

World Biodiesel Congress & Expo

December 5-7, 2016 San Antonio, Texas, USA

Research on a new technology of FBD biodiesel production

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Biodiesel gets great attention for production from renewable biomass resources and environmental friendliness. In order to solve problems of poor solubility of oil and methanol, and separation of catalyst in biodiesel synthesis, a new technology using high efficiency internal circulation reactor and recyclable liquid catalyst is developed by FRIPP. This technology increases transfer efficiency of methanol with oils and ensures mixing, as a result, the reaction can take place at low pressures and temperatures, reaction rate is accelerated and conversion of oil is increased. Cotton-seed oil and colza oil is selected to synthesize biodiesel by transesterification with methanol. On the condition of reaction temperature 130°C, reaction pressure 1.0 MPa, space velocity of oil 1.0 h⁻¹ and molar ratio of methanol to oil 10:1, the conversion of oil is close to 100% and the selectivity of fatty acid methyl ester is more than 95%, the biodiesel product meets the requirements of national standard of China on biodiesel BD100. Meanwhile, the byproduct glycerin can be used as raw material for fermentation to prepare 1,3-propanediol, the yield of 1,3-propanediol is comparable with that from reagent grade glycerol.

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