to calculate the uncertainties. Manufacturers have managed to find a calculation appropriate for their products. FEM questions the benefit of imposing a uniform approach to this calculation

- *Page 99, 5.2.11*

FEM agrees that market surveillance measurements should follow the principle of "shared risk".

- *Page 101, 5.2.24 Idling*

FEM is of the opinion that this question needs to be re-opened, especially in relation to Directive 2003/10/EC Physical Agents – exposure to noise.

- *Page 102, Lift trucks*

FEM requests clarification of "remove exception".

- *Page 102, Lift trucks+* loaders: Combine in one group

See comments on page 198.

- *Page 103, Straddle carrier and reach stackers*

These machines are used in ports and harbours and their introduction in the directive is not justified in the report. FEM see no benefit to regulate such equipment

- *Pages 104 and 105 Test cycles for lift trucks*

Lift trucks are used either in the construction sector or in the agricultural industry. As a consequence, a classification needs to be recognised in the directive in order to adapt the test codes and take into account the actual work performed.

Proposal c) (VDMA) refers to industrial type whereas d) (FEM) refers to the various types of lift trucks.

FEM is of the opinion that a complete review of the test codes needs to be conducted to take into account the different kinds of lift trucks (e.g. those with a vertical mast, industrial type – variable reach truck, rough terrain type) and their respective work cycle.

As a first approach FEM would be in favour of adhering to EN12053 for lift trucks with a vertical mast, industrial type, and creating a new test code for rough terrain lift trucks. The alignment with loaders needs to be studied in more detail.

Pages 146 to 150: Statement on the need to revise the list of article 12 and 13 (Chapter 8)

- *Page 148 New type to include*
  - *Mobile cranes for harbours and terminals*

There is no sufficient justification in the report for introducing these products into the directive. In addition, no test code is available due to the size of the machines. The current draft standard deals only with emission sound pressure levels at the operator's positions

- *Removal from the directive*
  - *Construction winches (all)*

FEM agrees with this proposal as the market is very low and continues to decrease. In addition the impact on the environment is in our opinion almost negligible.

Pages 155 to 227: Instrument for noise reduction (chapter 10)

- *Page 156 - Aerial access platforms with combustion engine*

FEM Comments

- Recommended limits: there is a discrepancy between table 9.1 on page 153 where a minimum of 101db is presented and the equipment fiche on page 156 where this value does not appear.
- Improvement of the test code: there appears to be a contradiction in the report between table 5.2 on page 102 (no improvement necessary) and the equipment fiche on page 156 (test code insufficient).
  What is the justification for the percentage or the various phases of the test (moving the platform (70%), turning (10%), idling (20%)) ?
  Additionally, the test does not represent the work cycles of those machines and turning is impossible for scissor types.

FEM Position

MEWPs should not be moved from Article 13 to Article 12 until the following issues are resolved. The test code and limit values are linked. There is a proposal to change the change the test code which leads to a lack of information about any possible limit. On the other hand, the proposed limits are not compatible with the current test code.

- *Page 196 - Lift trucks*

FEM Comments

Current limit: the current limit is 85 + 11 lgP with a minimum of 105 (as indicated on page 11 of the report).

FEM Position

Recommended limits: Considering the fact that test codes need to be revised it is much too early to comment on any limits.

Recommendation to test code/cycles: please see our comments on p 104 and 105.

- *Page198 - 37/38 Loading and lifting equipment P< 350kW*

FEM is not in favour of mixing both types of equipment since they are completely different machines, and primarily designed for different applications.

c) A statement of the need and the possibilities for revision of the limit values laid down in Article 12 taking into account technological development

- *Page 48: Dutch MIA/VAMIL incentive programme*

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- Page 58: *the CALM recommendations, amongst which the ambition to halve the noise from outdoor equipment by 2020.*

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Pages 97 to 105: Review of test cycles and procedures (chapter 5)

- *Page 103, tower cranes*

EN14439 has to be added as the reference standard as it includes the test code aligned with Directive 2000/14/EC.

- *Page 103, Straddle carrier and reach stackers*

These machines are used in ports and harbours and their introduction in the directive is not justified in the report. FEM see no benefit to regulate such equipment.

- Page *104 and 105 Test cycles for lift trucks*

Lift trucks are used either in the construction sector or in the agricultural industry. As a consequence, a classification needs to be recognised in the directive in order to adapt the test codes and take into account the actual work performed.

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FEM is of the opinion that a complete review of the test codes needs to be conducted to take into account the different kinds of lift trucks (e.g. those with a vertical mast, industrial type – variable reach truck, rough terrain type) and their respective work cycle.

As a first approach FEM would be in favour of adhering to EN12053 for lift trucks with a vertical mast, industrial type, and creating a new test code for rough terrain lift trucks. The alignment with loaders needs to be studied in more detail.

- Page *122, 6.8.3 Combustion-engine driven counterbalanced lift trucks*
  Stage II limits should be feasible as there is no severe weight or space limitation. This equipment type is sufficiently numerous to allow stricter limits.

The statement is not properly justified by assessed and reviewed technical data, environmental and economical figures. Unless properly justified, FEM asks that it be deleted.

Pages 155 to 227: Instrument for noise reduction (chapter 10)

- *Page 200 - Mobile cranes*

FEM Comments

Current limit: the level is only correct for two engine mobile cranes; for single engine mobile cranes, the level is 85 + 11 lg P with a minimum of 105 until 1 January 2008.

FEM position

In the last years, the technical improvement (optimization of the construction part) was very high to get in line with the stage II. The main noise sources are the water and hydraulic cooling system (higher fan speeds and larger air flow).

The "Quitter and engines and alternative drive systems" mentioned on "Current and future technical progress" is not seen by the manufacture for the future.

In fact, the exhaust emission directive faced the manufacturer, in the next years, for tremendous changes as following.

In 2011 and 2014 the Directives 97/68/EC and 2004/26/EC requires new stages IIIB and IV engines with significant influence on the crane design.
The new values required can only be met by the Diesel engine manufacturers with e.g. more injection pressure resulting in more heat generation and after treatment of emissions and require from the mobile cranes manufacturers a redesign of the whole engine environment (more space for greater air flow and insulation, after as treatment etc.), which is counterproductive regarding reduction of noise emission.

As a consequence, to maintain the existing noise emission with stage IIIB and stage IV engines will be a challenge for the mobile crane manufacturers, so FEM welcome the proposal to stick with stage II (noise emission) as proposed.

- *Page 218 - Tower cranes*

FEM Comments

- Range of guarantee sound power levels (84 – 100): Common range for tower cranes is 90 to 98
- Technical impact: FEM is of the opinion that quieter gear transmission is not possible for the majority of models, as this work has been done to comply with stage II of this directive. In addition the gear box is not the single source of noise.

FEM position

- There are various types of tower cranes – self-erecting tower cranes, tower cranes assembled from component parts, and mobile tower cranes used with generator set. More pictures would be helpful.
- The main noise emission source for tower cranes being the hoists, investigation could be undertaken to simplify the directive and facilitate the input in the database, taking into account the hoist for tower cranes alone. This would be justified as tower cranes have a modular design e.g. different crane types can be used with different hoist gears.
  As for the test code, reference to EN 14439 should be added.

d) a statement setting out an integrated range of instruments to be used in continuing the reduction of noise by equipment

Technical impact assessment (Chapter 6)

- *P 119, 6.5.2 Physical Agents Directive*

The Physical Agents Directive 2003/10/EC covers the exposure of workers to noise, thereby having an indirect impact on noise requirements set by users of machinery. A consequence of this legislation is that purchasers of machinery for professional use will tend to set contractual noise requirements to minimise the noise exposure to workers.
An exposure limit value of 87 dB(A) over 8 hours is set, together with upper and lower action level values of 85 and 80 dB(A) respectively. To compare this requirement with sound power levels, if an operator were to be standing next to outdoor equipment operating for 8 hours, the effective sound power limit would be around 95-98 dB(A).

FEM is of the opinion that the conclusion as presented appears confusing. In fact the noise exposure of workers depends of the actual use of the equipment, including high noise emissions during certain movements, low noise emissions during others, as well as process noise. As a general rule, and according to the test code used in

the framework of Directive 2000/14/EC, the movement of the equipment is limited to the noisiest one. FEM suggests modifying this clause to avoid misleading interpretation.

[i] FEM represents European manufacturers of materials handling, lifting and storage equipment since it was founded in 1953. FEM is a non-profit trade association (AISBL under Belgian law) permanently based in Brussels to better represent its members and their interests' vis-à-vis the European institutions and European partners. FEM currently has 13 National Committees as members in the EU, Switzerland and Turkey, and in 2006[1], the production value of FEM members exceeded €50.6 billion.

[1] Source: Statistical Database on the EU Mechanical Engineering Industry compiled by GzF/VDMA as part of the study commissioned by the European Community