

Driving Automotive Innovation - Congressional Panel September 2016

Engine Efficiency Improvement Panel 3 Introduction

Engine Fuel Economy – How Can They Get Better

For the foreseeable future (at least to 2040), transportation in the US will be powered by internal combustion engines (ICE). Increasing the efficiency of these engines will dramatically improve fuel economy and lower GHG emission for decades. It is expected even in 2040, that 99% of vehicles sold in the US will be ICE.

Innovation in the auto sector has been a driver since 1975 as vehicles today have better fuel economy, higher horsepower and actually have become larger and heavier. Dramatic changes in the auto industry is happening again. Computer and software will be a major part of the technology improvement. Cars of the future will be the “Most Powerful Computer, one will ever own. Future vehicles will run on a 100 million lines of code with 100s of ECUs (Electronic Control Unit). As today’s average car has over 10 million lines of code which is not far behind a Boeing 787 Dreamliner at 18 million lines with multiple redundant systems, one can only imagine the future.

As ICE remains the driver to move our nation, how can gasoline engines be improved further. One significant technology, Gasoline Direct Injection (GDI) is a method to combine the fuel and air much better than previous methods and is a similar approach like diesel. GDI improves fuel economy and increases horsepower and approaches diesel efficiency. This technology started in 2008 with about 2% penetration and currently is in 46% of vehicles sold today and expected to dramatically increase in the next decade. Is diesel another option? Although diesel has been around for many years, it became a viable option for cars and trucks when sulfur was taken out of the fuel. Diesel vehicles are about 3% of the light duty vehicle market this year with about 40 models being offered next year. Some of those are the Ram 1500 pick-up, Jeep Grand Cherokee, Chevy Colorado and Cruz and Ford just announced the F-150 along with many BMW and Mercedes-Benz models.

The speakers today are going to discuss how GDI and Diesel are improving more today and into the future.