



Licensing agreement ceremony for Chiyoda's proprietary ACETICA® process.

Licenses ACETICA® to Chinese Firm

Chiyoda executed a licensing agreement with Guizhou Crystal Organic Chemical Group Co., Ltd. in China for a planned 36,000 tons per year acetic acid plant. Chiyoda will grant a license for its proprietary process technology to produce acetic acid (ACETICA® Process) and provide its process design package to the client. Further, it has been basically agreed that Chiyoda will provide the engineering, procurement, and supervising services for this project. This plant, when constructed, will be the first commercial plant using the ACETICA® Process.

Guizhou Crystal Organic Chemical Group Co. manufactured acetic acid with a process that used mercury (Hg), which caused water pollution in the area. As a part of overall measures for the environmental protection of the Maotiao River Basin in Guizhou Province, this project will construct an acetic acid plant employing a process that does not use mercury, and the ACETICA® Process has been selected.

ACETICA® is a novel process for producing acetic acid based on methanol carbonylation. The process produces high yields of acetic acid from methanol and carbon monoxide in the presence of a proprietary catalyst developed by Chiyoda. The ACETICA® Process with this catalyst has several advantages over the conventional process: a) ease of catalyst handling, b) high reactor productivity, c) less byproduct, and d) less corrosion of plant equipment. Consumption of both steam and electric power are also significantly reduced with the employment of a unique bubble column loop reactor.

Chiyoda expects that the implementation of this project will accelerate the demand for the process in China, whose market is expected to grow exponentially now that China has been a member of the WTO since December 2001.

Acetic acid is used for vinyl acetate, which is the raw material of synthetic fibers and Pure Terephthalic Acid (PTA), the raw material of PET. Demand in China is expected to increase at an accelerating pace.



Contracts signing ceremony for the SM/PO and MPG/Polyols Plant on November 25, 2002.

SM/PO and MPG/Polyols Plant for CSPEC in China

Chiyoda, together with Technip and Mitsubishi Corporation, won a contract for the engineering, procurement and construction (EPC) of SM/PO and MPG/Polyols plant from CNOOC and Shell Petrochemicals Company Limited (CSPEC) in China.

This project is a part of CSPEC's Nanhai Petrochemicals Project, which is regarded as one of the largest Sino-foreign joint venture projects in China, with a total investment of USD 4.3 billion. This world-scale SM/PO and MPG/Polyols plant will produce 560,000 tons per year of styrene monomer (SM), 250,000 tons per year of propylene oxide (PO), 185,000 tons per year of polyols and 60,000 tons per year of monopropylene glycol (MPG). The plants will be on stream by the end of 2005.

Major reasons for selection of Chiyoda include the superb capabilities being proven in the similar projects for Shell, its abundant EPC experience in China, and competitive pricing.

Chiyoda has completed many projects in China since the 1970's. All of these projects have been successfully completed without accident, thanks to Chiyoda's technical expertise and project execution skills, which are highly reputed by clients.

We believe implementation of this significant project will further reinforce its competitive stronghold in China.