



## Petrochemical Project

### World's Largest Aromatics Complex Completed in Malaysia



Net Sales

In February 2000, 30 months after the construction contract was signed, TEC achieved the mechanical completion of the process units for an aromatics complex. This complex, the largest in the world, was constructed for Aromatics Malaysia Sdn. Bhd. (AMSB) and is located in Kertih, Terengganu, on the east coast of Malaysia. It is designed to produce 420,000 tons per year of paraxylene and 145,000 tons per year of benzene. In July 2000, the plant was accepted by its owner.

During the peak of construction, more than 6,000 local workers and more than 500 TEC site staff were involved, making this a rare large-scale project in Malaysia in recent years. At the same time, it was a challenging project that depended on TEC's experience and achievements in Malaysia.

This project was commissioned in August 1997 by AMSB, a joint venture involving PETRONAS, Mitsubishi Corporation, and Japan Energy Corporation. TEC was the leader of the consortium, which also included TEC's Malaysian subsidiary TOYO-M (Toyo Engineering & Construction Sdn. Bhd.) and Equator Engineering Sdn. Bhd., and the scope of work covered design, procurement, construction, and commissioning on a lump-sum turnkey contract basis.

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### Ethylene Plant for FPCC in Taiwan Operating Smoothly



Net Sales

The No.2 ethylene plant for Formosa Petrochemical Corp. (FPCC), which is the core plant of the No. 6 naphtha cracker complex being developed by Formosa Plastics Group (FPG) in the Mailiao region on the west coast of central Taiwan, has been completed, and it started operation smoothly on October 11, 2000. The No. 6 naphtha cracker complex, known as the Mailiao Complex, occupies a large site area totaling 2,600 hectares, extending 8.5 km from north to south and 3.0 km from east to west, and 47 plants of differing size are under construction, beginning with an upstream refinery (450,000 BPSD).

The No. 2 ethylene plant is the largest in the world as a naphtha cracker with an annual production capacity of 1,035,000 tons, and it has now begun operating seven years after LGI's basic design commenced in 1993. TEC has taken part in detailed design and procurement services for this large-scale project as well as in the plant's start-up through its involvement and assistance in test operations, based on the excellent track record that TEC has built up through numerous ethylene plants.

• Quench tower



## Refinery Project

### TEC Awarded a Contract for FCC Project by Tosco — TEC Entering the U.S. Refinery Market in Response to the Clean Air Act

TEC, with the cooperation of its U.S. subsidiary Toyo U.S.A. Inc., was awarded a contract for an FCC (Fluidized Catalytic Cracking) unit from Tosco Refining Company of the U.S. TEC participated in international tendering for the contract for this FCC unit (30,000 BPSD) and peripheral facilities as part of an upgrade project Tosco is undertaking at its Ferndale Refinery in Washington State, on the northwest coast of the U.S. Agreement was recently reached and the contract was formally signed. TEC's scope of work includes detailed design, procurement, and construction on a turnkey basis. The construction will be performed by a local construction contractor under TEC's management. The plant is scheduled to be completed at the end of January 2003.

Tosco is the largest independent refining company in the U.S., and it operates seven refineries in the U.S. (as of October 2000, producing a total of 1.35 million BPSD). This project is one aspect of the overall upgrade project for this refinery.

After pre-qualification screening in May last year, actual tenders for the project were submitted in August. TEC was selected based on its extensive global experience in the field of FCC and RFCC units. Based on this achievement, TEC is committed to an active sales drive in the U.S. to win more contracts for refinery upgrade projects, which companies are urgently undertaking in accordance with the Clean Air Act.



• Pictured at the contract signing are Tosco Refining Company President Dwight Wiggins (left of center) and Toyo Engineering Corporation President Toshihiko Hirose (right of center).

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### TEC Awarded Contract for Polyethylene Plant in Saudi Arabia

TEC, with the cooperation of Mitsui & Co., Ltd., submitted an international tender for a contract for a new polyethylene plant. The new plant is to be constructed in the Al-Jubail Industrial City on the east coast of Saudi Arabia by Arabian Petrochemical Company (PETROKEMYA), a wholly owned subsidiary of SABIC (Saudi Basic Industries Corporation), and will add 400,000 tons of HDPE (High Density Polyethylene) and LLDPE (Linear Low Density Polyethylene) to current annual capacity. Recently, an order was placed with TEC for this contract. The scope of work of the contract includes design work, procurement of equipment and materials, and construction work on a turnkey contract basis. The plant is expected to be on stream by the middle of 2003.

Tendering for this project was conducted last November. The key factors resulting in TEC being awarded this contract were TEC's excellent technical reliability and price competitiveness. Other factors include TEC's track record of efficient implementation of an EO/EG plant completed last year and the ammonia plant debottlenecking project for National Chemical Fertilizer Co. (IBN AL-BAYTAR) that is currently in progress within the same industrial city, a contract awarded to TEC last August.

Moreover, TEC has been awarded a contract for expansion work relating to the Saudi polyethylene plant project. On completion of this work, plant capacity will be increased by 400,000 tons, for a total capacity of 800,000 tons per year, making this facility one of the largest in the world.



• (Seated from left) Pictured at the contract signing are PETROKEMYA President Rawaf, Chairman Sayyari, and Toyo Engineering Corporation President Toshihiko Hirose.

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### EOG Project in Malaysia on Schedule for Completion in July 2001

The EOG plant project for Optimal Glycols (Malaysia) Sdn. Bhd., a joint venture between PETRONAS of Malaysia and Union Carbide of the U.S., is now fully under way in Kertih, Terengganu, on the east coast of Malaysia. The EOG plant consists of 140,000 tons per year of ethylene oxide, 320,000 tons per year of MEG, and 20,000 tons per year of DEG.

The EOG plant is one part of a large complex of related plants, and construction projects are being carried out concurrently by four contractors, including TEC, with completion scheduled for July 2001. Steady progress has been made since the beginning of construction of the EOG plant, and there have been no accidents or injuries recorded.



• Blasting tank in progress