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FOR IMMEDIATE RELEASE

Fuel Testing Reveals Higher Octane in Ethanol

Addition of Ethanol Shows Improved Performance Benefits

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(***Colwich, Kan., - January 10, 2012)*** – Last July, it might have seemed surprising when the government and automotive industry announced ambitious plans to raise corporate average fuel economy (CAFE) standards to 54.5 MPG by 2025. What's more, the bulk of the heavy lifting to get there will be accomplished by utilizing high-efficiency internal combustion engines that deliver lower C02 emissions per mile.

One hurdle to address is that these high-efficiency engines need higher-octane fuel to realize their full fuel efficiency and performance potential. Making higher octane gasoline at the refinery is an expensive process, which is then passed on to the consumer. Could a cheaper and more environmentally-friendly source of octane be found in ethanol? The answer is a resounding, 'yes,' according to the fuel testing results that were just released.

The fuel research was conducted by AVL, a global industry leader for the development of powertrain systems with internal combustion engines, instrumentation and test systems. The first phase of fuel testing began in January 2011 and ended in December 2011; the fuel testing study was funded in part by ICM.

Identifying A New Way to Test Fuel

Recognizing ethanol's full octane value required some practical thinking about how ethanol is added to fuel, and to show how ethanol performs in new direct-injection engines. The AVL tests incorporated multiple gasoline base fuels, various compression ratios and several automotive fuel systems to demonstrate ethanol's performance.

One of the surprising results revealed in this testing was the additional benefits of ethanol's favorable octane sensitivity. By plotting both ethanol's chemical octane and sensitivity benefits along with the cooling effect, test results showed that ethanol offers twice the octane potential. The focus of testing was to evaluate the various fuel blends along a range of knock limit operation rather than just evaluating one set point as is done today.

"Until now, most testing of ethanol allowed match blending and the base gasoline varied each time ethanol was added – which yielded inconsistent results due to variability of the gasoline fuel. As an effect of this particular testing approach, it limits the ability for results to show increased performance of ethanol. This new testing data has proven to be

a great tool to illustrate how much performance can be achieved by simply adding ethanol to gasoline. We are seeing a significantly higher value for ethanol and use of intermediate blends to support the changing needs of the automakers and the new fuel efficiency standards that have been issued," said ICM's Steve Vander Griend.

Yielding Higher Octane Performance

The fuel performance study revealed that E30 yielded higher octane performance compared to Iso-Octane, which is the reference fuel for determining the 100 octane scale. Current testing standards of the American Society for Testing and Materials (ASTM) would show much less octane potential for E30. "These real-world results show that ethanol blends have the potential to offer much more octane value than previously estimated by methods prescribed by the ASTM. This is very good news for automotive engineers who are looking to higher-octane fuel as they strive to meet higher fuel efficiency and performance standards. Most importantly, consumers stand to gain the most from saving money at the pump," continued Vander Griend.

Ethanol's favorable performance can be particularly beneficial under high engine load conditions that often result in contributing to higher emissions from motor vehicle exhaust. The potential benefits include lower emissions and better fuel economy which equates to lower C02 per mile with utilizing mid-level ethanol blends.

ICM looks forward to supporting future fuel test studies that will continue to prove the performance and value that ethanol delivers. In addition, through continued collaboration with various stakeholders, the biofuels industry stands ready to assist in achieving aggressive fuel efficiency standards that will reduce our dependence on foreign oil and promote cleaner cars that won't pollute our air or constrain consumers' wallets at the fuel pump.

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About AVL Powertrain Engineering
AVL is the world's largest privately owned and independent company for the development of powertrain systems with internal combustion engines as well as instrumentation and test systems. AVL Powertrain Engineering has been supporting the Automotive and Mobility industries for more than 60 years.

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