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Director  
Standards & Regulations Division  
Attention: ONAC Docket 81-02  
(Medium & Heavy Trucks)  
ANR-490  
U.S. Environmental Protection Agency  
WASHINGTON, D. C. 20460

Reference: EPA Request for Comments Regarding the 80 dBA  
Noise Standard Regulation for Heavy & Medium  
Trucks

Gentlemen:

We appreciate the opportunity offered to the industry to address the question of whether EPA should rescind the 80 dBA noise regulation for medium and heavy trucks.

Kloekner-Humboldt-Deutz AG. (KHD) is a manufacturer of air and water cooled diesel engines with an output range up to 10,000 HP. Our on-highway diesel engines are air cooled, with power outputs in the range from 40 to 550 HP.

KHD's production program is comprised of nine different engine series with a total of twenty-nine families of heavy-duty diesel engines. Two engine families are presently certified as meeting EPA exhaust emission standards for heavy-duty diesel engines.

During 1974 KHD established research and development facilities in Montreal, Canada, for the purpose of developing air cooled diesel engines for the North American market. Several engine families (namely, B/FL 610) are being developed. These engines feature -

- high speed/light weight combination, which allows for the use of existing automotive transmissions and drive trains.
- direct injection combustion system which ensures low fuel consumption.

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- exhaust emission characteristic meeting the present EPA emission requirements for heavy-duty diesel engines.

KHD CANADA, Inc. does not manufacture vehicles. The engine families developed in Montreal are to be utilized for powering/repowering of vehicles manufactured by other companies; therefore, the features listed above - especially for high speed-light weight combination - are needed to suit the market requirements.

The optimization of these engines to adequately meet market and legal requirements, i.e., high rated speed, light weight, low fuel consumption, low exhaust emission levels, etc., presents, however, a trade-off in terms of noise emission levels.

Having outlined the background of our Company, we would like to offer the following comments regarding the 80 dBA noise standard regulation for heavy and medium trucks.

The underlining objective in the 1980's is energy conservation with environmental consideration borne in mind. Energy conservation during manufacturing, as well as operation of land transportation vehicles, can also be translated directly into cost for manufacturers and consumers. It is especially important under the present economic atmosphere of the North American automotive industry.

Our B/FL 610 engines are prime examples of engines developed adhering to the above mentioned objective for the 1980's North American market. Being high rated speed (3600 or 3200 rpm), direct injection engines, they possess superior fuel efficiency and power-to-weight ratio. Compared to lower rated speed and indirect injection engines, the manufacturing cost is also lower both in process as well as quantity of material utilized for the equivalent power output. The B/FL 610 engines have been optimized to meet the present EPA emission regulations for heavy-duty diesel engines. Many present state-of-the-art technologies have been incorporated in the design to ensure that vehicles using these engines meet the present 83 dBA noise level requirement without excessive noise insulation treatment.

If the 80 dBA noise standard regulation is to be enforced, it is likely that one or more of the following options will have to be taken.



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1. Reassessment of the Combustion System

If the direct injection system is to be retained, the exhaust emissions as well as fuel consumption will be negatively affected to achieve lower noise level. Indirect injection is an alternative combustion system which offers benefits in terms of noise and exhaust emission levels; however, a severe penalty accompanies such an alternative - namely, increased fuel consumption (up to 10%) and lower power output (approximately 15%).

2. Lowering the Rated Speed of the Engine

The reduction of engine rated speed does reduce the noise emission level, but with the following negative results:

- 2.1 Unfavourable ratio of material weight versus horsepower.
- 2.2 Necessity of heavier power trains to handle higher torque than with the equivalent output high speed engine.
- 2.3 Necessity for transmissions with a higher number of speeds (gears) to overcome narrower engine speed ranges. This, along with 2.1 and 2.2 above, increases the necessary energy portion contained within each weight unit of total powertrain. i.e., extra energy usage in material and manufacturing process.
- 2.4 Lower fuel efficiency due to the lower ratio of vehicle curb weight versus payload.

3. Add-on Noise Treatment to Engine & Vehicle

This method, including partial or total engine encapsulation, usually provides the quickest result regarding noise reduction; however, it represents the costliest avenue among the three options mentioned as indicated in the cost/benefit summary below. The additional weight of such add-ons can also affect the overall efficiency of the vehicle.



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Cost/Benefit Summary

Our Company has performed several studies and exercises (including building prototype engines and vehicles) toward the determination of cost versus benefit in the noise reduction program. Based on such experience, the following can confidently be estimated:

If option 1 and/or option 2 were selected, the manufacturing cost per engine would increase by approximately \$100 per each one (1) dBA reduction. This is based on the equal power output comparison, with power recovery achieved by turbocharging or other means. This cost increase is in addition to the fuel consumption penalty which would be carried by the vehicle for its entire useful life.

If option 3 were selected, the increase in manufacturing cost per engine would be in the order of \$250 per each one (1) dBA reduction.

It therefore can be seen that a reduction in noise level from 83 dBA to 80 dBA will cost the engine manufacturer alone an extra \$300 to \$750 per engine, with possible heavy fuel efficiency penalties. These costs are also subjected to the well-known "law of diminishing return", i.e., it will cost more and more for the same amount of improvement towards a lower and lower absolute level.

In conclusion, our Company would like to echo the general reaction of the North American engine and truck manufacturers in urging EPA to rescind this particular legislation regarding the 80 dBA noise standard for heavy and medium duty trucks. This will, no doubt, alleviate a burden from the shoulder of an industry which already finds itself in many tight situations caused by events beyond its control.

We thank you for the opportunity to let us voice our opinions.

Yours truly,  
KHD CANADA, Inc.

A handwritten signature in cursive script, appearing to read 'Paul Slezak'.

Paul Slezak, Manager,  
Design, Research & Development

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