

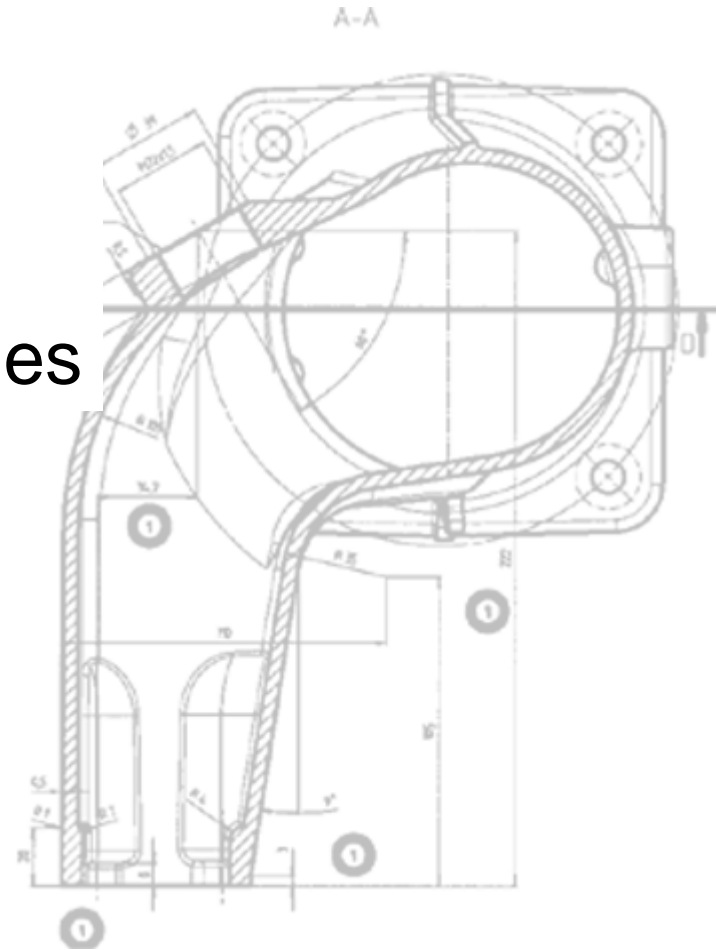


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The European Association of Internal Combustion Engine Manufacturers

Considerations on Low-S Fuel for Inland Waterway Vessel Engines

CCNR Roundtable
Strasbourg
3 May 2007



General Fuel Requirements for NRMM Stage IIIB and IV Engines (I)

- Stage IIIB and IV engines will adapt corresponding onroad technology, thus require onroad fuel quality EN590
- Current 98/707EC review proposal COM(2007)18 addresses fuel S only (and PAH for 10 ppm S)
- Specifications on additional fuel parameters needed such as:
 - Cetane number (Cold start)
 - Lubricity
 - Viscosity
 - Polyaromatic Hydrocarbon contents
(set to 8% for 10 ppm S fuel by COM(2007)18)
- Unclear how to include alignment request with EN590 in regulatory process

General Fuel Requirements for NRMM Stage IIIB and IV Engines (II)

- Minimum S requirements:
 - Fuel S limits for emission limits based on engine internal measures: 300 ppm S
 - Fuel S limits for emission limits based on aftertreatment system: 10 ppm S

- Biodiesel
 - Generally NRMM engines will be designed for max. 5% FAME (v/v)
 - Higher blends or different qualities (pure vegetable oils,...) will require case-by-case investigation

Concerns on Availability of Low S Heating Oil

- Might be available in both 300 and 10 ppm S qualities
- Specified by national standards only
- Key parameters for Stage IIIB and IV missing: Cetane number, viscosity, lubricity, PAH
- Use will result in severe operability, reliability, durability and warranty issues for Stage IIIB and IV engines

Compatibility of Existing Engines with Low-S Fuel

- General guidance on compatibility of either 300 or 10 ppm S fuel with existing engines cannot be provided
 - Very broad variability of existing engines concerning age, models, manufacturers (some out of business) due to the exceptionally long life time of engines in IWT
 - Currently can only estimate potential impact on older technology
- Major issue is not low S but other fuel parameters getting changed during desulfurisation. Example: lower lubricity resulting in early valve seats attrition
- Additives might offer options; most of the experience will be available from oil companies/refiners
- In-use testing programs for NRMM anticipated by some manufacturers, however, strongly recommend CCNR driven in-use test program, to be developed with stakeholders



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