

Oil Market Report: May 2021

Whether you live or breathe energy or simply take a passing interest, there is now no escape from decarbonisation, with government legislation, consumer behaviour and societal interest all taking the environmental agenda to new levels of intensity. As a result, numerous renewable fuel opportunities are presenting themselves and one of the main areas of interest is low-carbon, “drop-in” fuels.

Unlike biodiesels such as FAME (Fatty Acid Methyl Ester), which have to be mixed into liquid fuels in small doses, drop-in fuels can be used interchangeably with normal fossil fuels. Thus, low-carbon, drop-in fuels deliver lower emissions, without requiring capital expenditure on new equipment or expensive engineering modifications to existing equipment. This is of interest to both “hard to decarbonise” sectors (eg, construction) and those sectors that are already well on their way to low-carbon solutions (eg, public transport), but who still have to operate with high carbon legacy equipment (ie, diesel buses). In simple terms, even if every bus depot in the land decided to go electric tomorrow, they would still have numerous diesel buses on the books that need to be depreciated (ie, used) over the next 5-10 years.

No drop-in product has had more feverish interest than Hydrotreated Vegetable Oil (HVO), which can reduce CO2 emissions by up to 90% versus normal diesel. Even better, HVO is a high quality paraffinic liquid (ie, more akin to kerosene) which does not invalidate engine warranties. In effect, it is a pure, finished grade “fossil” fuel, that happens not to come from fossil fuels! Although containing the words “vegetable oil” in its title, the product is not necessarily made from vegetables at all. A small amount comes from decayed vegetable matter, but it is far more common to use virgin vegetable feedstocks (sunflower, rapeseed or more controversially, palm oil), used cooking oil (see last month’s report on the Suez blockage) or by chemically processing (hydrotreating) meat carcass tallow. Nice!

Emission reductions are at their least impressive when HVO production relies on virgin vegetable oils. Palm oil derived HVO only delivers “well to tank” emission reductions of 26%. Used cooking oil performs much better at circa 60% reduction, but it is by using tallow (meat) where the greatest savings are made (90%). Pretty impressive you would agree, but when it comes to those high levels of CO2 abatement, so the problems begin. Renewable fuel is not necessarily the same as sustainable fuel and when it comes to tallow supply, there are simply not enough waste animal carcasses being “produced” globally, to meet the kind of demand required to replace mineral fossil fuels. If we were to go down that route, a kind of downward circular spiral would be created, whereby people are encouraged to eat more meat (= more CO2), just so that more HVO could be produced! This was in fact exactly what happened with early green legislation in the 2000’s, whereby European targets were responsible for accelerating tropical deforestation, in favour of palm oil plantations (for biofuels).

A further problem associated with HVO comes with its high price. As industry veterans know only too well, consumers and businesses alike tend to be “water melons”, ie, green on the outside (“that sounds like a great product”), but red on the inside (“but I’m not willing to pay more for it”). With HVO, the cost issues around limited and expensive raw materials, are compounded by the undeveloped nature of manufacturing capacity. Only Neste (Finland / Netherlands), Total (France) and ENI (Italy) have material production in Europe, whilst any product from elsewhere typically gets hit by EU import tariffs (designed to protect European manufacturing) - US HVO for example, gets whacked with a 440% tariff! Put all of that together and you have a recipe for high prices.

In the UK, Renewable Fuels Transport Certificates (RTFC’s = a form of subsidy) go some way to mitigate the high price of HVO, although it is still considerably more expensive than standard diesel, which means that uptake for the product has been miniscule. In Europe, only Scandinavia (direct government subsidy) and Germany (carbon tax) have extensive consumption of HVO. For the rest, it would seem that there are lots of “water melons” about, with the product’s high price resulting in very low volumes. This subdued demand could be about to change though, as covetous aviation bosses hungrily size up the fuel’s huge potential. As a paraffinic liquid (ie, kerosene characteristics) drop-in HVO is aligned and interchangeable with kerosene Jet A1. With few options available other than liquid fuel combustion, HVO might well be the only game in town when it comes to low-carbon flying.

Until that happens, HVO remains a high priced, niche fuel with limited mass environmental impact. But with few silver bullets available, a green source of energy that is immediately available, has universal usage and the potential for 90% CO2 reduction, has a great deal going for it. In theory, prices should come down as manufacturing capacity grows, but equally if demand also keeps growing, then prices will remain unattractively high. Which probably means that when it comes to HVO, Government subsidy and legislation will be the only ways that the water melons will be “persuaded”!