

# A biofuels future for chemical tankers?

Use of biofuels is mandated by some governments. **Barry Parker** reports on what this growing market could mean for tanker trades

According to Richard Sadler, CEO of Lloyd's Register, "oil, product and chemical tankers being constructed now are likely to be increasingly influenced by the biofuels trade." From his research experience with biofuels, Sadler pointed to practical implications for likely trade growth in these cargoes over the next two decades. Speaking at the recent LR Technology Day in New York he said International Energy Agency (IEA) forecasts suggest that "world biofuels demand for the transport sector could increase to 3% of overall world demand by 2015, and double by 2030, over the 2008 figure."

Suggesting that politics might make a 3% forecast a little on the low side, Sadler discussed the prospects of a bio-fuel fleet comprising 3-6% of the product/chemical tankers in service at the time. He warned owners to consider this future trade through flexible design options. The expected move from ethanol and vegoils to second-generation biofuels (waste biomass, or specially-grown energy crops) and then to the third-generation (algae fuels grown on ponds) will veer through uncharted regulatory territory, he said. "It is still unclear if the capacity required will need



Photo: Martin Hlatky

to be chemical tankers or product tankers. What is needed are flexible designs that allow control of initial costs while allowing subsequent modification at reasonable cost, as and when needed."

At present, vegetable oils – which have been required since 2007 by MARPOL Annex II to be transported in chemical tankers – are a feedstock for fatty acid methyl ester (FAME)-biodiesel (see panel below). Doll Shipping Consultancy, with expertise in the prod-

**Chemical parcel tankers, such as Bow Favour, which is capable of carrying 47 separate cargoes, could benefit from growth of the use of biofuels**

uct and chemical tanker business, notes that seaborne vegoil movements (about 34% of chemical tanker trading) totalled 58M tonnes in 2008. More than half of this was the fast-growing palm oil segment, and another quarter was soyabean oil. Seaborne FAME shipments (an IMO 2 tanker cargo) are mainly for the US and Europe. Consultant Fred Doll, says overall vegoil transport was 33M tonnes in 2000, and since 2005 much of the growth in deepsea vegoil trades has been attributed to biodiesel demand rather than increased food uses.

Broker Inge Steensland studied the sector and concluded in 2008 that the impact of biodiesel (used in transport fuels) was still "too little and too early to have a major impact on the chemical tanker market balance." Steensland's data on the seaborne trades in bio-ethanol (for blending with gasoline), show roughly 3M tonnes moved on chemical tankers in 2007 (mostly from Brazil into the US).

Observers are keenly watching the progress of a possible share exchange that would create a chemical tanker giant, from a combination of Jakarta-based PT Berlian Laju Tankers (BLT) and Camillo Eitzen and Co (CECO). Such a coming together would rival the tonnage league leaders, Stolt and Odfjell. Berlian Laju's bid for CECO was possibly the first deal of its kind in this market, but perhaps not the last.

Both CECO and BLT have benefited from expanding trades in palm and soyabean oil. Doll forecasts vegoil movement in 2009 of 61M tonnes. IHS Global Insight suggests palm oil trade will level off in the next few years, with greater trading of soyabean oil. Increased trade in biodiesel will be dictated by political mandates to reduce the fossil fuel percentage in transport fuels. **F**

## The FAME game

Several processes based on the use of vegetable oils can be used to create biodiesel.

One commonly used process starts with a lipid (a vegetable oil or animal fat base) and an alcohol, which are reacted to produce an ester and a glycol by-product

through a process called transesterification. The resultant fatty acid methyl ester (FAME) is biodiesel.

An alternative process uses vegoils as a refinery feed stock, which is cracked to produce a mixture of propane, petrol and diesel fuels without the glycol by-product.

Although biodiesel can be used at 100% concentration (B100), its principal use has been as a blending agent (at about 5% – B5) with petroleum diesel in both the US and European Union, which are mandating reductions in greenhouse gases from transport.