

Studi Analisis Tekno-Ekonomi Pada Implementasi Produksi Renewable Diesel = Techo-Economic Analysis of Renewable Diesel Production

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Abstrak

Pemenuhan kebutuhan bahan bakar dilakukan dengan aktivitas impor bahan bakar yang menyebabkan defisit pada current account. Indonesia juga berkomitmen untuk ikut serta dalam pembatasan kenaikan suhu rata-rata global di Conference of Parties (COP) 21 dengan menurunkan emisi karbon sebesar 29% dengan usaha sendiri. Produksi Renewable diesel menggunakan teknologi hydrotreatment dengan bahan baku 100% bio-oil dan co-processing dengan bahan baku 50% bio-oil. Kapasitas produksi pada simulasi ini yaitu teknologi hydrotreatment sebesar 1,9 juta ton pertahun dan co-processing 633.600 ton pertahun dengan by-products LPG 297.840 ton pertahun, naphta 316.800 ton pertahun, dan bensin 617.700 ton pertahun. Biaya investasi atau CAPEX hydrotreatment dan co-processing masing-masing 1.198.000.000 USD dan 2.159.290.000 USD. Biaya operasional atau OPEX hydrotreatment dan co-processing masing-masing 1.612.800.000 USD dan 1.097.000.000 USD. NPV selama 25 tahun sebesar USD 18.779.951.443 dan USD 19.268.377.636. Internal rate of return hydrotreatment dan co-processing masing-masing 42% dan 32%. Biaya pokok produksi hydrotreatment dan co-processing masing-masing 68 USD/MJ dan 54 USD/MJ. Teknologi hydrotreatment dengan bahan baku 100% bio-oil lebih sensitif terhadap parameter bahan baku dan harga produk, sedangkan teknologi co-processing lebih sensitive terhadap parameter biaya operasional. Pelaksanaan produksi renewable diesel perlu memperhatikan sensitivitas parameter-parameter tersebut.

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Fulfillment of fuel needs is carried out with fuel import activities that cause a current account deficit. Indonesia is also committed to participating in limiting global average temperature increases at Conference of Parties (COP) 21 by reducing carbon emissions by 29% on its own. Renewable diesel production using hydrotreatment technology with 100% bio-oil raw material and co-processing with 50% bio-oil raw material. The production capacity of hydrotreatment is 1.9 million tons per year and co-processing 633.600 tons per year with by-products LPG 297.840 tons per year, naphta 316.800 tons per year, and gasoline 617.700 tons per year. Investment costs or CAPEX hydrotreatment and co-processing are 1.198.000.000 USD and 2.159.290.000 USD, respectively. Operational costs or OPEX of hydrotreatment and co-processing are 1.612.800.000 USD and 1.097.000.000 USD, respectively. NPV for 25 years amounted to USD 18.779.951.443 and USD 19.268.377.636. Internal rate of return hydrotreatment and co-processing are 42% and 32%, respectively. The levelized cost of energy of hydrotreatment and co-processing are 68 USD/MJ and 54 USD/MJ, respectively. Hydrotreatment technology with 100% bio-oil raw material is more sensitive to raw material parameters and product prices, while co-processing technology is more sensitive to operational cost parameters. The implementation of renewable diesel production needs to consider the sensitivity of these parameters.</i>