

So, what have we learned?

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Options for the ECA

- Gas oil 0.1% S – Already in use for some years.
- DMB 0.1% S – Hybrid product, incorporating some Vacuum Gas Oil (VGO)
- RMB 30 0.1% S – Hybrid product, mainly VGO, elevated density.
- RMD 80 0.1% S - Hybrid product, mainly VGO, elevated pour point.
- All are refinery / Supplier specific so availability is geographically restricted.

Testing issues

- The hybrid fuels can be difficult to assess.
- Should we use test methods intended for use with distillates or those intended for residual grades?
- The testing laboratories are using their own judgement at this time.

Players, Pros and Cons

- Suppliers include – ExxonMobil, Shell, BP, Lukoil, Stena, FastOil, Cepsa, SK Energy and others.
- The fuels perform well in the engines (medium and slow speed)
- Few problems reported co-mingling with gas oil.
- Advice on co-mingling with residuals – Max 98:2 ratio. Must be heated, must be purified
- On board segregation is the main issue – not many adopters so far.
- Points to note, Hybrid analysis represents 3% of the total fuels tested.
- Also note that the distillates (DMA and DMB) now represent 33% of the total fuels tested (last year it was less than 10%, historically it was less than 5%).

Target consumers?

- Vessels spending a significant % of time in an ECA (> than 70% of time)
- Vessels with regular calls in ports with availability.
- Vessels with sufficient tanks to permit segregation of parcels without affecting steaming range.
- Vessel operators with experienced technical support staff.

Co-mingling issues

- The fuels will generally need heating and purifying.
- The pour point and fuel chemistry mean that there are issues in mixing with other hybrid fuels.
- They will generally mix with “on spec” DMA gas oil however all sellers advise caution.

Any special advantages?

- It has a much higher viscosity than gas oil.
- It is highly paraffinic with good ignition and combustion properties.
- It has good lubricity.
- It is coloured green - so it looks kind of “neat”!



Results from one analysis co. Q1 and Q2 2015

- 405 test results of RMD80 Hybrid fuels.
 - Average Density 887 (range 833 to 949) kg/m³
 - Average Viscosity 24.9 (range 2.6 to 84) cSt @ 50 ° C
 - Average MCR 2.6 (range 0.01 to 8.6) %
 - Average Al + Si 7 (range 2 to 32) mg/kg
 - Average Pour 17.9 (range -12 to 33) ° C
- 12 test results of RMB30 Hybrid fuels
- All out of 15173 total samples of which 5771 were DMA or DMB distillates.

What fuel are there?

- Hybrid RMD80
- Hybrid RMB30
- Hybrid RMA10
- Hybrid DMB
- Conventional LS DMA
- Alternatives?
 - Methane
 - Bio diesel

Where are the hybrids?

- Baltic Sea (Russia, Finland, Sweden, Norway, Estonia, Latvia, Poland, Germany and Denmark)
- North Sea (Netherlands, Belgium, France, UK)
- Northern Mediterranean (Spain, France, Malta)
- USA (Atlantic coast, Gulf coast, West coast)
- Caribs / South America (Curacao*, Chile*)
- Canary Islands
- East Asia (South Korea, Hong Kong, Japan, Singapore*)

Those marked * are RMA or RMB 0.1% but may not be hybrid

Where is the Methane?

- Baltic Sea (Finland, Sweden, Norway, Poland, Germany and Denmark)
- North Sea (Netherlands, Belgium, France, UK)
- Northern Mediterranean (Spain, France)
- USA (Atlantic coast, Gulf coast, West coast)
- South Korea
- On the horizon
 - Italy, Malta, Greece, Turkey, Fujairah, Singapore, Japan
- RTW supply routine at many locations, barge delivery in its infancy.

Bio diesel

- Widely available in Europe and the USA by RTW.
- Still seen as problematic on the basis of cost, storage on board and a need to modify engines for 100% bio diesel.
- Carries a cost disadvantage, subsidies for road transport are via taxation – not workable for international shipping as yet.

Low sulphur DMA

- Very widely available in Europe and the Americas.
- More difficult to source in Africa and the Middle East.
- Some availability in East Asia
- Availability increasing as nations adopt Ultra Low Sulphur diesel for automotive use.

My conclusions

- Hybrid fuels continue to be a minority product, suitable for some vessels and some trades.
- Methane (stored as LNG) is gaining traction but uptake for deep sea will be gradual.
- Bio diesel need subsidies to succeed and there are still operational hurdles to cross
- Scrubber uptake is accelerating