RENEWABLE BIO-LIQUIDS

THE STORY SO FAR

REECE SUMMERFIELD

TECHNICAL SALES DIRECTOR

EOGB GROUP

- FAME
- Paraffinic Liquid fuels
- Synthetic molecules in fossil fuels

FAME

FATTY **A**CID **M**ETHYL **E**STERS DERIVED FROM

- WASTE – E.G. USED COOKING OIL AND/OR TALLOW METHYL ESTERS
- VIRGIN – E.G. RAPE, PALM, SOYA METHYL ESTERS
- AUTOMOTIVE AND FIXED COMBUSTION APPLICATIONS BS EN 14214

FAME

Used Cooking Oil & tallow methyl Esters

- Used cooking oil and Animal waste derived lowest environmental impact but least accommodating fuel for fixed combustion applications in terms of long term storage stability, material compatibility issues and hygroscopic nature.
- Requires, stainless steel storage and pipework systems, Viton (PTFE) seals, Heating and agitation, plus pre-heat for combustion.
- No yellow metals, butyl or nitrile rubbers.

FAME

Virgin Rape (Seed) Methyl Esters

- Virgin crop derived Highest environmental impact, deforestation, food V fuel land use concerns, but more accommodating fuel for fixed combustion applications in terms of long term storage stability, material compatibility issues and hygroscopic nature.
- Requires, stainless steel storage and pipework systems, Viton (PTFE) seals, may not require Heating and agitation, but may still require pre-heat for combustion.
- No yellow metals, butyl or nitrile rubbers.

FAME – REFERENCE MATERIAL

- BS EN 14214 **LIQUID PETROLEUM PRODUCTS. FATTY ACID METHYL ESTERS (FAME) FOR USE IN DIESEL ENGINES AND HEATING APPLICATIONS. REQUIREMENTS AND TEST METHODS**
- **HTTPS://KNOWLEDGE.BSIGROUP.COM/PRODUCTS/LIQUID-PETROLEUM-PRODUCTS-FATTY-ACID-METHYL-ESTERS-FAME-FOR-USE-IN-DIESEL-ENGINES-AND-HEATING-APPLICATIONS-REQUIREMENTS-AND-TEST-METHODS-1**

MATERIALS AND COMPATIBILITY

- CONCAWE REPORT 9/09 GUIDELINES FOR HANDLING AND BLENDING FAME.
- HTTPS://WWW.CONCAWE.EU/PUBLICATION/REPORT-NO-909/

Paraffinic Liquid fuels

Paraffinic Liquid fuels derived from

- Gas
- Coal
- Tar
- Vegetable oils – used (waste) cooking oil
- Automotive and fixed combustion applications BS EN 15940.

Paraffinic Liquid fuels

- Paraffinic Liquid fuels derived from Gas, Coal, Tar, etc are denominated xTL for example Gas to liquid would be "GTL"
- Higher CO2e/kWh emissions than equivalent fossil fuels!

Paraffinic Liquid fuels

- Paraffinic Liquid fuels derived from used cooking oil are denominated "HVO" Hydrotreated vegetable oil
- Circa 90% lower CO2e/kWh emissions than equivalent Class D "Gas oil" fossil fuels, but dependent on HVO feedstock!

Paraffinic Liquid fuels (HVO)

Paraffinic diesel but……

- Lower density (akin to kerosene)
- Lower flame luminosity (akin to kerosene)
- Ergo "Gas oil" without the aromatics and napthenic "nasties".
- Requires burner throughput calibration of equipment and combustion settings specific to the type of fuel.

Paraffinic Liquid fuels (HVO)– reference material

- BS EN 15940 Automotive fuels. Paraffinic diesel fuel from synthesis or hydrotreatment. Requirements and test methods
- **https://knowledge.bsigroup.com/products/automotive-fuels-paraffinic-diesel-fuel-from-synthesis-or-hydrotreatment-requirements-and-test-methods-1**

- PAS 5420 Liquid fuels. Sustainable bioliquid fuels for use in fixed combustion applications for heating, hot water and cooking. Specification.
- https://knowledge.bsigroup.com/products/liquid-fuels-sustainable-bioliquid-fuels-for-use-in-fixed-combustion-applications-for-heating-hot-water-and-cooking-specification

Synthetic molecules in fossil fuels

- Manufactured carbon atoms – molecules of energy which are not fossil fuel distillate and are not currently recognised in BS 2869 fuels specification for fixed combustion applications.
- It is proposed that in the future they will be included within the strict specification limits that apply to maintain the fuels fit for fixed combustion applications

Synthetic molecules in fossil fuels

At present BS 2869:

- Industrial Furnace Oil – Class I & Middle distillate Class D "Gas Oil"

May include upto 7% FAME

Synthetic molecules in fossil fuels

Industry Proposals could see future inclusion of synthetic molecules of energy within fossil fuels and;

- Upto 20% Paraffinic diesel (HVO) in Class C2 Kerosene
- Upto 50% Paraffinic diesel (HVO) in Class D Middle distillate "gas oil"

Synthetic molecules in fossil fuels

Industry Proposals could see future inclusion of synthetic molecules of energy within fossil fuels and;

- B20 and B30 automotive diesel/FAME blend fuels adopted for controlled fixed combustion applications.

SYNTHETIC MOLECULES - REFERENCE MATERIALS

WATCH THIS SPACE!

ENDS.