



**RIO
TINTO**

Client: Rio Tinto

Project Type:

Implementing an integrated management standard to ISO 14001 and OHSAS 18001

Background

Biodiesel is a clean burning bio-fuel, produced from domestic, renewable resources. Biodiesel contains no petroleum but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression-ignition (diesel) engines with no modifications.

Biodiesel is simple to use, biodegradable, non-toxic, carbon neutral and essentially free of sulphur and aromatics. Biodiesel has been around for over a century. Dr Rudolf Diesel actually invented the diesel engine to run on vegetable oil and, in fact, when he presented his engine at the 1900 World Exhibition in Paris, his engine was running on a fuel derived from peanut oil. Prior to his death in 1913 he stated that "the diesel engine can be fed with vegetable oils, and it will considerably help the development of agriculture in the countries which use it" and "the use of vegetable oils for engine fuels may seem insignificant today but such oils may become, in course of time, as important as petroleum and the coal tar products of the present time". However, due to the low cost of mineral oils at the time, his engine was modified to run on such oils.

How is it made and how much does it cost?

Biodiesel is made through a process called transesterification whereby the glycerine is separated from the vegetable oil. The process leaves behind two products: biodiesel (Mono-alkyl ester) and glycerine (a valuable by-product used in soaps and other products). A simple breakdown of the cost of producing biodiesel is:

WVO or SVO*	£0.00 - £0.30
Methanol	£0.08
Catalyst	£0.02
Water	£0.003
Electricity	£0.008
Wages	£0.04
Fuel duty	£0.271

Total cost per litre £0.40 - £0.70

Assuming a price of £0.98 per litre for mineral diesel, a small 150-litre processor would save £72.00 per batch.

*) WVO (Waste Vegetable Oil) can be collected free or bought for anything up to £0.25 per litre. SVO (Straight Vegetable Oil) can be bought in bulk or pressed directly from seed. Oil prices are estimated as prices vary from region to region, depending on your source.

Benefits

The benefits include:

- Costs around £0.50 per litre to make
- 80% lower emissions than mineral diesel
- Made mostly from waste vegetable oil
- As biodegradable as table salt
- Can be used in vehicles, boats, generators, furnaces
- Can be used alone or blended with mineral diesel at any ratio
- Reduces dependency on foreign oil
- Dramatically reduces diesel pollution (even when blended)
- Engines run smoother, last longer

For a consultative meeting or additional information, please contact a member of our sales team on 020 8460 3345. Alternatively, e-mail us at sales@stadius.uk.com



STADIUS
MANAGEMENT SERVICES