

Seminar on Energy Saving and Maintenance in the Refinery Held at SINOPEC

1. Background

JCCP conducted a Customized Program-Overseas (CPO) for SINOPEC on refinery efficiency and energy saving, from April 12 to 15, 2010. Mr. Wang Tianpu, President of SINOPEC, initially suggested the implementation of the program in a meeting with Mr. Masataka Sase, Executive Director JCCP, when Mr. Sase visited SINOPEC's Head Office last year. At that time, Mr. Wang noted that efficiency improvement and energy saving in the refinery will likely become important issues in the mutual cooperation between SINOPEC and JCCP, and that it would therefore be appropriate to take up these issues as a common theme to refineries in China and Japan. More specifically, the SINOPEC side requested a program that would cover a wide range of topics including energy conservation, efficiency improvement, TPM, loss prevention, and maintenance management, and we responded by designing a program that covers these topics in four separate sessions, as shown below.

- Day 1: General discussion of energy saving in Japanese refineries
- Day 2: Case examples of energy saving
New energy-saving technologies developed in recent years
- Day 3: Implementation status of energy-saving technologies
Kaizen activities in Japanese refineries



Lecture scene at the seminar venue

Day 4: Case examples of efficiency improvement in Japanese refineries (TPM, maintenance management, loss prevention, etc.)

A team of four lecturers made the trip to SINOPEC to hold the seminar. They included two lecturers from JCCP's Training Department (T. Kubota and S. Miyawaki) and two experts from JCCP member companies, Mr. Hiroshi Sano (Idemitsu Kosan Co., Ltd.) and Mr. Takeshi Koyama (JGC Corporation).

2. Details of the Seminar

As many as 57 people applied for the seminar, a number greatly exceeding our expectations, as an indication of SINOPEC's strong interest in the seminar. The participants were mainly management-class employees and executive-class refinery employees from the company's Head Office, Science and Technology Development Department, and nine refineries. The majority were from major refineries that are well known even in Japan, such as the Maoming, Qingdao, Tianjin, and Shanghai-Gaoqiao Refineries, with several members representing each refinery.

The seminar opened with welcome messages by Mr. Zhang Zheng, Deputy Director General, Foreign Affairs Dept., and Mr. Jiang Zheng Hong, President of the Zhenhai Refinery. They thanked JCCP for its implementation of training programs over many years since its establishment, and also expressed their expectations of the seminar, recognizing it as an important event involving a significant number of participants from the Zhenhai Refinery and other major refineries under SINOPEC.

Mr. Zhang and his staff, Mr. Rong Qi and Ms. Yang Ailing, Director and Deputy Director, respectively, of the Cooperation Division, Foreign Affairs Bureau, have long engaged in SINOPEC's overseas businesses, which began to expand in the late 1900s, and possess a network of personal connections in the Japanese government, JCCP, and other oil-related institutions in Japan. They



Q&A session

were thus ideal coordinators of the seminar's successful implementation. JCCP thanked the SINOPEC side for its warm reception and for their wide-ranging cooperation from the planning stage of the seminar, particularly because this seminar was the first CPO to be held at SINOPEC in almost ten years (the last CPO was held in 2000 at the Qilu Refinery).

The program commenced with an introduction of the Zhenhai Refinery. The refinery commenced operations in 1975 as the Zhejiang Refining & Chemical Company, and was thereafter brought under the management of SINOPEC. Today, it has a crude oil processing capacity of 23 million tons/year, and ranks 17th in the world in terms of crude oil processing capacity by a single refinery. Its sea berth has the capacity to handle 45 million tons/year of crude oil and crude oil products.

The lecture on case examples of energy saving in the refinery elicited numerous questions from the participants concerning efficiency improvement and the latest energy-saving technologies. Among the explanations that were given, the introduction of a new energy-saving distillation system (divided wall column for separating three components, etc.) captured the participants' strong interest. We gathered from this response that SINOPEC might perhaps be aiming to apply and introduce said technology to energy-consuming petrochemical plants that are attached to most of the state-of-the-art refineries under SINOPEC.

During the latter half of the program, each lecturer introduced broad-ranging technology improvement initiatives of many refineries, in relation to themes covered in the first half of the program (TPM, maintenance management, etc.). These presentations also drew forth many detailed questions from the audience, mainly in regard to new technologies. The participants' intense

interest in new technologies appears to stem from the top runner system employed in SINOPEC's refineries. As SINOPEC manages more than 40 refineries throughout the country, it makes sure that new energy-saving technologies are fully disseminated to all of its refineries by initially introducing them to outstanding top-class refineries, such as those represented by the participants of the seminar, and sequentially applying them to the conventional smaller refineries under its management.

3. Summary of the Seminar

The Zhenhai Refinery, located in close proximity to the seminar venue, has just commenced operations of a new ethylene plant built to increase the value of its products. SINOPEC also has plans to renovate and install new facilities in existing plants, to improve refinery efficiency in the future. Due to these initiatives, participants displayed, throughout the seminar, strong commitment to acquiring the latest energy-saving technologies and to preventing operational loss. Additionally, given the diversity of members from various departments, including head office personnel and engineers from oil refining departments who will be in charge of engineering the new facilities under consideration, SINOPEC's firm stance toward advancing the above improvement initiatives by acquiring new energy-saving and loss-prevention technologies was also evident in all aspects of their conduct. Even in the closing statement of the seminar, there was mention of the fact that the program provided many practical and important case examples of efficiency and improvement measures in the refinery, and that these and other reality-based presentations were highly helpful in raising cost awareness among the seminar participants. Such official stamps of approval from the hosting party of the seminar came as a reward to the efforts of the Japanese lecturers who took the podium in each of the sessions, and encouraged them to bring the seminar program to a successful close.

Today, the Chinese automobile industry is growing into the world's largest producer of automobiles, even exceeding the United States, and SINOPEC and other state-run oil companies are pushing ahead with plans to construct new refineries in response to the explosive trend of motorization (drastic increase in the consumption of automotive fuels). Amid this fast pace of change and transformation, the Zhenhai Refinery and

other major refineries are operating at rates far exceeding 90%. Especially to refineries with such high operating rates, loss prevention, efficiency improvement, and stable operations are fast becoming issues of primary concern.

Based on conscious awareness of the above situation, seminar participants fulfilled their responsibilities as executive employees of SINOPEC's head office and refinery departments. The fervor with which they pursued an accurate understanding of each case example based on Japanese experience during the Q&A sessions

left a strong impression on the JCCP lecturers.

JCCP feels that identifying future directions that would benefit both JCCP and SINOPEC through such forums as this seminar would come to have even greater meaning in the framework of cooperative development in the East Asian economic community, as the community is showing rapid growth in recent years. In this respect, we believe that the successful completion of this seminar as originally planned, with the cooperation of various departments, is a meaningful achievement in and of itself.

<by Shintaro Miyawaki, Training Dept.>



Seminar participants

