

US and EU technologies and investors break ground on next-generation biorefineries in Brazil

Partnerships and portfolios for progress

Brazil is emerging as a world leader in next-generation, integrated biorefineries, with help from technology partners and investors in the US and EU. Brazil's progress in private sector biofuels investment and partnerships has been charging ahead, while uncertain EU and US government policies continue to effectively reduce the options for deploying next-generation biorefineries at scale.

Stability = growth

In Brazil, US and EU-based technology leaders and producers are finding long-awaited political support, partnerships, product portfolios, and stable ground for long-term economic growth.

Since 2008, biofuels sustainability criteria in the US, EU and UN have created favorable investment trends in Brazil during a challenging global economic recession. Since 2009, a consolidation among Brazil's sugarcane production facilities and conglomerates have led to favourable terms for first generation sugarcane ethanol acquisitions, and attractive conditions for next-generation, integrated biorefineries. The convergence of these factors has led to a favorable series of investments in Brazil, where Shell and BP have entered into

multi-billion dollar ventures (Shell-Cosan JV at \$12 billion (€8.4 billion), BP's \$8 billion through 2015) as examples of this new trend of emerging markets technology ventures.

Strategic partnerships

From 2009-2011, the expansion of next-generation biofuels companies are investing in and creating strategic partnerships with Brazil's sugarcane fermentation biorefineries and leaders. Amyris, LS9, Virent and Solazyme are benefitting from the scale and experience from its investors and strategic partners: Total, Chevron, Shell, and Bunge. Each organisations strategy is similar: use existing fermentation systems and exchange ethanol-based yeast with an advanced 'drop-in' microbes such as algae, e coli, fungus, and yeast.

In the near future, these fermentation-based biorefineries will be able to convert multiple inputs from cellulosic sugars-bagasse, vinasse, glycerin, switchgrass, wood chips, and bio-solids into a portfolio of outputs, including renewable diesel, aviation fuel, bio-crude oil, biochemicals and biopolymers.

Portfolio approaches

In Brazil, key advantages to US and EU based biorefinery

approaches are found by enabling Brazilian partners and ethanol producers greater flexibility to (1) select from multiple feedstock inputs in order to create (2) a more balanced portfolio of products beyond ethanol. By upgrading existing plants into integrated biorefineries, these enhanced ethanol refineries will soon be able to use multiple inputs (cellulosic sugars from various feedstocks) in low cost fermentation systems with new microbes.

By using this portfolio approach, these biorefineries will not repeat the same mistakes first generation corn ethanol and biodiesel plants made by using a single commodity as an input to produce just one commodity as an output. The petroleum fuels and biofuels business is a brutally competitive commodity industry, where volume, volatility, diversity, hedging, and achieving profitability in the margins are keys to success. These technology upgrades to existing refineries will help to lead to the advancement of the biofuels industry towards diversified feedstock inputs, outputs, technologies and alliances.

Emerging markets

The future benefits of these US-EU-Brazil based biorefinery partnerships in

Brazil will help move the advanced biofuels industry into the next phase: large scale demonstration projects, and first-stage commercial – and profitable – biorefineries. In India, the world's most populated nation and second largest sugar producer, is most likely to benefit from this progress along with China and other key emerging market nations interested in attracting increased investment and emerging technologies for sustainable growth.

Brazil's long-term political and economic stability, coupled with advanced technologies from US and EU industry partners, will provide an 'early-adopters' template for testing and achieving large-scale, successfully integrated, diversified, biorefineries. Brazil's leadership and progress in attracting investment, technology is likely to benefit the other big emerging markets of China and India as these emerging partnerships and portfolios progress. ●

For more information:

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