NexantECA

Technology and Costs

Biorenewable Insights: Gasoline and Reformate

Gasoline and Reformate is one in a series of reports published as part of NexantECA's 2016 Biorenewable Insights program.

Overview

"Peak oil", climate change, and pollution problems are the key issues related to fossil fuel use that are causing concern across society. Biofuels are perceived as being neutral with respect to the carbon dioxide emissions upon combustion (as contrasted with the fossil carbon released in burning petroleum fuels adding to the total inventory of atmospheric carbon). That is, the carbon that is absorbed from the atmosphere to grow a plant is simply released again upon combustion of the plant's biofuel derivatives. This carbon neutrality based on feeds must be netted against any fossil fuel requirements for agriculture, transportation and for manufacturing the fuel. If the systems that support the production of the biomass and the conversion processes as well as transportation also derive their energy needs from biomass or other renewable sources, biofuels can be completely free of greenhouse gas emissions. At least in their present forms of ethanol and biodiesel, liquid biofuels are non-toxic and biodegradable and the emissions and residuals from their manufacturing processes and handling are in general less problematic in terms of human health and environmental risks compared to those for fossil fuels. Many initiatives are underway to develop and produce biofuels (gasoline, diesel, and jet fuel) that are chemically closer to the hydrocarbon liquid fuels from petroleum sources in use today than are ethanol and FAME biodiesel. Renewable diesel is chemically very similar to diesel.

Motor fuels present special technical and logistic challenges for fuel substitution. In contrast, for example, there is a wide diversity of feasible alternatives for generating electricity, from coal and natural gas combustion, nuclear fission, hydroelectric and wind power, to photovoltaic and solar thermal energy. Natural gas, gas condensates, fuel oil, petroleum residuals, and waste materials serve most of the total of space heating and industrial fuel needs, and for the latter, a high degree of switching capability is already in place.

Technologies

NexantECA investigated 10 technologies in 6 categories to produce biogasoline and bioreformate:

- Alcohol-to-Gasoline
  - Biomethanol to Gasoline (bio-MTG)
  - Ethanol to Gasoline (ETG)
- Virent's Aqueous Phase Reforming of Sugars
- Ethylene Oligomerization (ETL)
  - Byogy
  - Siluria
- Biomass Gasification and Fischer Tropsch
- Chemtex's Lignin-based MOGHI Process
- Pyrolysis
  - Anellotech's Catalytic Fast Pyrolysis
  - Cool Planet's Modular Pyrolysis units
  - GTI/CRI's Hydropyrolysis

Process Economics

Cost of production models for USGC, Brazil, Western Europe and China are shown for:

- Virent Reformate
- Anellotech Reformate
- Cool Planet Reformate
- Moghi Reformate
- Gasification + FT
- GTI/CRI
- Byogy
- Sundrop Fuels

Capacity

NexantECA has catalogued existing biogasoline and reformate production and capacity and includes profiles of projects.

For more information. please contact
Technology@NexantECA.com or www.NexantECA.com

NexantECA

Technology and Costs

Biorenewable Insights: Gasoline and Reformate

Subscribe to BI

The BI program (sister program to the world renowned TECH program, formerly known as PERP) is globally recognized as the industry standard source of process evaluations of existing, new and emerging technologies of interest to the renewable energy and chemical industries.

BI's comprehensive studies include detailed technology analyses, process economics, as well as capacity analysis and impacts on conventional industry. Reports typically cover:

- Trends in technology
- Strategic/business overviews and/or developer profiles
- Process Technology:
- Chemistry
- Process flow diagrams and descriptions of established/conventional, new and emerging processes
- Process economics – comparative costs of production estimates for different technologies across various geographic regions
- Capacity tables of plants and analysis of announced capacities
- Regulatory and environmental issues where relevant

Subscription Options

A subscription to BI comprises:

- PDF reports including detailed technology analyses, process economics, as well as commercial overviews and industry trends
- Cost of production tables in spreadsheet format (as requested)
- Consultation time with the project team

An annual subscription to BI includes 10 reports published in a given program year. Reports can also be purchased on an individual basis, including reports from previous program years.

For more information, please contact
Technology@NexantECA.com or www.NexantECA.com

NexantECA

NexantECA Subscriptions & Reports provide clients with comprehensive analytics, forecasts and insights for the chemicals, polymers, energy and cleantech industries. Using a combination of business and technical expertise, with deep and broad understanding of markets, technologies and economics, NexantECA provides solutions that our clients have relied upon for over 50 years.

Technology and Costs comprises the Technoeconomics – Energy & Chemicals (TECH) program, the Biorenewable Insights program (BI), and the new Cost Curve Analysis. These programs provide comparative economics of different process routes and technologies in various geographic regions.

NexantECA serves its clients from over 10 offices located throughout the Americas, Europe, the Middle East, Africa, and Asia.

Americas
Tel: +1 914 609 0300
44 S Broadway,
5th Floor White Plains
NY 10601-4425
USA

Europe, Middle East & Africa
Tel: +44 20 7950 1600
110 Cannon Street
London EC4N 6EU
United Kingdom

Asia Pacific
Tel: +662 793 4600
22nd Floor, Rasa Tower I
555 Phahonyothin Road
Kwaeng Chatuchak
Khet Chatuchak
Bangkok 10900
Thailand

For more information. please contact
Technology@NexantECA.com or www.NexantECA.com