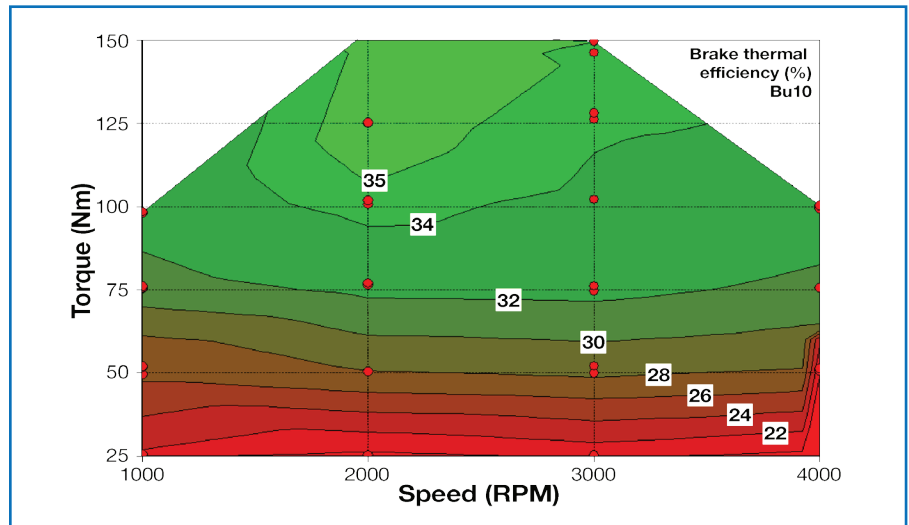


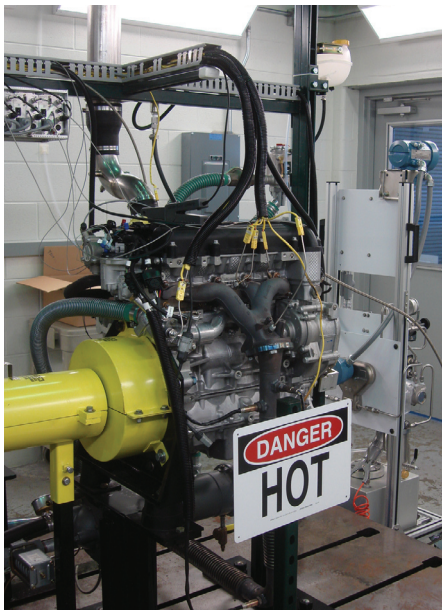
Omnivorous Engine Project

Opportunity

The new U.S. Renewable Fuel Standard requires that the production of ethanol and advanced biofuels be increased to 36 billion gallons by 2022. The production of ethanol will be capped at 15 billion gallons, leaving 21 billion gallons to come from other sources such as bio-butanol. While current flex-fuel engines are designed and calibrated to use gasoline, they do not take full advantage of the specific beneficial properties of alternative fuels and do not operate at maximum efficiency.



Engine efficiency map for a blend of 10% n-butanol and 90% gasoline



Omnivorous engine test stand at Argonne's Center for Transportation Research

Argonne's Approach

Argonne's Center for Transportation Research set up a dedicated test engine for alternative fuels research. Its key features are:

- State-of-the-art engine test cell with low- and high-speed data acquisition
- Modern, fully-instrumented 4-cylinder direct-injection engine
- Engine control unit (ECU) with full calibration access (OEM gasoline calibration)
- Full emissions sampling capability for regulated and non-regulated emissions
- Integration of advanced sensing tools (ion-sensing) for engine controls development

Benefit

A combustion engine designed and calibrated specifically for use with alternative fuels will result in higher fuel efficiency and could potentially reduce engine emissions.

The development of such an engine is a step toward reducing our nation's dependence on oil, a critical component of the U.S. Department of Energy's strategic goals.

For further information, contact

Center for Transportation Research
Argonne National Laboratory

Dr. Thomas Wallner
630-252-3003
twallner@anl.gov

Steve McConnell
630-252-3080
smcconnell@anl.gov

October 2008