

Palm Biodiesel: Development and Current Status

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INTRODUCTION

Biodiesel is one of the liquid biofuels that has been successfully evaluated as diesel substitute and gained worldwide acceptance (Choo *et al.*, 2005). Today, many countries have mandated or given incentives for the use of biodiesel, whether derived from palm, soyabean, rapeseed or other feedstock in their diesel fuel. The leading countries in producing and promoting the use of biodiesel through mandates and incentives are the European Union and the United States. Other countries in Southeast Asia such as Thailand, Indonesia, Malaysia and the Philippines have also introduced the use of biodiesel in recent years. The major reasons for the use of biodiesel in these countries are to enhance energy security by reducing dependency on fossil fuel import, to reduce greenhouse gas (GHG) emissions and to support the agricultural sector which supplies the biodiesel feedstock. At the current moment, most of the engine manufacturers and original equipment manufacturers (OEM) of fuel injectors have provided warranty to use biodiesel subject to a maximum blending ratio of 5% based on volume. The blending ratio may be increasing from time to time as seen in the European Union (EU) diesel specifications (EN 590:2009+A1:2010) where the maximum limit of biodiesel of 7% has been allowed. Other issues such as sustainability of biodiesel production and potential GHG emissions saving of using biodiesel are being discussed globally.

DEVELOPMENT OF MALAYSIAN BIODIESEL INDUSTRY

The launching of National Biofuel Policy on 21 March 2006 by the Prime Minister of Malaysia has paved the way for the establishment of the biodiesel industry in Malay-

sia. The National Biofuel Policy envisions that the production and use of biofuel will enhance the prosperity and well-being of all stakeholders in the agriculture and commodities-based industries through stable and remunerative prices of palm oil.

The policy is primarily aimed at reducing the country's dependency on depleting fossil fuels, promoting

the demand for palm oil and stabilizing its prices at a remunerative level. There are five strategic thrusts underpinned by the policy namely, (i) biofuel for transport, (ii) biofuel for industry, (iii) biofuel technologies, (iv) biofuel for export, and (v) biofuel for cleaner environment.

In June 2006, a significant milestone of the biodiesel industry was achieved by the successful commissioning of the first normal- and winter-grade commercial palm biodiesel plants by Carotino Sdn Bhd with capacities of 60 000 and 30 000 t per annum respectively based on MPOB technologies (Choo and Goh, 1987; Choo and Ong, 1989; Choo *et al.*, 1990; 2002). Since then, 91 biodiesel manufacturing licences have been issued by MIDA and to date, 61 licences have been re-issued (some with conditional approval) by the Ministry of Plantation Industries and Commodities which has since assumed the licensing function for biodiesel. The total approved biodiesel production capacity stands at 6.7 million tonnes per year.

In line with one of the strategic thrusts underlined in National

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Biofuel Policy, the Malaysian biodiesel industry has been exporting biodiesel since 2006 with gradual increase in total export volume from 2006 to 2009 as shown in *Table 1*. The major feedstocks used were crude palm

Kuala Lumpur, Putrajaya, Selangor, Negeri Sembilan and Melaka in June 2011 (The Star Online, 2010). The implementation shall cover all sectors including transportation and industrial sectors.

The government through MPOB is actively facilitating the setting up of proper inline blending facilities for biodiesel by petroleum companies at depots and terminals in the central region. Concurrently, the licensing and regulatory framework is being finalized.

TABLE 1. MALAYSIA PALM BIODIESEL EXPORT (2006-2009)

	2006	2007	2008	2009
Volume (t)	47 986	95 013	182 108	227 457

Source: MPOB (2009).

oil and refined palm oil and the major export destinations were the EU and the US.

MPOB played a key role in getting published the *Malaysian Biodiesel Standard on Automotive Fuels – Palm Methyl Esters (PME) for Diesel Engines – Requirements and Test Methods (MS 2008:2008)* in October 2008 to facilitate the local implementation of biodiesel usage. The Standard is substantially similar to biodiesel specifications stipulated in EU Standard EN 14214 and US Standard ASTM D 6751.

CURRENT STATUS OF B5 IMPLEMENTATION

The commercial use of 5% biodiesel with 95% diesel (B5) in Malaysia started in February 2009 in selected government departments, viz. Dewan Bandaraya Kuala Lumpur (DBKL), Armed Forces and Jabatan Kerja Raya (JKR). A total of 4000 vehicles are involved in this initial phase of implementation. No engine problem have been reported as of October 2010.

The Minister of Plantation Industries and Commodities has announced the mandatory use of B5 in central region which covers

CONCLUSION

Biodiesel, as diesel substitute remains as the most readily avail-



Figure 1. MPOB-Sime Darby normal-grade palm biodiesel plant.



Figure 2. MPOB-Sime Darby winter-grade palm biodiesel plant.

able liquid renewable energy in the world today. Malaysia is committed to produce biodiesel in the most sustainable manner so as to achieve highest GHG emission reduction through the use of biodiesel. Whether the biodiesel will sustain itself in the face of uncertain demand will depend on developments in global market.

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