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An overview of renewable fuels like ethanol from cellulose and bio-diesel from conventional/algae feed status and the economic options for ETBE

Advances in biofuel technology: RHT-ETBE and RHT-TAEE are the smart configuration technologies to enhance the conversion to over 97 to 90 percent, respectively by having multiple side draws from the columns, and one can expect much better quality than competitive technologies. The major advantage in these processes is that it allows wet ethanol to be used in the process, still meeting TBA and TAA specifications in the product. Essentially the process is rejecting the water from wet ethanol and making high quality ethers at low CapEx and OpEx to the competitive processes. RHT-biodiesel process is optimized to produce biodiesel from palm oil, rape seed oil, vegetable and animal product that are all fatty acids with even number of carbon atoms typically 12 to 22. This biodiesel is comparable to hydrocarbon diesel. The triglycerides are reacted with methanol/ethanol or higher alcohols which produce biodiesel in the acceptable boiling range. Methanol is most commonly used for the biodiesel production as being the cheapest alcohol, hence provides better economics. After the transesterification reaction, methyl esters of those oils/fats are produced as a product and glycerin is produced as a byproduct. Glycerine is separated from the methyl esters of vegetable oils that are the biodiesel by phase separation by gravity settling due to density differences. The methyl esters and glycerine are purified to meet the product specifications. This technology is able to provide that reactions also to meet high overall conversions and selectivity at low CapEx and OpEx without producing any liquid waste.

Recent Publications

1. Sahoo B B and Sahoo N and Saha U K (2009) Effect of engine parameters and type of gaseous fuel on the performance of dual-fuel gas diesel engines—a critical review. Renewable and Sustainable Energy Reviews, Elsevier 13(6-7):1151–1184.
2. Korakianitis T, Boruta M, Jerovsek J and Meitner P L (2009) Performance of a single nutating disk engine in the 2 to 500Â kW power range. Applied Energy, Elsevier 86(10): 2213–2221.
3. Baiju B, Naik M K and Das L M (2009) A comparative evaluation of compression ignition engine characteristics using methyl and ethyl esters of *Karanja* oil. Renewable Energy, Elsevier 34(6):1616–1621.
4. Saravanan N, Nagarajan G, Kalaiselvan K M and Dhanasekaran C (2008) An experimental investigation on hydrogen as a dual fuel for diesel engine system with exhaust gas recirculation technique. Renewable Energy, Elsevier 33(3):422–427.

5. Saravanan N, Nagarajan G and Narayanasamy S (2008) An experimental investigation on DI diesel engine with hydrogen fuel. Renewable Energy, Elsevier 33(3):415–421.

Biography

Amarjit Bakshi has a PhD and also Undergraduate Degree, both in Chemical Engineering from University of Surrey, Guildford, UK. He has over 40 years' experience in Engineering/Consulting Management at senior level in Process Engineering, Technology, Business Development, Licensing, Acquisitions, Alliances and Project Management and Engineering, Operations Management and Process Engineering. He has provided proven leadership and vision with broader perspectives and able to manage multiple tasks and personnel on mega projects. He has worked in all EU countries including UK, Germany and The Netherlands.

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