**Overview**

DME or Dimethyl Ether is regarded as one of the most promising alternative fuels for compression ignition, diesel type, engines that has potential to meet Green House Gas (GHG) environmental goals. For DME to be used as a fuel, it has to be certified for public use. Part of that certification process is having a Fuel Specification defining its characteristics. The American standards (ASTM) for DME references standards for Liquefied Petroleum. The applicability and accuracies for these LP standards need to be determined.

**Objectives**

Team Volvo compared the ASTM DME standards to the ISO and JSA standards to determine discrepancies between them. The discrepancies were weighed and the correct committee (ASTM, ISO, JSA) was chosen for each testing procedure. If there was no other committee to compare a standard with that standard was researched for accuracy.

**Approach**

The project was broken down into seven smaller tasks to complete the project thoroughly and efficiently.

1) Read and understand the ASTM DME Standard. 2) Identify the Japanese DME standard. 3) Identify the ISO DME Standard. 4) Using all three DME fuel standards, identify differences in the specifications as they pertain to testing requirements, minimum and maximum limits on critical variables, and pass/fail criteria. 5) Review the existing ASTM DME fuel specification limits for pass/fail under the testing procedures recommended by the standard and see if the ASTM limits agree with the accuracy of the procedure. 6) Where the testing procedure is modeled or referenced to a propane procedure, check to see if the procedure reflects the correct pass/fail criteria for DME. 7) Compare the accuracy of the various testing procedures recommended by the three standard committees and identify any other concerns/risks which need highlighted.

**Outcomes**

After completion of the 7 tasks outlined above, the results were compiled into a final report with the team’s recommendations. Below are the recommendations:

The best standard for water content testing is ISO 17197. The best standard for residue testing is ISO 17786. The best standard for hydrocarbon testing is ISO 17196. The best standard for sulfur content testing is JSA JIS K-2180-6. Corrosion test procedure is accurate for DME and should be included in the standard due to impurities creating corrosion. Vapor pressure test procedure is accurate for DME with the correct adjustments and should be included in the standard. These conclusions were derived from head to head comparisons of both ASTM vs. ISO, ASTM vs. JSA, and ISO vs. JSA.