

Re: Why Can't A Fuel injected Petrol Engine be as Efficient as a Diesel?

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- *From:* Cyril <Meynier.Cyril@xxxxxxxxxxxxxxxxxxxx>
  - *Date:* Fri, 20 May 2005 21:35:06 +0200
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"Fritz Schlunder" <me@xxxxxxxxxxxx> a utilisé son clavier pour dire :

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>Compression ratio. Higher=better for efficiency. Diesel engines use higher  
>compression ratios.

Yes. That's because Otto engines compress an air-fuel mixture. If one compresses it too much, the mixture may explode during the compression. This limits the compression ratio (to about 10 iirc).

diesel engines compress air only and add the fuel after that. Since there is no fuel during the compression, there is no risk of premature ignition, and compression ratio can safely be set to much higher values.

>However, this is only part of the reason why a diesel fuelled vehicle may  
>appear to get better gas mileage. Diesel fuel also normally contains  
>somewhat more energy content than gasoline on a volume basis.

This shows in fact that measuring fuel efficiency in miles per gallon (here in Europe, we do the opposite, we count how much liters the car uses to drive 100 km, but the problem remains the same) is not relevant to compare cars that use different fuels.

A LPG car can seem inefficient because it has not much mpg's, but this is only because LPG is 30% less dense than gasoline.

The best measure for fuel efficiency is not Miles Per Gallons, but miles per Megajoule of fuel.

This unit would be relevant to compare various (existing or planned) cars using diesel oil, gasoline, LPG, natural gas, hydrogen, ethanol, biodiesel, butanol or electricity.

This is still not the whole story, because hydrogen and electricity are not primary sources of energy: unfortunately, there is no hydrogen well, and no natural electric plug; so the mileage of cars using H<sub>2</sub> or electricity should be decreased by a ratio reflecting what is lost when these forms of energy are produced from primary energy.

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But we could go yet a little bit further : gasoline does not occur naturally either, and refineries consume some energy to make it from crude.

to sum up, it is very difficult to compare fuel efficiency of cars that doesn't use the same fuel !

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"We do not consider that aeroplanes will be of any possible use for war purposes"  
Richard Haldane, ministre à la guerre britannique, 1910

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- *Follow-Ups:*

- ◆ [Re: Why Can't A Fuel injected Petrol Engine be as Efficient as a Diesel?](#)  
◇ From: quasarstrider

- *References:*

- ◆ [Re: Why Can't A Fuel injected Petrol Engine be as Efficient as a Diesel?](#)  
◇ From: Fritz Schlunder

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