Strategies for introducing methanol as an alternative fuel for shipping (10533)

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LEANSHIPS PROJECT
✓ European Innovation Project (Horizon 2020)
✓ Low Energy And Near to zero emissions Ships
✓ 7 Work Packages, 41 partners
✓ Work Package 5: “Demonstrating the Potential of Methanol as an Alternative Fuel”
✓ 6 Partners
✓ Objectives:
  ➢ Conversion of Volvo Penta D7 to dual fuel operation
  ➢ Bench tests on dual fuel diesel-methanol
  ➢ LCA study on 2 case study vessels
  ➢ Tools for dissemination & exploitation

RATIONALE FOR METHANOL

Although waterborne transport is an energy efficient means of transport, pollutant emissions are high relative to other forms of transport. Given more stringent emission regulations, the industry looks for alternatives. The internal combustion engine remains the best technology, provided it can operate on CO₂ neutral fuels.

3 CRITERIA FOR ALTERNATIVE FUELS: SCALABLE, STORABLE, SUSTAINABLE
➣ Internal Combustion Engine (ICE) and methanol are scalable
➣ Methanol has acceptable energy density and is sustainable
➣ Methanol production in a sustainable way (closed CO₂ cycle)

DUAL FUEL OPERATION: FUMIGATION CONCEPT
➣ Methanol injected in the intake manifold
➣ Methanol-air mixture ignited by pilot diesel injection

BENCH TESTS (planned Q2 & Q3 2018)

Test engine: Volvo Penta D7C TA
6 in-line cylinders
7.15 l
CR = 17.6:1
195 kW @ 2300 rpm

Deliverables:
➣ Operating range on dual fuel diesel-methanol
➣ Maximum substitution ratio of diesel by methanol
➣ Emissions, efficiency & power output on dual fuel