

## SETTING NATIONAL FUEL QUALITY STANDARDS

### Bio-power (UK) Ltd

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This is the response we wish to submit to the consultation on a standard for bio-fuels in Australia, from the Bio-power Network.

Bio-power is an association of bio-fuel makers set up as a co-operative network, initially in the UK but now expanding to other parts of the world. The aim of the network is to provide alternative forms of vehicle fuel, and power in the form of heating and electricity, derived from non-fossil materials, which can be used as a direct alternative to fossil fuels. It is a fact of nature that the sun's energy is constantly being stored up in many natural organic forms, and most of these can be converted into bio-fuels and used to create energy for man's activities if there was a will to do so. There is no need for us to be using fossil fuels that cause such problems as Global Warming and Climate Change.

It is well established that bio-fuels are at least carbon neutral as energy released by the burning of recently grown organic matter does not add carbon to the atmosphere that was formerly locked below the earth's crust. Some say that the careful use of bio-fuels could indeed provide a means to redress and reverse the effect of the damage done by the burning of fossil fuels. Whilst in the past there has been controversy over the benefits of using bio-fuels, it is now well accepted by governments throughout the world that the use of bio-fuels is something to be encouraged for environmental and economic reasons.

In addition to the environmental benefits, there is an economic dilemma. Although there may continue to be discoveries of new resources of fossil fuels, the fact is that the cost of extraction is always getting higher as reserves are found in more inaccessible places, and eventually reserves will be depleted. For all these reasons the development and use of a wide range of renewable bio-fuel options is essential. We can't make new fossil oil or petrol, but we can grow plenty of new vegetable oil.

As an emerging world wide network of dedicated bio-fuel makers, Bio-power is very concerned to ensure that future regulation is not un-necessarily restrictive or misleading. It is generally not appreciated by governments or even by scientists just how easy it is to make all kinds of useful bio-fuels. It should be noted that the first Compression Ignition engines designed and built by Rudolf Diesel did not run on a an organic oil pre-processed as a Fatty Acid Methyl Ester. His engines ran on Pure Vegetable Oil. Most diesel engines built to-day will also run very well on Pure Vegetable Oil, and they will run even better if the basic natural oil is modified in simple but effective ways to improve performance reduce the emission of particulates etc. This is not ground breaking technology. It is very simple technology. We are very concerned that ministers and civil servants seem to believe that the only way to make a bio-fuel for vehicles is to make a Fatty Acid Methyl Ester. In fact this is a very wasteful and totally unnecessary process.

Bio-power has developed a method of making what we call 'Modified Waste Vegetable Fat' (MWVF). Unlike the subtractive method by which RME or bio-diesel is made ours is an

additive process. Bio-diesel is made by the removal of the glycerol bond which secures the three hydrocarbon chains within the triglyceride lipid fat molecule. This creates an un-necessary waste product, and uses chemicals like caustic soda and methanol and energy. Instead of removing elements from the natural triglyceride molecule, the Bio-power process is an additive process in which the cleaned raw (or recycled) fat is simply blended with natural solvents the purpose of which is to add to the volume and reduce the viscosity of the fuel and improve the burn quality. This increases the Cetane value, adds to the performance and reduces emissions.

It is important to realise that the Bio-power method creates about 60% to 80% more volume of usable fuel from a given volume of fat stock, and it also provides a form of fuel that can be more powerful than bio-diesel and therefore it can run longer distances. The Bio-power fuel making method achieves between 120% to 150% greater tractive distances from a given volume of fat stock when compared to the RME method. It does not require any mineral chemicals in its production process like caustic soda or methanol - both of which are potentially quite dangerous. Most importantly, there is no waste in the form of glycerol, which itself contains a great deal of energy that could otherwise be used as a fuel. The Bio-power method ensures that there is no waste of potential organic energy when making bio-fuels.

All in all, we believe that the encouragement of the manufacture of Bio-diesel as a Fatty Acid Methyl Ester is not the best way to proceed.

This view seems to be shared by Germany where it has been possible to buy bio-diesel from the pumps for many years, and there has been a strong interest from the public in changing to the use of 'greener' and more environmentally responsible forms of energy. This development has been encouraged by the fact that there is no duty charged on the use of bio-fuels in Germany. It is also possible to have Pure Vegetable Oil delivered to your home for use as a fuel in Germany, without any charge of Excise Duty. Many people now run their Mercedes on simple vegetable oil which has not been transesterified. This means that all the energy within the natural vegetable fat is available as a fuel without any waste. It is this form of bio-fuel that Germany is now pressing to encourage, because of the environmental benefits and also because of the thermal efficiency. In Germany there is now a considerable problem with the disposal of mountains of glycerol created by their enthusiastic manufacture of bio-diesel. This material used to have a value in cosmetics and soap manufacture, but the glycerol created as a by-product of bio-diesel manufacture is not of a suitable quality for cosmetic use. Some say that it can be used as a sugar to create ethanol for the manufacture of bio-petrol, but there are many other cheaper forms of sugar feed stocks available.

We therefore strongly advise that consideration is given to a very much broader definition of what can be termed a 'bio-fuel', and essentially that this should include any fuel derived from non-fossil materials. It is very important also that any definition of bio-diesel (especially for the purposes of any possible tax break to encourage the development and use of bio-fuels) includes the use of the much more efficient MWVF process, developed by Bio-power. It is our view that in the long term this will become the form of bio-fuel that has the greatest environmental and economic benefit.

Australia has enormous potential as a producer of bio-energy. It is well placed to grow energy

crops and also to make the maximum use of existing waste materials which can be used as fuel stocks. We are already discussing projects in several locations within Australia, and we are informed that currently there is a welcome position in which bio-fuels are not subject to Excise Duty in recognition of the environmental benefits. We very much hope that this position will be maintained. In our view the imposition of a negative and restricting definition of what a bio-fuel is at this early stage in the growth of a diverse bio-fuels industry would be a very great mistake.