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Microchannel reactors: Demonstrating the future for distributed biofuels production

Next generation biofuels – liquid fuels produced from waste products such as agricultural byproducts, construction debris and municipal solid waste – have attracted attention as an environmentally friendly substitute for petroleum-based transport fuels. But because biomass isn't very dense – it takes roughly 1 tonne of biomass to produce one barrel of liquid biofuel – biomass to liquid (BTL) production facilities need to be relatively small and located near the source of the biomass. Establishing BTL as a practical and economically feasible option requires demonstrating a way to intensify the BTL process in order to enable this distributed production of biofuels.

A Joint Development Agreement (JDA) between US-based company, Velocys Inc, a member of the UK-based Oxford Catalysts Group, and the Portuguese incorporated holding company, SGC Energia (SGCE), will bring this goal closer to fruition.

Under the terms of the JDA, the Oxford Catalysts Group will receive US\$5.9 million over the next year or so to enable the demonstration and commercialisation of its Fischer-Tropsch (FT) microchannel reactor technology. As part of this, Velocys and SGCE will work together to set up an FT microchannel reactor demonstration plant at the biomass gasification facility in the pioneering eco-town, Güssing, in Austria.

The demonstration plant, which will use gasified woodchips as a feedstock, will include an FT

microchannel reactor skid with full length process and coolant channels. The plant, which will have a capacity of ~10,000 gallons/year (~100 l/day), is expected to be operational by early 2010. After a six month trial operation, the FT microchannel reactor skid will be transferred to the Wright Patterson Air Force Base near Dayton, Ohio, US, where it will be used in another trial to produce synthetic jet fuel. Meanwhile, SGCE will act as the lead company to commercialise the Velocys FT microchannel reactor technology for gasification-based facilities.

Tom Hickey, President, Velocys, said: “Microchannel technology provides a number of advantages for BTL applications. Because it accelerates Fischer Tropsch (FT) reactions by 10-15 fold compared to conventional processes, microchannel technology enables smaller reactors which can operate efficiently when producing just 500-5,000 barrels of liquid fuel per day. As a result, these plants are very well suited for the distributed production of biofuels from a wide variety of waste products. Working together with SGCE, we hope to be able accelerate the introduction of distributed production of biofuels.”

Vianney Vales, CEO, SGCE said: “SGCE is fully committed to biofuels and is deploying substantial resources in this market. We are confident that the Velocys technology provides an important competitive advantage in this area and that through our partnership with them we will secure a leading position in the production of clean next generation synthetic fuels.”

About The Oxford Catalysts Group

Oxford Catalysts Group PLC is a listed public company (LSE: OCG) comprised of two operating subsidiaries – Oxford Catalysts Ltd and Velocys, Inc. The Group has over 90 employees and operates from facilities near Abingdon, Oxfordshire, UK and Columbus Ohio, US. The company was founded in October 2004 and was admitted to trading on the AIM market of the London Stock Exchange on 26th April 2006, having raised £15m before expenses from a solid base of institutional investors.

www.oxfordcatalysts.com

About Velocys Inc.

Velocys Inc is based in Columbus, Ohio, US and specialises in the design and development of microchannel process technology for the production of synthetic fuels. The company was spun out of Battelle Memorial Institute, Inc, a major not-for-profit science and technology organisation, in 2001. It owns, or has licenses to, the largest microchannel patent portfolio in the world, with over 550 patent filings, and supports a large microchannel development team. Velocys Inc. was acquired by Oxford Catalysts in 2008.

www.velocys.com

About SGCE

SGC Energia (SGCE), SGPS, S.A. is a Portuguese incorporated holding company that acts as the investment arm of João Pereira Coutinho in the renewable energy sector. SGCE is involved in the development of next generation bio and synthesis fuels technologies, and also offers complex integrated solutions for producing alternative energy. SGCE is expanding its activities internationally and is currently working with partners to develop and demonstrate gasification, syngas cleanup, and syngas-to-liquids technologies. Joao Pereira Coutinho is also involved through SGC in the operation of a 125,000 ton/yr biodiesel production facility, and is establishing over 30,000 ha of biomass energy crops in Africa. The SGC Group is active in 13 countries and has an annual turnover of one billion Euros.

www.sgc.pt