



# Alternative Fuels & Feedstocks

Crude oil and product prices have risen dramatically over the last few years leading to unprecedented gasoline, diesel, and jet fuel prices. In parallel, legislative requirements mandating the use of “greener” fuels or “biofuels” have resulted in new challenges for refiners and producers of “greener” feedstock in investing, producing, processing, handling, and blending these products. Concern over long term crude supply quality and security are further drivers in the development of alternative fuels and feedstocks.

In 2007, alternative fuels production reached 1 million barrels per day (BPD). The major alternative fuels that are enjoying growth today are:

- Gas-based fuels (CNG, LPG)
- Biofuels (bioethanol, biodiesel)
- Synthetic Fuels (GTL, CTL)
- Methanol and DME

At the same time, alternative feedstocks such as syncrude from Canadian Tar Sands and vegetable oils as hydrotreater feedstock continue to grow.

## MAKING SENSE OF THE OPTIONS

Each alternative fuel and feedstock presents challenges to producers, refiners, marketers, and consumers alike.

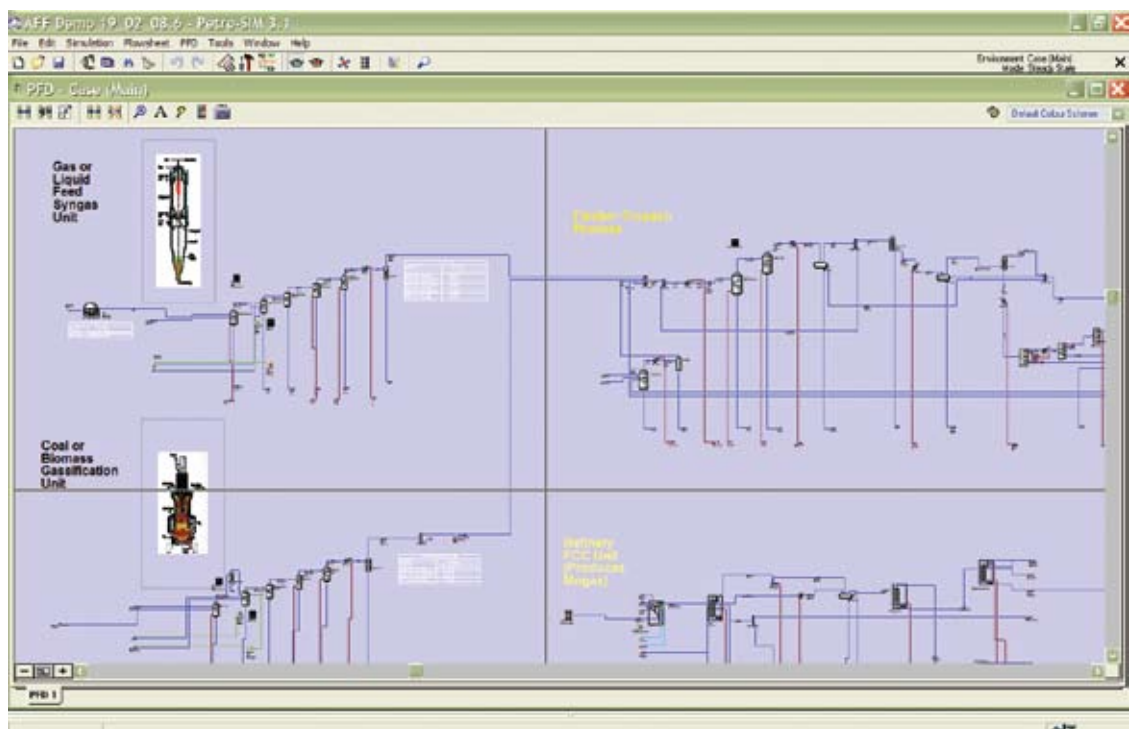
The ever-changing costs of feedstocks, production and distribution, subsidy and tax levels, government mandates and pressures to reduce Greenhouse Gas (GHG) emissions make for a complex and continuously changing marketplace. Producers of “green” fuels and syngas need

to understand the value of their products as a high value blendstock. Blenders need to understand the operational and legislative constraints and value of alternative blendstocks and the effects on blended fuel quality.

Companies considering building or operating GTL and CTL plants need to optimise designs and operations to maximise yields of high value products, minimise energy consumption and CO<sub>2</sub> emissions, ensure reliability, and operate at optimum staffing levels using Best Practice systems, work processes, procedures, and tools.

Refiners need to cope with increasingly difficult and scarce crudes and alternative feedstocks such as syncrudes, bio-crudes, vegetable oils as hydrotreater feed and bioethanol for ETBE manufacture.

KBC helps clients develop and evaluate options, design contingency plans, and take maximum advantage of market conditions. The vast experience our team possesses in advising producers of conventional fuels and producers and blenders of alternative fuels positions us to provide a unique blend of strategic, market, and technical advice and solutions.



Petro-SIM Model of Synthetic Fuels Process

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## TOOLS AND TECHNIQUES

The KBC Software Solutions group is the industry leader in providing models of hydrocarbon-based processes. Our process simulator, Petro-SIM™, has been used to successfully model gas-to-liquids (GTL) and coal-to-liquids (CTL) processes, and, in conjunction with the KBC SIM Suite of kinetic reactor models, it represents the world's most comprehensive modelling tool for refinery processes. KBC consulting teams use Petro-SIM to develop solutions quickly within quality and quantity constraints, producing a detailed level of product yields and properties for evaluation and optimisation.

For high-level studies, KBC Planning Optimisation consultants work with the LP to develop solutions. Petro-SIM models can be used to create and update the linear program (LP) model vectors for a broader representation of plant performance.

Using the KBC energy software packages and Pinch Analysis technology, our consultants can optimise energy performance, hydrogen usage, water usage, or monitor CO<sub>2</sub> on a total site basis.

In addition to these services, KBC Environmental Service offerings provide both technical support for existing facilities and strategic consulting for future investment planning in anticipation of the future regulatory landscape. KBC provides support on GHG emissions through our KBC CarbonManager™ product and traditional air and water emissions and solid waste management.

## EXPERIENCED STAFF

With our methods, tools, and experienced personnel, the KBC team helps plant and planning staff focus on solutions that are both technically achievable and financially viable. Our consultants have extensive experience in process modelling, design, operations, maintenance, operational planning, strategic studies and configuration studies.

KBC assists clients in finding the right option for their facility by explaining the many options available to meet alternative feedstock and fuels regulations and opportunities. In doing so, we work to help our clients achieve their strategic and project objectives and provide cost-effective short- and long-term solutions utilising the most appropriate technologies.



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KBC CarbonManager is a trademark of KBC Advanced Technologies plc.

*KBC offers a comprehensive range of consulting, implementation, and training solutions to provide sustainable competitive advantage to our process industry clients worldwide.*



**DRIVING EXCELLENCE**

### OUR SERVICES INCLUDE:

#### CapX – Capital Excellence

- Market Analysis & Forecasting
- Business Strategy Review
- Merger, Acquisition, & Integration Studies
- Feasibility Studies
- Capital Project Support

#### OpX – Operational Excellence

- Operational Planning
- Process Optimisation
- Energy
- HSE
- Reliability, Availability, & Maintenance
- Human Performance Improvement
- Software Solutions

*For more information, please visit [www.kbc.com](http://www.kbc.com),  
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