

BIOFUELS and CLASSIC VEHICLES

*by Mark Stockdale, Secretary
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So, what's this fuss about biofuels that you've heard about? What are they? What difference do they make? Should you even care?

Well, yes you should – because they could affect the performance of your pride and joy. Let me explain why.

You may be aware that the Government recently passed a Bill requiring oil companies to sell a percentage of retail fuels as renewable, or bio-fuels. The so-called Biofuels Sales Obligation means all oil companies – BP, Caltex, Gull, Mobil and Shell – have no choice but to comply. Although the sales target itself is small, it could lead them to blend a percentage of biofuels in all petrol you buy.

The Biofuels Sales Obligation

When the Bill was originally drafted, it proposed a graduated sales target that would reach 3.4% by 2012, meaning that much of all fuel sold must be biofuel. But 3.4% doesn't mean no more than 3.4% of the stuff you put in your tank will be renewable fuel. Far from it. For a start, most oil companies are initially concentrating on introducing ethanol into petrol. And since half of all fuel sold is diesel, that means twice as much will need to be sold in petrol just to meet the target.

There was little opposition to the Government's plans – why would there be, when the idea of a clean, green, renewable fuel is the holy grail of transport? But many of the submitters expressed concerns about the level of the obligation, which in turn could lead to imports of less-sustainable biofuels. Both of these matters were addressed in the final Bill, which, in addition to specifying strict sustainability standards, recommended a lower BSO starting at 0.5% in the first year, rising to 2.5% by 2012.

What are biofuels?

There are two types of biofuels:

- **Bioethanol** – blended with petrol. Mostly sourced from sugarcane and corn, can be derived from whey in NZ. Retail blends will range from 3% (E3) to 10% (E10);
- **Biodiesel** – blended with diesel. Most common feedstock is palm oil, but in NZ could again be sourced from a by-product of agriculture, namely tallow. Not permitted to be retailed in blends above 5% (B5).

New Zealand has plentiful feedstocks of tallow – almost enough to meet the BSO – although much of it is committed for export to China for soap manufacture. Alas, the poor performance of tallow-based biodiesel in cold temperatures is one reason why oil companies are devoting their energies to introducing bioethanol instead.

Although the BSO only came into effect in October, Gull has been selling a 10% ethanol blend at most of its 35 North Island outlets for a year, supplied by Fonterra from whey. And in August Mobil commenced retailing both E3 (91) and E10 (98) blends at several Wellington stations, sourced from Brazilian sugarcane.

All biofuels have a slightly lower energy content than mineral fuels, particularly ethanol, which is 30% less efficient. So at a 10% blend, that equals a 3% reduction in performance, meaning you'll consume slightly more to travel the same distance. At least that's the theory – a test by the AA using the same car on an identical route produced no discernable difference between Gull's 'Force 10' and a conventional 98 grade.

Despite the lower energy content of biofuels, there are performance benefits – biodiesel improves lubrication while ethanol boosts octane ratings. That's why, when Gull moved to sell E10, it did away with 95 octane and replaced it with 98 octane Force 10. At a 10 percent ethanol blend in the old 95 mineral fuel, it boosted octane by nearly 3 points without having to import a special high-octane fuel like BP and Mobil do.

Compatibility with your vehicle

So what do all these figures signify? E3, E10, 2.5%? What does any of this mean for classic car or 'bike owners? What you really want to know is, 'can I use this stuff in my classic?'. Well, the short answer is, no.

According to AA Technical Advice Manager Jack Biddle, vehicles fitted with carburettors are "highly unlikely to be able to use E3 or E10." That's an estimated 378,400 incompatible cars, or 14% of the fleet.

As for the rest, a Government-commissioned study by Transport Engineering & Research NZ suggests that up to half the fleet (over one million cars) are not compatible with ethanol blends above 3%. This is largely because Japanese manufacturers won't endorse the use of blends above E3 in their domestic models – which arrive here as used-imports.

At a 10% blend (E10), potentially 1.7 million vehicles are at risk, not including recreational boats or planes, which even the Energy Efficiency & Conservation Authority advises not to use ethanol blends. That's because ethanol is anhydrous, meaning it can separate from the fuel if it's tainted with water.

According to Jack Biddle, “the lower the percentage of ethanol in the fuel, like E3, the higher the risk of phase separation when it is added to a tank contaminated by water. If that occurs, straight water can be drawn into the engine, causing a ‘no start’ situation.”

In two-stroke engines, the potential for damage is even greater, as any water introduced by ethanol will cause the essential lubricating oil in the air/fuel mix to separate before it reaches the engine components.

EECA also recommends that ethanol blends not be stored for long periods, making it even less compatible with classic cars, which tend to go weeks if not months between fills.

Gull concedes that its Force 10 is “better suited to newer vehicles”, while Mobil cautions owners of pre-1986 (i.e. carb-fed) cars to consult the vehicle manufacture before using an ethanol blend.

To help you find out, the Motor Industry Association have compiled a list of *NZ-new cars’* suitability for ethanol, published on the AA website. Not all older cars are incompatible however, but then again, not all late model cars are suitable either. For example, Nissan won’t endorse any ethanol blend in models built before 2004, whereas Mercedes-Benz say E10 can be used in all models built after 1985.

Now I don’t know about you, but if multi-billion-dollar oil companies and auto manufacturers, with all the research and development expertise in the world, warn me not to put a certain fuel in the tank of my old car – I’m gonna listen!

Jack Biddle says “it’s about minimising risk. Ethanol could corrode the fuel lines and carburettor body in older cars, which were never designed with biofuels in mind. Ethanol’s affinity to water is further exacerbated by older cars which have the potential to absorb or generate moisture because they don’t have sealed fuel filler caps and plastic tanks like modern cars.”

Such damage could cost \$800 to repair, although there is no guarantee that replacement components will be ethanol-compatible either. Oh, and by the way – neither the oil companies nor Government are liable for fuel system failures resulting from biofuel use.

But as I have explained, in order to meet the BSO, oil companies are relying on ethanol-blended petrol, rather than biodiesel, which – annoyingly – is readily compatible with diesel engines of any age. To sell enough, they’ll have to blend more than a mere 3% by the time the mandate reaches its zenith in 2012. Hence we have a dilemma, given half the fleet are not compatible with blends above that.

Be vigilant

In its submission on the Biofuel Bill, the AA said “it is unacceptable for the Government to potentially compromise the operability of the national vehicle fleet in this way, and to risk imposing such high repair costs on motorists.”

Mike Noon, AA’s General Manager of Motoring affairs, says the solution is quite simple. “One of our minimum conditions for the introduction of biofuels was that consumers have a choice between biofuel blends and mineral fuels. We want oil companies to be required to supply an unblended fuel for incompatible vehicles.

“There is an onus on Government and the oil companies to ensure that fuels sold are of merchantable quality and fit for purpose, and that an information campaign around the new fuels leaves consumers clearly informed with regards to vehicle suitability, effects on warranties, fuel consumption and cost.”

Under the original target of 3.4%, the oil companies would have had to blend ethanol in all petrol grades – probably at the maximum 10% – just to meet the target. It is hoped now, under the reduced 2.5% mandate, that they will keep one grade unblended for incompatible vehicles. Since the bulk of petrol sales are 91 octane, we probably should expect it to be retailed up to E10, in order to maximise biofuel sales, leaving 95 or 98 octane for us enthusiasts.

Jack Hindess, President of the NZ Federation of Motoring Clubs says “classic car owners have to be vigilant regarding the blends of fuels they use, and pressure oil companies to continue to make neat petrol available nationwide for use by heritage vehicles.”

- More information: www.aa.co.nz; www.eeca.govt.nz.

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