

Proposal for a Black Carbon measurement protocol for data collection to voluntary measurement studies as invited by the International Maritime Organization (IMO)

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About EUROMOT



Established in 1991, EUROMOT has been providing **reliable know-how** on advanced engine technologies in general, and on environmentally efficient and cost-effective product regulations.

We partner with other associations and stakeholders around the world to develop **technically and economically feasible regulations for the local or global environment** while sustaining mobility and economic growth in a modern trans boundary society.

EUROMOT is a **European Interest Representative** registered in the EU Transparency Register (id. no. 6284937371-73) and a non governmental organisation in **observer status** with the UN Economic Commission for Europe **UNECE** and the UN International Maritime Organisation **IMO**.

IMO demands for a BC measurement protocol (1)

IMO's MEPC approved at its 68th session in May 2015 the definition of Bond et al. for Black Carbon (BC):

"Black Carbon is a distinct type of carbonaceous material, formed only in flames during combustion of carbon-based fuels. It is distinguishable from other forms of carbon and carbon compounds contained in atmospheric aerosol because it has a unique combination of the following physical properties:

- *it strongly absorbs visible light with a mass absorption cross section of at least 5 m²g⁻¹ at a wavelength of 550 nm;*
- *it is refractory; that is, it retains its basic form at very high temperatures, with vaporization temperature near 4000 K;*
- *it is insoluble in water, in organic solvents including methanol and acetone, and in other components of atmospheric aerosol; and*
- *it exists as an aggregate of small carbon spherules."*

IMO demands for a BC measurement protocol (2)

- Furthermore, the definition is requested to be:
 - neutral concerning potential measurement methods; and
 - widely supported by the scientific community
- Interested Member Governments and international stakeholders have been invited to submit proposals for protocols for a voluntary BC data collection
- The data collection exercise is anticipated to verify the feasibility of the proposed definition and its applicability to the four measurement methods LII, FSN, PAS and MAAP
- A key pre-requisite has been clearly stated by IMO MEPC 68: The protocol needs to be measurement method neutral!

The EUROMOT proposal for a BC measurement protocol (1): Our approach

- EUROMOT supports using a harmonized measurement protocol for the voluntary data collection and evaluation exercise as it would facilitate the assessment and comparability of the collected data
- The EUROMOT proposal is:
 - fully in-line with the demand for a measurement method neutral protocol
 - suitable for measurements on board ships as well as on engine test beds
 - very detailed in terms of parameters to be included. It is aligned to the utmost extent possible with existing IMO regulations

The EUROMOT proposal for a BC measurement protocol (2): Parameters to be included

- Engine design parameters, maintenance status and running-in
- Fuel in use during measuring
- Lubrication oil properties and composition during measuring
- Information to the measurement equipment including the instrument calibration, exhaust gas dilution, sample line and probe conditioning
- Values to be determined in accordance with NTC 2008 and their estimated accuracy
- Measured values at load points under actual engine settings and ambient conditions

Thank you for your attention

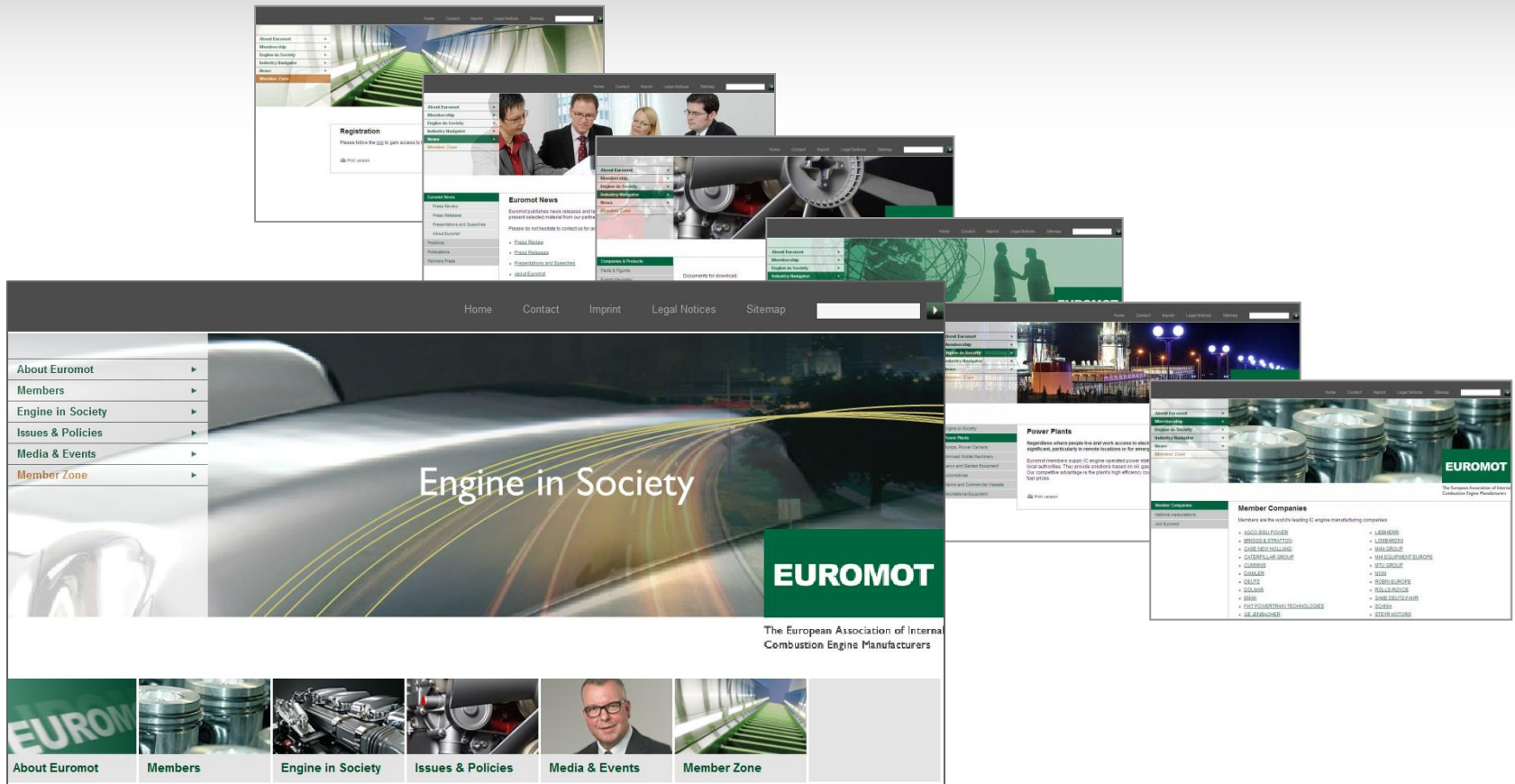
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