

Most South Africa's have heard about biodiesel. But how many of us have actually had sight of this fuel, let alone tested it out in our vehicle? Curious to know more about this green fuel, Sean Doel spoke with Amiene van der Merwe about South Africa's first green transport company - The Green Cab.



A company's journey towards driving a greener future

No More Guilt

How big is your tyre-print? The average person travelling in an average car for an average distance of around 2 000km per month at 2.02 tons of CO₂ per 10kms, produces 4.86 tons of CO₂ per annum. This is significant as it represents up to a quarter of one's personal CO₂ footprint.

So when four entrepreneurial South African women decided to join forces and establish a company whose core business is transport they knew they would not be able to achieve true success with a 'business as usual' approach. Some lateral thinking and eco-innovation was required.

With a genuine commitment to making a difference and conscious of the ever-looming issue of green-washing, these eco-preneurs came up with a unique business that has a true, measurable positive impact on the environment: a public transport service that is fuelled by a cleaner, renewable energy option – biodiesel.

Cutting the fossil fuel habit

Biodiesel is commonly produced from agricultural oils, seeds and carbohydrates such as soya, sunflower, canola and maize. New crops such as jatropha, moringa, cassava and castor are also viable options – but these are all long-term projects requiring large-scale investments and, due to the alternate value in food markets, they are not viable without market price support or subsidies. And, of course, not without major concerns and debate around the long-term impact on food security.

After careful consideration, and acknowledging the potential negative impact of biofuels production on food security, The Green Cab decided to utilise only biofuels produced from waste products. To start they will be using biodiesel produced from used cooking oil – a waste resource that is hardly in scarce supply. There is an estimated 200 000 tons of waste cooking oil generated annually in South Africa. Sadly, only 60 000 tons is currently being collected for re-use, the rest going to waste disposal or the questionable practice of use in agricultural feed stock.

Fuel for thought

There are two key reasons for using biodiesel, say Amiene. 'First and foremost the environmental savings, and secondly, the economic benefits

achieved makes a compelling business case.'

The environmental benefits of using biofuels are significant – not only reduced CO₂ but also reduced particulate and sulphur emissions. Then there are the benefits for your vehicle from improved fuel system cleaning to better lubrication, and that means longer lifespan of the fuel injectors.

The bottom line, according to Amiene, is 'reduced maintenance costs and extended engine life. All-in-all it makes complete business and environmental sense.'

Roadmap to switching

It is apparently also surprisingly easy to convert to running diesel vehicles on biodiesel. Literally one, two, three. Or almost.

Benefits of biofuel

What's good for the environment...



- ✓ **Reduced CO (-50%) and CO₂ (-78%) emissions**
- ✓ **Reduced hazardous hydrocarbon emissions such as benzofluoranthene (-56%) and benzopyrene (-71%)**
- ✓ **Reduced particulate emissions (-65%) that reduces cancer risks related to poor air quality**
- ✓ **Eliminating exhaust emissions of sulphur oxides and sulphates (major components of acid rain)**

...is good for your car...

- ✓ **Improved cleaning power cleans the fuel system**
- ✓ **Improved lubrication means a longer fuel injector life**
- ✓ **Reduced maintenance costs**

Trips





Top: South Africa's first green transport company – The Green Cab; **Above, right:** one of the vehicles



Biodiesel is known to be
less toxic than table salt &
biodegrades as fast as sugar

- The vehicle – no modifications are necessary in post 1990-model vehicles.
- The blend – secured from a reputable supplier, blends of 20% (B20) and 50% (B50) are common (the former should not adversely effect the warrantee on you vehicle). SABS accreditation is advised – according to standard SANS 1935:2004 as a minimum.
- The switch – no phasing-in is required on new vehicles, but vehicles that used to run on traditional 'fossil fuel' diesel are likely to have sludge and sediment that will gradually be cleared away by the biodiesel. It is best to consult your supplier about initial ratios to phase in biodiesel in such cases.
- The seasons – a bit more susceptible to cold temperatures, biodiesel is prone to crystallise between 0° and 1.6°C; a reputable dealer should know to compensate for low winter temperatures such as using a 50/50 blend.
- Maintenance – switch your fuel at every 10000km oil change.

Biofuel suppliers

Suppliers of biodiesel are not as hard to find as one might initially think. The Southern African Biofuels Association (SABA) is undoubtedly the best place to start your search and already has some 40 members. SABA (www.saba.za.org) is a non-profit organisation of dedicated professionals, promoters, sponsors and motivated individuals who co-operate to support the development and implementation of:

- a sustainable biofuel industry in Southern Africa;
- a comprehensive infrastructure to market and utilise biofuels in the most suitable way;
- a framework of laws and regulations, favourable to the biofuel sector; and to
- establish a network of companies, organisations and individuals in order to provide a platform for discussions, interaction and co-operation for the benefit of the biofuel sector.

At current best estimates, there is a total of some 200 small biodiesel producers in South Africa. The Green Cab selected The Bio-Diesel Centre in Brackenfell, Cape Town, as their supplier. Why? Because the Centre has a proven track-record of quality and reliability in supplying and servicing a reputable national retailer.

The quality of a waste cooking oil can vary significantly depending on the type of oil (sunflower, vegetable, and so on) and how long the oil has been used for cooking – over-use of the oil for deep frying is not only a health issue in terms of food quality, but also affects the quality of biofuel that can be produced.

So the greatest challenge in producing a quality biodiesel is in achieving a consistent specification. The injection system settings on most modern vehicles have a relatively narrow tolerance and if the fuel specification deviates outside of this range, the performance of the engine can be affected unless the injector system is reset.

Challenges notwithstanding, there are positive indications that the first blends of biodiesel may be available to the consumer at selected pumps by 2010. This will probably be relatively low proportion blends (less than 10% to 20% biodiesel in a traditional fossil fuel diesel) to limit any concerns around variability in quality.

Greening our transport

So, you may not be able to switch your vehicle over to biofuels just yet. But companies like The Green Cab are proof that biodiesel does work, and that sustainable means of transport are finally here to stay. **SG**

Cooking oil as fuel

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Other options

Cooking oil is not the only waste that can be used for making biofuels.

Tallow (animal fat from abattoirs), oils from forestry products and processess, dairy and cheese making by-products are all significant sources of waste that should be turned into beneficial fuel products rather than being dumped in our landfills.

