


Andy Girdharry – Breakout A



Presentation to APSE
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WELCOME

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 - **Company history & facts**
 - Biofuels Corporation PLC
 - **What is Biodiesel**
 - The Market
 - Our product & other products
 - **Q&A**

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Biofuels Corporation....

- UK Stock Exchange (AIM) listed company
 - Floated in June 2004, €100 million
 - 50 people employed on Teesside
- 250,000 tonnes/year of biodiesel (33/t per hr)... one of the largest single stream biodiesel production facilities in the world
- 25,000 tonnes/year of glycerine
- Plans for two further facilities in near term
- Biodiesel deliveries commenced Q1 2006
- Delivery by road, rail, or sea ex Teessport. Cargoes up to 5000 te.

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Plant construction

Jan 2005



Oct 2005



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Our plant at Teesside



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Prime Minister opens Teesside 1 30th June 2006



'Teesside 1' will provide enough biodiesel to meet 25% of the UK's Renewable Transport Fuels Obligation target for diesel in 2010

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What is Biodiesel?

- Renewable energy source
- Made from vegetable oils - rapeseed, soya or palm
- Vegetable oil + methanol → biodiesel + glycerine
- Substitute or additive to mineral diesel
- Lowers carbon balance
- Lower pollution – e.g. particulates/SOx
- Established product in Europe

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Plant Description

- Our Biodiesel plant converts virgin vegetable oil (rape Oil, Soya Oil, & Palm Oil) into FAME (Fatty Acid Methyl Ester) or Biodiesel.
- In addition there are two main by products from the plant.
 - Glycerine; crude, technical and pharmaceutical grade
 - Potassium Sulphate
- Manufacture is through trans-esterification
- Other routes can be used:
 - Use of different oils (UCO, Jatropha, etc)
 - Blending of methyl esters (large mixing tanks)

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Biodiesel Production

- Biodiesel has been produced on an industrial scale in the European Union since 1992, largely in response to positive signals from the EU institutions.
- Today, there are approximately 120 plants in the EU producing up to 6,100,000 tonnes of biodiesel annually. These plants are mainly located in Germany, Italy, Austria, France and Sweden.
 - Specific legislation to promote and regulate the use of biodiesel is in force in various countries including Austria, France, Germany, Italy, Sweden and UK.
- In the transport sector, it may be effectively used both when blended with fossil diesel fuel and in pure form. Tests undertaken by motor manufacturers in the European Union on blends with diesel oil up to 5-10%, or at 25-30% and 100% pure have resulted in guarantees for each type of use.
- Minor modifications (seals, piping, gaskets) is required for use at 100% pure, unless specifically guaranteed by car manufacturers.
- The use of biodiesel as a transport fuel does not require any changes in the distribution system, therefore avoiding expensive infrastructure changes. Biodiesel is also used as an efficient heating oil.

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Why Use Biodiesel?

- Biodiesel has been demonstrated to have significant environmental benefits in terms of decreased global warming impacts, reduced emissions, greater energy independence and a positive impact on agriculture.
- Various studies have estimated that the use of 1 kg of biodiesel leads to the reduction of some 3 kg of CO₂.
- As such, an increased use of biodiesel in Europe represents an important step for the European Union to meet its emission reduction target as agreed under the Kyoto agreement. Additionally reducing pollutant emissions alleviates various human health problems.
- In specific cases, used vegetable oils can be recycled as feedstock for biodiesel production. This can reduce the loss of used oils in the environment and provides a competitive and CO₂ advantageous way of transforming a waste into transport energy.

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Why Use Biodiesel?

- Biodiesel production also plays a useful role in agriculture. Under the current Common Agricultural Policy, the arable raw materials needed for biodiesel production may be grown on set-aside land, land which would otherwise be taken out of production.
- Biodiesel production uses today around 3 million hectares of arable land in the EU.
- Under appropriate economic conditions, biodiesel production could represent a significant absorbing potential for additional acreage resulting from the agricultural surfaces of the 10 new EU Member States and the forthcoming accession of Romania, Bulgaria and Croatia in the European Union.

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Not all FAME/Biodiesel is the same....

CFPP v CV for 5 FAMES

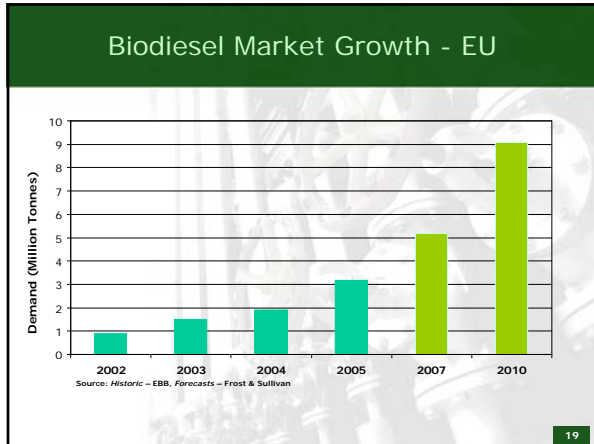
FAME	CV	CFPP
UCO	37	-5
olive	38	-5
rapeseed	39	-5
soyab	40	-5
palm	41	10

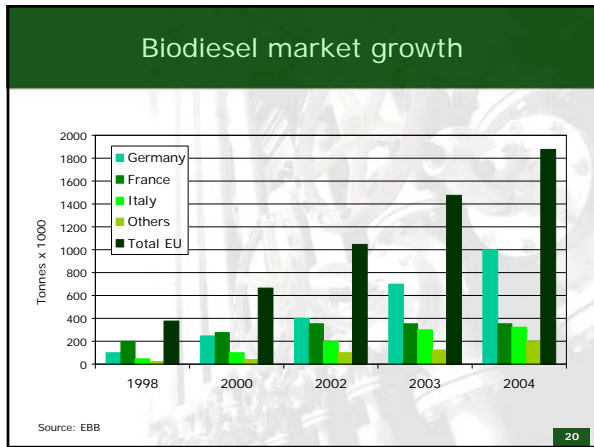
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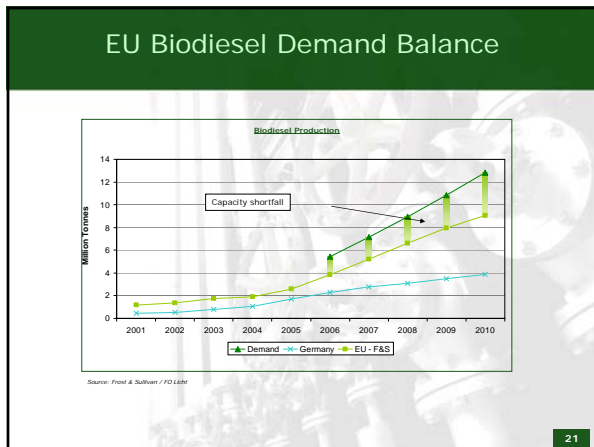


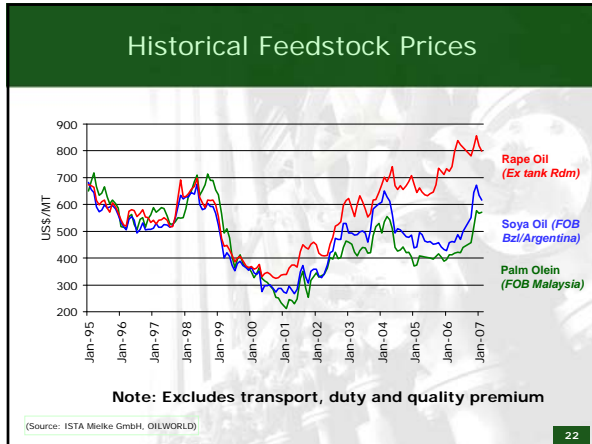
- ### How is Biodiesel used?
- **5% biodiesel blend**
 - Allowed within EN 590 diesel
 - Existing supply chain
 - Any diesel engine
 - **100% biodiesel**
 - Also uses existing equipment
 - EN 14214 – biodiesel standard
 - Some supply chain/engine constraints
- The slide number 17 is in the bottom right corner.

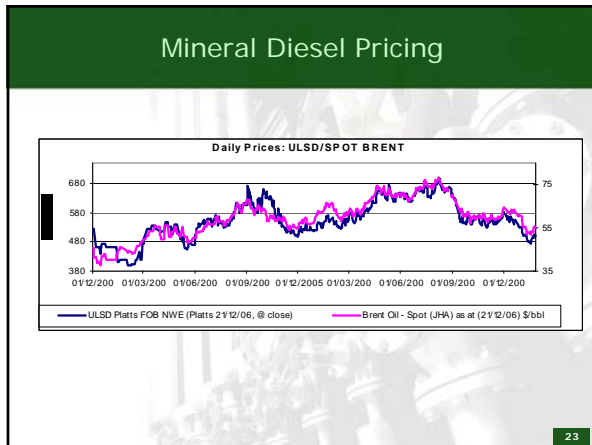
- ### Biodiesel exhaust characteristics
- compared to ultra low sulphur diesel
- Carbon monoxide is reduced by 47%
 - Particulates reduced by 48%
 - All unburned hydrocarbons reduced by 67%
 - SOx removed completely
 - NOx increased by 10% but reduced by 4% with catalytic convertor
 - @50% lifecycle carbon reduction
- Source US EPA
- The slide number 18 is in the bottom right corner.











Teesside Expansion

- Planning for future growth already underway
 - Teesside site has space / outline planning permission
 - Technology review
 - Front end engineering design ("FEED")
- Further plants to benefit from Teesside 1 lessons
 - Appropriate project structure / contractor selection
- Compelling economics for growth to meet UK & European demand
- We recently announced the expansion plans for two additional Biodiesel production units

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Biodiesel: Some general points

- Rape (RME) is best for cold flow (B100 and unblended storage)
- Vegetable oils are subject to oxidation and will breakdown over time if not treated with antioxidant and preferably blended with mineral diesel
- There are no special handling characteristics if managed / stored as a blend
- EN 14214 is at the centre of our operations
 - BS 590 for mineral diesel
- All our products are oxidation stabilised

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Biodiesel: Some general points

- Storage:
 - All the FAME Tanks are constructed of Carbon Steel, minimum level in each tank is 1.0 meter to ensure coverage of heating coils.
 - Tank Heating - Each tank is fitted with internal carbon steel heating coils to maintain a product temp of 20deg C.
 - All tanks are lined internally on the tank floor and shell to a height of 1 metre.

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Our advantages

What we have

- Large Scale
- Deepwater port
- Multi-feedstock
- Flexible supply
- Access to all markets
- Merchant plant

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Summary

- Strong Biodiesel market in EU and growing in the UK and in Europe
 - Mandation 2020 => 20% renewable energy sources
 - 'Green' drive
 - Preferred fuel type by majors to meet obligations
- Ready market in the UK for refined Rape Oil
- Biofuels could supply bio/mineral diesel product
 - B50 OR B30 OR B100
- Biofuels are progressing with our expansion plans to increase production to 650,00/t p.a. by end of 2008.

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THANK YOU

Any Questions

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