

## Re: Gasoline grade BTUs per gallon?

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- *From:* "K. Jones" <[shadetree1999@xxxxxxxxxxxxxxxxxxxxxx](mailto:shadetree1999@xxxxxxxxxxxxxxxxxxxxxx)>
  - *Date:* Mon, 29 May 2006 00:55:05 -0400
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"Pooh Bear" <[rabbitsfriendsandrelations@xxxxxxxxxxxxx](mailto:rabbitsfriendsandrelations@xxxxxxxxxxxxx)> wrote in message [news:4477601A.B1ECBE3@xxxxxxxxxxxxxxxxxx](mailto:news:4477601A.B1ECBE3@xxxxxxxxxxxxxxxxxx)

"K. Jones" wrote:

Bill, would it be more accurate to say an engines can "*\*be built\** with slightly greater efficiency by utilizing a higher effective compression ratio"?

That's a diesel ! They have much higher compression ratios than gasoline engines and are therefore more efficient.

I didn't didn't mean *\*that\** much more compression. :) While a typical car might have a static compression ratio of 8.5 or 9:1 compression, diesels have in the order of 20:1 compression. I've owned and "wrenched" several diesel vehicles. Love 'em. Large part of a diesel engines efficiency has to do with no throttle plate, and lean idle/low throttle.

Saab's new bio-power gasoline engines that run on E85 are more efficient on ethanol by turbocharging at a higher boost pressure than on gas that utilises the higher octane of ethanol ( a bit similar to having a higher compression ratio too ).

AFAIK, on a typical, un-modified, car engine, as delivered by the factory, built to use say, 87 octane gasoline, you will see no "preformance improvement" by using "premium" (say 91 octane).....more likely less

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performance.

Less performance ? Why do you say that. It flies in the face of experience.

Well, I used to think that too. The experience of many years of racing, and the thousands of timeslip that proved me wrong. I kept a log for sometime, of track temperature, air temperature, relative humidity (dry bulb), barometric pressure, and wind speed for hundreds of passes over a couple of seasons (helps less experienced drivers dial the car better). Looking at ETs and top speed after each run, "experience" has shown me that you get more "bang for the buck" on the lowest octane fuel you can run without having to retard anything.

It's only on engines that have a higher effective compression ratio, that performance gains will be found.

Higher compression ratio engines can make better use of it.

Well yes and no. If my engine runs fine on low octane fuel, I'll realize zero gains from a higher octane fuel (won't "hurt" it, just slightly less performance). If my engine requires higher octane fuel, I will see a major loss of performance, and possibly damage to the engine from running it on fuel with too low an octane. Much more so on an engine with "power adders" (ie turbo or super charging, nitrous, etc)

If my engine is designed for "regular" gasoline, I'll get slightly more miles/gallon, and a higher "max power" from regular gasoline, than I will from premium.

Probably not. It depends hugely on the ECU programming. though.

It may be one of those "Your Mileage May Vary". "Stock" maps are usually fairly conservative (ignition/fuel curves, etc), so there is even less of a chance of getting any gains from using a higher than recommended octane. Few cars that I drag raced had stock maps, or ran "regular" gas, but my mustang did (and the vehicle I was thinking of in the example with the timeslips). Harley recommends 91 octane. If it's not very hot outside, it runs on 87 octane fine, and I get 7 km/tankful more on "regular" than on "premium". If it's very warm out, it doesn't "like" 87, and I have move up to 89 or 91. That's with a mild cam and the stock (conservative) ignition map. If I remapped it so it wasn't quite so "conservative", then I'd most likely have to run 91 all the time.....but it's fast enough for me as it is

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(for now \*smile\*).

Graham

K. Jones

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