



ENGEN

**Bio Fuels in Western Cape
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Contents

- The RSA Petroleum Industry
- Bio Fuels
- Refinery Issues
- Other



RSA Petroleum Industry

- Refiners
 - Crude and Synfuel
 - Inland and Coastal
- Logistics
 - Pipeline
 - Depots
 - Inter-dependence of purchases and accommodation
- Oil Industry Product Exchange Specifications
- Fungibility of product for users (automotives)
- Highly regulated



Bio Fuels - Legislation

- Current Legislation enables uptake of limited Bio blend components of into Diesel (<5% vol) and Mogas (Ethanol Content <7,5%vol) without specific labelling.
- Legislation provides for BXX Bio Diesel Future Trends
- Legislation is in place to enable enforced used of Bio Fuel.
- Legislations refers specifically to SANS specifications.



Specifications

SANS 342 – Automotive Diesel

- Allows 5% Bio Diesel to SANS 1935
- SANS 1935 – Automotive Bio Diesel
 - Similar to EN 14214
 - Mono-Alkyl Methyl Esters
 - Distillation Curve
 - Cold Filter Plugging Point
- SANS 1598 for Unleaded Petrol
 - Distillation curve
 - Vapour Pressure (coastal and Inland)
 - Oxygenates (Alcohols and Ethers)
 - SANS 465 – Denatured Fuel Ethanol = ASTM D4806



Bio Diesel - What Happens ?

- Bio Diesel is complex fuel that is fungible and interchangeable with Fossil Diesel within limits of specifications.
- Bio Diesel volume adds to available RSA Diesel from given amount of crude/synfuel processed locally.
- Inspection & Testing of Products on a batch by batch basis
- Possible alternative use as non automotive fuel
- Contamination by low grade product - beware Australian experience.
- There may be a need for specification of “Industrial Diesel” If blended at refinery or depot then may need to have client segregation of product by customer use?
- Poor storage properties (short shelf life). Unsuitable for stockpiling.
- Handling of supply interruptions?



Bio Ethanol – What Happens? -1

- Two routes to absorb into RSA automotive fuel
 - Used as Ethanol as a blend component in Petrol.
 - Used as feed stock to refinery and it is converted to an Ether.
 - Ron, Mon, Vapour Pressure, Distillation Curve Issues



Bio Ethanol – What Happens? - 2

- Ethanol as a single component added to make up petrol
 - Implies that the refinery must remove other component to allow Ethanol into the blend.
 - Ethanol then approaches the value of the products that the refinery has taken out and sells locally or offshore.
 - If not blended at the refinery then a “blend with petrol potential” must be made by the refinery and moved to ethanol blending station.
 - If contains ethanol (>2%) then not compatible with Multi-product pipelines that carry Jet fuel – Not all lines carry Jet.
 - More onerous quality management issue throughout supply chain
 - Specialised tankage, drains and additional corrosion inhibitors
 - No increase in RSA gasoline volumes from existing crude imports Lower calorific value increases fuel consumption – cost to motorist
 - Compatibility if ethanol >7.5%



Bio Ethanol – What Happens? - 3

- **As Ether feedstock.**
 - **Implies that the refinery must make available other components to react with Ethanol to make Ether – New Capital investment.**
 - **Ethanol supply and required refinery molecules must be matched/optimised.**
 - **Distribution system and customers must tolerate the Petrol containing ethers.**
 - **These petrols may not be fungible with ethanol petrols (>7.5%) in customers automobile**
 - **No issues in respect of pipelines used for Jet Fuel.**
 - **Specialised tankage**
 - **Increase in nett petrol production**



Refineries Issues

- Long lead time if significant plant modifications are required. World wide shortages of skills and material is driving this time frame to longer than five years.
- Security of supply
 - Unable to make major adjustments to blend configuration at short notice
 - Ethanol/Bio Diesel too expensive to import
 - If ethanol for splash blend not available, revert to ordinary gasoline, with transitional problems.
 - If ethanol for ethers is not available, import MTBE and continue as usual
- Stability of component quality to required standard.
- Have regulated market therefore need appropriate price benchmark for period of capital repayment.
- Clarity of handling of Duty at sources, other taxes and levies, rebates, and subsidies.
- No negative impact on operations.



Marketing Issues

- Public perception that bio Fuels are of low quality/inferior
- Once it is declared to customers, continuity and consistency of quality are imperatives.
- Exposure if position first around bio fuels.
- Cost of handling a initial niche grade.
- Variance in product performance



Bio Fuels - Trends

- **RSA will follow world wide trends in bio fuels.**
- **Increasing availability of RSA produced ethanol.**
- **Increasing complexity in managing RSA logistics because of increasing number of technically different fuels that meet the same “user grade specification”. E.g. standby generators to preferably get pure Fossil Diesel, some bio-fuels likely to be incompatible with pipelines used for Jet Fuel.**
- **Bio Ethanol plants seem to be “large” scale driven by commercial farmers**
- **Bio Diesel few commercial scale projects in RSA – laboratory testing of batches**



THANK YOU



OTHER

- RSA a nett importer of raw materials – forex exposure
- Time to develop local sourcing
- Have used coastal limits on Oxygenates

