
EUROMOT POSITION

20 November 2015



Inland Shipping Limits in NRMM – Not Feasible nor Realistic

EUROMOT has become aware of a paper circulating claiming that the NO_x limit proposed by Commission for inland waterway engines > 1000 kW (ie 0.4 g/kWh) is 'feasible and realistic' even without the use of LNG.

EUROMOT would like to make it clear that it has seen no robust data that demonstrates this limit would be achievable with a marine diesel engine, particularly taking into account the challenging and comprehensive type approval and production requirements that must be met before a manufacturer can place a Stage V engine on the EU market.

Moreover, the paper is particularly disingenuous in citing an (in EUROMOT's opinion) unrealistically low incremental product cost whilst totally omitting to include any mention of the largest element of cost, namely the necessary cost to develop and validate a unique series-production product for this tiny market sector.

Even if the proposed limit value could be achieved by a marine diesel engine (which we doubt), the cost of developing engines to comply with all the requirements (set out below) at the point of placing the engine on the market are considerable and would be in the order of many millions of Euro for each engine family, set against annual sales per engine family of a few tens of engines. To put this into perspective, leaving aside the substantial cost of development staff, test facilities, prototype parts, etc, the amount of fuel consumed in running the necessary development and validation of a > 1000 kW engine family would alone cost more than 1 million Euro. How such costs could be met by the sector are unclear.

It should also be noted that the US Tier 4 emission limits for this power range (600 – 1400 kW) do not come into force until 2017. The EPA does not make any mention of reviewing marine engine exhaust emission limits in its 2014-2018 Strategic Plan and EUROMOT and its US partner the EMA are not aware of any plans beyond that.

In conclusion, EUROMOT remains concerned that the overly ambitious emission limits that are proposed for this niche sector would be detrimental to the viability of inland shipping.

President:
Georg Diderich

General Manager:
Dr Peter Scherm

ENGINE IN SOCIETY

A European Interest Representative (EU Transparency Register Id. No. 6284937371-73)

A Non Governmental Organisation in observer status with the UN Economic Commission for Europe (UNECE) and the UN International Maritime Organisation (IMO)

ADDITIONAL INFORMATION

The requirements set out to type approve and produce a Stage V engine require all of the following:

- The limit must be achieved over specified test cycle(s) depending upon how the engine will be operated (propeller curve or constant speed);
- The engine emission control strategy used on the test cycle must be maintained throughout a range of ambient conditions, not only under emission test conditions;
- The emissions must also be effectively controlled over a range of speed and load points (control area), not just on the test cycle;
- The SCR system must not result in more than a (barely measurable) level of 10 parts per million of urea escaping into the exhaust;
- The emission results must include an allowance for any additional emissions generated through the periodic regeneration of the after-treatment system (eg burning off soot collected in a particle filter);
- The engine manufacturer must demonstrate the system will be sufficiently durable to assure that emission limits will still be met after 10000 hours of operation (emission durability period), taking into consideration any degradation of the catalyst or deposit formation on the urea injection system, etc. Using the NOx assigned deterioration factor from Stage IV of 1.15 (which is unlikely to change for Stage V) would mean that the NOx level to be achieved at the type approval test would be reduced from 0.4 to 0.35 g/kWh;
- The engine emission electronic control unit (ECU) must be protected from tampering/unauthorised re-programming to prevent in-situ re-tuning of the engine;
- The manufacturer must achieve the emission limit values for each engine placed on the market, without in-situ re-tuning, taking into account normal production tolerances. Allowing a nominal 10% margin for production variability would reduce the target type approval emission level further from 0.35 to 0.31 g/kWh;
- A comprehensive NOx control diagnostic system must be installed to detect and warn of problems with the urea supply (level, quality) or failures of the system.

From the non-legislative aspect of routine daily operation in the demanding inland waterway operating environment, the engine manufacturer will need to achieve the above whilst providing excellent reliability and being backed-up by comprehensive installation and maintenance instructions and a next day spare parts and technical support service, with the associated costs.

EUROMOT – 2015-11-20

For more information please contact:

**European Association of Internal Combustion
Engine Manufacturers – EUROMOT aisbl**

Dr Peter Scherm, +32 497 06 2227

peter.scherm@euromot.eu

EUROMOT is the European Association of Internal Combustion Engine Manufacturers. It is committed to promoting the central role of the IC engine in modern society, reflects the importance of advanced technologies to sustain economic growth without endangering the global environment and communicates the assets of IC engine power to regulators worldwide. For more than 20 years we have been supporting our members - the leading manufacturers of internal combustion engines in Europe, USA and Japan - by providing expertise and up-to-date information and by campaigning on their behalf for internationally aligned legislation. The EUROMOT member companies employ all over the world about 200,000 highly skilled and motivated men and women. The European market turnover for the business represented exceeds 25 bn euros.

Our **EU Transparency Register** identification number is **6284937371-73**.

<http://www.euromot.eu> – your bookmark for IC engine power worldwide

Our members are:

DIESEL AND GAS ENGINE MANUFACTURERS

| | |
|---|--|
| AGCO POWER | LOMBARDINI-KOHLER GLOBAL POWER (GROUP) |
| CATERPILLAR ENERGY & TRANSPORTATION (GROUP) | MAN GROUP |
| CNH INDUSTRIAL (GROUP) | mitsubishi turbo & engine europe |
| CUMMINS | MOTEURS BAUDOIN |
| DAIMLER | ROLLS-ROYCE POWER SYSTEMS (GROUP) |
| DEUTZ | SAME DEUTZ-FAHR |
| DOOSAN | SCANIA |
| GE POWER, WATER & TRANSPORTATION (GROUP) | STEYR MOTORS |
| HATZ | VOLKSWAGEN POWER SYSTEMS |
| ISUZU MOTORS GERMANY | VOLVO CONSTRUCTION EQUIPMENT |
| JCB POWER SYSTEMS | VOLVO PENTA |
| JOHN DEERE | WÄRTSILÄ |
| KOMATSU ENGINES | YANMAR (GROUP) |
| LIEBHERR | ZETOR |

SMALL SI ENGINE MANUFACTURERS

| | |
|-------------------|---------------------------|
| BRIGGS & STRATTON | KOHLER GLOBAL POWER GROUP |
| DOLMAR | SOLO |
| EMAK | STIHL |
| HONDA EUROPE | TOHATSU |
| HUSQVARNA (GROUP) | TORO EUROPE |
| KAWASAKI EUROPE | WACKER NEUSON |
| | YAMABIKO (GROUP) |