Driving to be (even) more efficient

It's hard to imagine a world without automobiles. They serve our needs. They enhance our freedom. They can even give us pleasure. And for more than a century, these amazing machines have exerted a powerful influence on the global economy and helped usher in the modern world.

In 1900, fewer than 10,000 cars were produced worldwide. This year, automakers will manufacture more than 60 million passenger cars and light-duty vehicles. And today, the internal combustion engine (sometimes called ICE), an invention of the 1800's, remains the most efficient, reliable and affordable system for powering them.

Vehicle numbers will continue to rise with economic growth and increases in personal income. Greater petroleum use and a heightened focus on achieving additional environmental improvements have led to high interest in alternative vehicles. Longer term, for example, fuel-cell vehicles may become competitive if all the remaining safety, technical and economic hurdles can be addressed.

For now, the ICE remains the most economically viable option available and is expected to be the primary vehicle technology worldwide for decades. Given this reality, technologies that improve the ICE's efficiency and emissions performance can not only meet consumer needs but also have a positive effect on the environment – for a long time to come and with a far greater impact early on than other alternatives.

Just as scientists and engineers are working on alternative vehicles, they are also working on ways to make ICE-based vehicles even more efficient and environmentally attractive.

The best efficiency improvements will come by addressing the entire system – rather than considering each step in isolation – by assessing the energy used and the emissions produced in making a fuel, delivering it and using it in a vehicle (including how efficiently different fuels work in different types of engines).

Some promising options include existing hybrid vehicles – which combine an ICE with an electric motor – and emerging technologies such as HCCI (homogeneous charge compression ignition) combining the efficiency of a diesel engine with a gasoline engine's lower emissions.

Working with automakers, we're investing in research to move these technologies from laboratory concepts to the showroom floor – and ultimately to our driveways and highways. Part of this work involves gaining a better understanding of the complex interactions that occur when different types of molecules are burned in an internal combustion engine. We expect this knowledge will lead to new fuel/vehicle systems having even higher efficiency and lower emissions.

Private industry and academia have the people and ingenuity to develop new technology for tomorrow's advanced fuels and vehicles. Consumers will keep driving the competition to find the right solutions to meet their specific needs for safe, reliable, affordable and efficient cars.

We're taking on that challenge and will continue to help improve energy efficiency in ways that are economically viable, scientifically sound and environmentally responsible.

ExxonMobil

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Chart: Internal combustion engines remain primary technology in 2030 (EUCAR)