Development Methodology for Power-Dense Military Diesel Engine

Poster Location P-26

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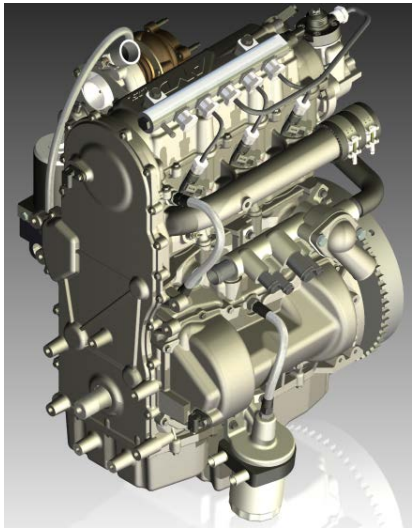

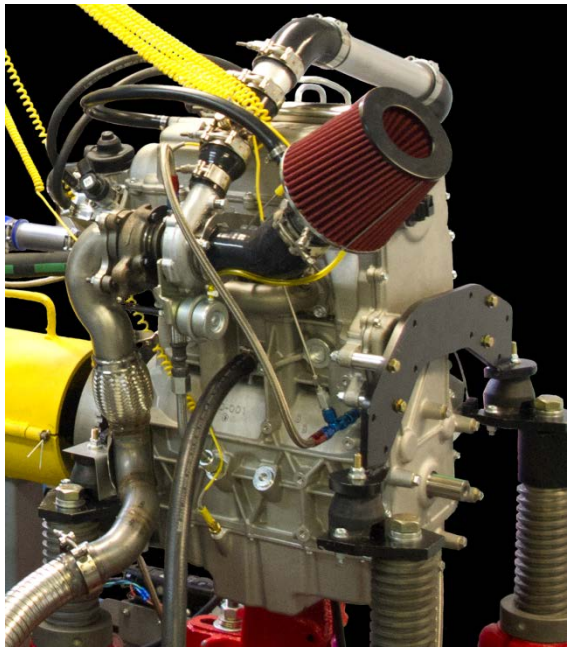

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Emissions-Compliant, Lightweight Military Diesel Engine

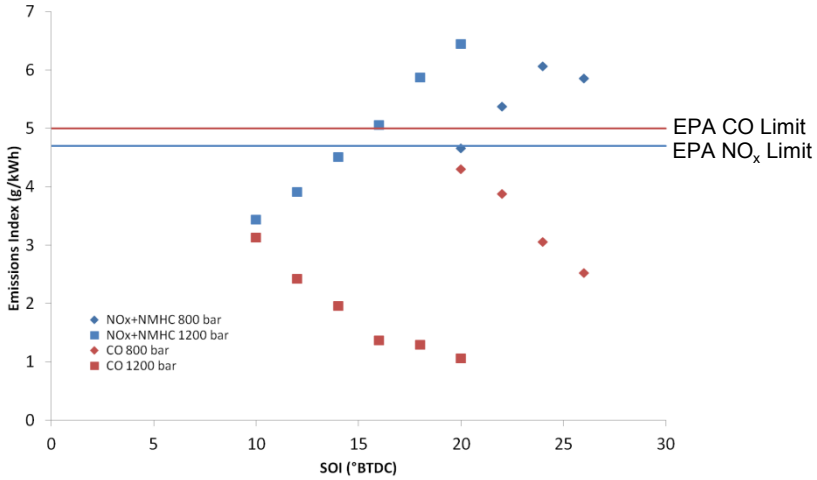
Motivation

- Mobility of military diesel power generation systems is hindered because of engine weight
- Our objective is to design an emissions-compliant, lightweight diesel engine capable of handling harsh military duty cycles and environments

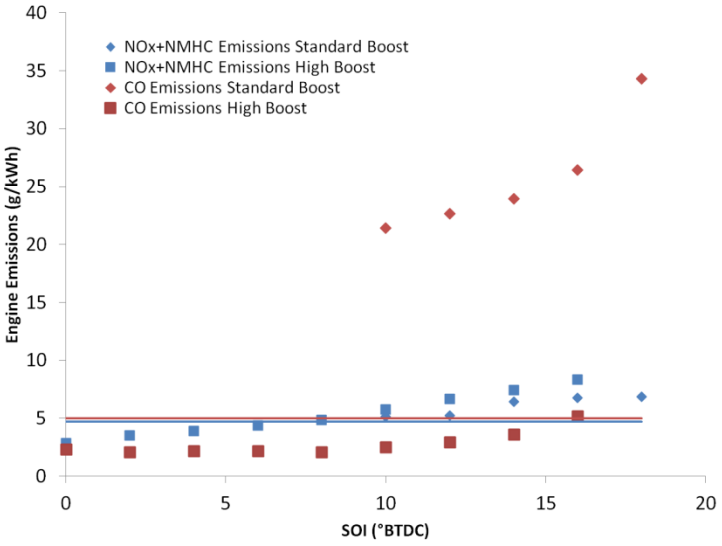
Preliminary Results

- Maximum Power: 53.2 kW (71.3 hp)
- Weight: 91.8 kg (202 lb; 0.353 hp/lb)
- FEA results indicate a factor of safety of 1.87 for 8000 hrs at 4500 RPM, 140 bar peak pressure
- Modulation of manifold pressure, injection pressure, and injection timing can reduce NO_X +NMHC and CO by 24.9% and 44.3% respectively

Effect of Injection Pressure



Effect of Manifold Pressure



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