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For immediate release

Synthetic fuels: Distributed production set to take off

Following the successful demonstration of its microchannel Fischer-Tropsch (FT) reactor for small scale production of biofuels at a biomass gasification plant in Güssing, Austria, the Oxford Catalysts Group has now received an order for two full-scale FT microchannel reactors from a Fortune 500 company. The customer is committed to the distributed production of synthetic fuels and plans to use the reactors in a commercial synthetic fuels plant in the US. The plant, with a nominal capacity greater than 50 barrels per day (bpd), is expected to begin operating in 2012. Following successful completion and operation of this first facility, additional plants are planned.

Synthetic fuels can be produced from a variety of hydrocarbon, waste and biomass feedstocks via the Fischer-Tropsch (FT) process. Because these feedstocks are often only available in relatively small quantities and at scattered locations, they are not economic to use in large centralised production plants and so are often wasted. Distributed production – the production of synthetic fuels in small scale plants located near the source of the feedstock and markets for the fuels – based on the use of microchannel reactors provides a way to turn this 'wasted' resource into a valuable commercial product.

This is the third commercial order received by the Oxford Catalysts Group for its microchannel FT technology. Two orders for the microchannel reactor and associated FT catalyst were received from SGC Energia (SGCE) in December 2010 and April 2011 for use in a 50 bpd biofuels plant due to begin operating in Brazil in 2012. In addition, the Group's microchannel FT and steam methane reforming (SMR) reactors have been incorporated in a skid-mounted gas to liquids (GTL) demonstration plant at the Petróleo Brasileiro S.A. (Petrobras) Lubnor refinery in Fortaleza, Brazil. The demonstration plant, which is scheduled to start-up later this year, will operate for approximately nine months.

Jeff McDaniel, Commercial Director, The Oxford Catalysts Group said:

"Microchannel FT reactors offer substantial advantages over conventional technology and make it possible to convert a wide variety of carbon-containing feedstocks into clean synthetic fuels. Their high conversion efficiencies – in the range of 70% per pass – and modular nature makes them particularly useful for distributed production because capacity can be easily increased by simply 'numbering up' or linking together additional FT reactor modules. We are excited to have the opportunity to work with this major corporation to deploy our technology in its first commercial plant."

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Notes to Editors

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Microchannel reactors

Microchannel reactors are compact reactors that have channels with critical dimensions in the millimetre range. The small channels dissipate heat more quickly than conventional reactors with larger tube diameters in the 2.5 – 10 cm (1 – 4 inch) range so more active catalysts can be used. Mass and heat transfer limitations reduce the efficiency of the large conventional high pressure reactors. The use of microchannel processing makes it possible to greatly intensify chemical reactions to enable them to occur at rates 10 to 1000 times faster than in conventional systems. Microchannel reactors are especially well suited for economical production on a small scale.

For further technical information about microchannel reactors see the Technology pages of the new Oxford Catalysts and Velocys websites

www.oxfordcatalysts.com
www.velocys.com

The Fischer-Tropsch (FT) Process

The Fischer-Tropsch (FT) process was developed in Germany in the early part of the last century as a way to produce liquid fuels, such as diesel, from coal. Initially, the availability of cheap oil meant that the FT process was only used when political expediency required it. It was used, for example, in Germany during the second World War, and in South Africa during the apartheid era.

In the FT process, a synthesis gas consisting of a mixture of carbon monoxide and hydrogen, is converted into paraffinic hydrocarbons over an iron or cobalt catalyst. Oxford Catalysts' patented technology results in FT catalysts that combine high productivity with great stability.

Thanks to advances in reactor and catalyst technology, the FT process has become cost competitive and it is now possible to use feedstocks such as natural gas and biogas, as well as coal, for the production of the clean synthetic fuel products. The range of products produced includes diesel, naphtha and bases for synthetic lubricants. Generally the products produced by the FT process are of higher quality than those derived by conventional means, so the FT process can be used to produce premium products of greater value.

FT microchannel reactors

FT microchannel reactors are compact and have channels with critical dimensions in the millimetre range. Conventional reactors are many times larger and have tube diameters in the centimetre range. Because the smaller diameter channels in microchannel reactors dissipate heat more quickly than those in conventional reactors, more active catalysts can be used to boost the conversion rates to an economic level.

When used with a new FT catalyst developed by Oxford Catalysts, microchannel FT reactors exhibit conversion efficiencies in the range of 70% per pass. A single microchannel reactor block, measuring 60 x 60 X 60 cm, might produce over 30 barrels (bbls) of liquid fuel/day. In

contrast, conventional FT plants typically exhibit conversion efficiencies in the range of 50% or less per pass. They are designed to work at minimum capacities of 5000 bbls/day, and function well and economically only at capacities of 30 000 bbls/day or higher.

For more detailed information about the use of microchannel technology for FT applications see the White Papers on the Media page of the new Oxford Catalysts and Velocys websites

www.oxfordcatalysts.com

www.velocys.com

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 around 80 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. To date the Group has raised £36 million before expenses over two rounds from a solid base of institutional investors.

www.oxfordcatalysts.com

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, a major not-for-profit science and technology organisation, in 2001. It owns, or has licences 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 the Oxford Catalysts Group in 2008.

www.velocys.com

Oxford Catalysts Ltd

Oxford Catalysts Ltd designs, develops and licenses speciality catalysts for the generation of clean fuels from both conventional fossil fuels and certain renewable sources such as biomass.

www.oxfordcatalysts.com