

# JCCP NEWS

No. 117 2014 January

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## Topics

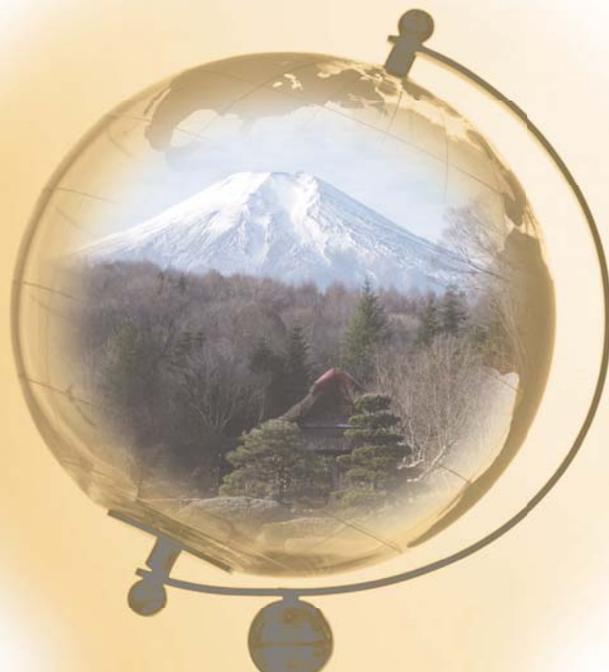
- **Introducing Training Facilities in the CAI Room**
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# JCCP NEWS No. 117 January 2014

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Cover photo  
Taken by: Minoru Horike  
Location: Mt. Fuji seen from  
Oshinohakkai  
Date: Jan. 1, 2012

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## Special Message



**Mr. Asaad Ahmad Al-Saad**

**Chief Executive Officer, Petrochemical Industries Company  
Chairman, Kuwait National Petroleum Company (KNPC)**

Participant of a regular course on Personnel Management offered in October 1989

It gives me great pleasure to write a message on the occasion of the 30th Anniversary of Japan Cooperation Center, Petroleum (JCCP).

In October 1989, I had the opportunity to attend my first JCCP seminar in Japan on “Personnel Management.” We explored Japanese-style management practices, and realized that they are firmly founded on Japanese culture and values. We also learned that ongoing pursuit of education and innovation is a salient characteristic of Japanese-style management and performance, and that the quality assurance system in Japan today is uniquely made up of a number of different components. The components, however, are all based on the “Total Quality Circle” concept. This experience has provided a foundation for my principles of management and leadership since 25 years ago.

I have high expectations that JCCP will continue to impart valuable knowledge through tailor-made programs that cover diverse aspects of the oil industry.

I wish JCCP management and staff all the best, and look forward to JCCP’s further contribution to the world’s oil industries. I also wish to encourage JCCP training program participants to make full use of the valuable learning opportunities offered by JCCP.

Thank you very much.



*Mr. Al-Saad giving a speech at the reception of the 28th JCCP International Symposium (January 2010)*



*Mr. Al-Saad’s participation in a JCCP regular course in October 1989  
(front row, third from right)*

# Introducing Training Facilities in the CAI (Computer Assisted Instruction) Room

The CAI room at JCCP Headquarters is outfitted with 15 computers for use by participants and seven for use by instructors. They can be used to run software applications that simulate refinery plant operations and provide training in operational methods, control methods, and economically optimal plant operations.

Training in the CAI room is highly popular among participants as a program that addresses practical issues. Training related to processes uses (1) a refinery production planning system (LP: linear programming); (2) the “JCCP Refinery” system for learning about the flow of oil refining; and (3) a refinery plant operation simulation program (dynamic simulator) for exercises in the startup (S/U) and shutdown (S/D) of the crude distillation unit (CDU), fluid catalytic cracker (FCC) and resid fluid catalytic cracker (RFCC). Training related to maintenance includes exercises in (4) the vibration diagnosis of rotary machinery, and training related to instrument control includes exercises in (5) controller tuning for refinery processes; (6) advanced process control (reactor temperature control, etc.); and (7) operational assistance systems based on automated control or navigation system.

Below, we introduce an overview of activities (1), (2) and (3) related to processes.

## 1. JCCP-LP

JCCP-LP is a refinery production planning system produced by JCCP in 2005. It is used to create optimal production plans in the refinery by adjusting product balance and calculating the throughput balance of refinery units to produce the greatest profit. It runs on Windows and provides an optimal solution using the linear programming (LP) method. Data can be entered by selecting a plant or blender in the refinery flow and displaying a data entry chart for each. A report-generating function can also be used to compare and display multiple analysis results.

Since 2006, the system has been used to analyze case studies of changes in demand for oil products, in an attempt to improve refinery models and enhance user interface. More specifically, it is used to analyze changes



*JCCP-LP training*

in profit that are brought about when changes in profit and plant operations occur due to a change from heavy oil to light oil, or a change in quality. Hands-on exercises have been previously offered under the titles, “Case study of increased production of premium gasoline,” “Case study of increased production of regular gasoline,” and “Case study of white oils.”

## 2. JCCP-Refinery (Virtual Refinery for Training Purposes)

JCCP-Refinery is a refinery flow learning system produced by JCCP in 2011, which provides a model for understanding the structure of refinery units that are used in the process of oil production, from crude oil to final product. Its operation is easy, as it is accessed using Excel



*JCCP-Refinery training*

running on Windows, and participants can calculate oil throughput to a device or blender by selecting a type of crude oil for processing in the topper, setting volume, and setting a volume or splitting ratio at the splitter along the refining flow.

Ultimately, production volume that would yield maximum profit is obtained based on the throughput to the blender and price of the product (gasoline, diesel fuel, heavy oil; optimization calculation is performed by LP for the blender only). The output result is analyzed against detailed solutions per case and a comparison chart of cases. Training using JCCP-Refinery focuses on analyzing changes in profit when refinery units are renewed in phases, and on seeking requirements for acquiring the greatest profit under a given set of conditions. This exercise is highly popular among all participants, from less-experienced employees to middle-level engineers, as being extremely easy to understand.

### 3. Operational Simulation Program (Dynamic Simulator)

JCCP has three programs for simulated operational training: (1) CDU, (2) FCC (introduced in 2008) and (3) RFCC (introduced in 2010). One parent unit for use by the instructor and two child units for use by participants comprise one training set. Such facilities are used in many refineries in Japan to provide employees

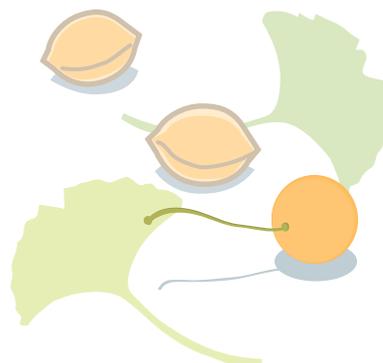


*FCC startup training*

simulated training in operations, control and particularly in emergency response, envisioning actual machines. As the operations and control of FCC and RFCC, in particular, are classified as advanced processes among actual refinery processes, the dynamic simulator is highly appreciated by many participants for facilitating understanding of refinery processes and providing effective training on startup operations in a short amount of time, even to participants with little experience in refinery operations (which comprises the majority of participants).

In the future, we hope to further develop the software program to reflect upgraded refinery plants and product configurations and offer courses that provide even greater knowledge to participants.

*<by Takaaki Yuasa, Training Dept.>*



# Implementation of a New Course on the Latest Technologies and Control Systems for Power Generation Facilities

## 1. Objective and Background

JCCP has heretofore offered training in areas related to instrumentation and control, but as there have been few training opportunities for electrical engineers, demand for courses relevant to electrical engineers has been increasing. At the same time, as a reflection of the electric power situation in each country, the development of power generation facilities has become an urgent issue, and there have been requests for training related to power generation technologies.

In response to this situation, we implemented a course on “Latest Technologies and Control Systems for Power Generation Facilities” that provides a wide range of technologies, ranging from the basics to the latest technologies and technologies in highly specialized areas.

The course not only aimed to provide relevant knowledge, but also to provide practical training through computer simulator training and hands-on training using actual machines at various oil-related facilities. It was held over a net period of 14 days, from August 27 to September 13, 2013.

## 2. Selection of Programs

As JCCP has never offered a course related to power generation facilities, we went through a continuing process of trial and error in selecting appropriate programs. Ultimately, we were able to select programs that aimed to provide a wide range of technologies, ranging from the basics to the latest technologies, as well as highly specialized technologies. Particularly for training in specialized fields and training using actual machines, we concentrated on providing fully practical training with the active cooperation of a number of relevant Japanese companies.

The programs included the following, according to content.

### (1) General description of power generation facilities, including control systems

- 1) General description of power generation facilities from the basic to latest systems (lecture at JCCP/Chiyoda Corporation)
- 2) Control systems for power generation facilities (offsite training/Yokogawa Electric Corporation)

### (2) Training in specialized areas related to power generation facilities

- 1) Overview and practical training in vibration sensors (offsite training/Shinkawa Sensor Technology, Inc.)
- 2) Governor functions and reliability improvement technologies (offsite training/Woods Corporation)
- 3) Water quality management of steam turbine boilers (lecture at JCCP/Suzuki Technical Consulting Ltd.)
- 4) Application of an optimization system for utility units (offsite training/Invensys Process Systems)

### (3) Basics of control systems and applied technologies such as safety instrumented systems, etc.

- 1) Latest DCS systems and advanced control systems (offsite training/Yokogawa Electric Corporation)
- 2) Process control theory and practice—PID tuning (lecture and practical training at JCCP)
- 3) Overview of safety instrumented systems and engineering training (lecture and practical training at JCCP/Invensys Process Systems)

### (4) Training using actual power generation facilities

- 1) Control systems of actual power generation facilities (offsite training/Tobata Co-operative Thermal Power Company, Inc.)
- 2) Overview and operational status of IPP (offsite training/Marifu Refinery, JX Nippon Oil & Energy Corporation)

### (5) Other

- 1) Japanese language, Japan’s economy (lecture at JCCP)
- 2) Japan’s oil industry (lecture at JCCP)

### 3. Summary of the Course

#### 3.1 Participants

A total of 16 engineers, including one woman, from 12 countries participated in the course. Composed of three members in their 20s, nine in their 30s, and four in their 40s, the average age of the group was 35.

In terms of business field, the majority were electrical engineers and engineers who work in fields related to power generation facilities, befitting the theme of the course. In a nutshell, the participants were sincere, earnest and considerate. They were impressively punctual, and actively interacted with the lecturers in a sincere and pertinent manner. Furthermore, they had a cooperative spirit of supporting and mutually helping each other.

For most participants, this was their first time to Japan and the first to participate in a JCCP course, except one member from Sudan, who had visited Japan once before in 2011, a year of seismic events in the world. At that time, the Arab Spring spilled over to Libya in February while the member was attending a course in Japan, and he had difficulty returning to his country. Furthermore, he vividly remembers that the Great East Japan Earthquake occurred no more than a month after completion of his course.

#### 3.2 Training Content

For a new course, the course as a whole received high marks from the participants. Among the evaluation items, it received particularly high marks for being “beneficial,” which we interpreted as indicating that the programs selected for the course were of satisfactory level to the participants and that they provided knowledge useful to each of their duties. The participants also established particularly good communication among themselves and with the lecturers during the course, largely owing to their closeness as a group and their spirit of mutual support, in addition to their sense of respect for the lecturers.

Being such a group of participants composed mostly of electrical engineers and engineers who work in fields related to power generation facilities, they mostly expressed strong interest and satisfaction in highly specialized training and training in wide-ranging technologies related to process control and safety instrumentation on one hand, and also showed keen interest in Japan and in learning the Japanese language, on the other.

The following are some of the principal programs of the course.

#### (1) *Highly specialized training*

Training at the following offsite destinations proved highly specialized, and allowed participants to acquire specialized technologies through practical training that included hands-on operations of actual machines.

- 1) Governor functions and reliability improvement technology: Woods Corporation provided training in a wide range of specialized fields as a major maintenance company for governor products produced by Woodward Inc., a global manufacturer of governors, which are an essential component in turbines and steam engines.
- 2) Overview and practical training in vibration sensors: Shinkawa Sensor Technology, Inc., a representative manufacturer of vibration meters, provided training in the principles of measurement using vibration meters, methods for inspection of sensors, and diagnosis and judgment methods.
- 3) Application of an optimization system to utility units: Invensys Process Systems provided a lecture on the principles and performance of the optimization and control of utility balance in the refinery, as well as hands-on training in control using a dynamic simulator of a power generating facility.

#### (2) *Wide-ranging technologies related to process control and safety instrumentation*

The lecture and practical training on “process control theory and practice—PID tuning” is a requisite item in regular courses on instrumentation and control, and consistently receives high ratings. Moreover, the series of practical training offered at Yokogawa Electric Corporation, as shown below, is regarded as a program



At Woods Corporation



At Shinkawa Sensor Technology, Inc.

that clearly covers the theme of the course.

- 1) Process control theory and practice—PID tuning: It is important for experts who participate in the course to review the basic knowledge they already possess through hands-on training.
- 2) Series of offsite training by Yokogawa Electric Corporation: Yokogawa Electric provided, in order: (1) training in the latest DCS systems and advanced control software; (2) a detailed explanation specifically of control systems for power generation facilities in preparation of the next day's training on the actual control status of a power generating facility at Tobata Co-operative Thermal Power Company, Inc.; and (3) observation of the actual state of control at Tobata Co-operative Thermal Power Company.



At Yokogawa Electric Corporation

- 3) Engineering training of a safety instrumented system: A clear and concise explanation was given of the concept of safety that underlies safety instrumented systems (SIS) and their safety evaluation methods, and a simulator at JCCP was operated to provide first-hand experience in an SIS in operation.

(3) Acquisition of wide-ranging knowledge

- 1) General description of power generating facilities (Chiyoda Corporation): In view of the entire course, this program provided a lecture divided into the following three sections, to provide an important foundation for the rest of the course.
  - i) Explanation of power generation, from its principles to efficiency improvement, with reference to various power generating systems ranging from thermal power generation to the latest combined cycle generation, facilities involved in power generation and their thermal balance
  - ii) Introduction of the mechanism of generated electricity and the latest systems for efficient operation
  - iii) Lecture centered on the principles of power generation
- 2) Water quality management of steam turbine boilers (Suzuki Technical Consulting Ltd.): A lecture was provided on the boiler system, the most important of all power generating facilities, including its principle and structure, the causes and countermeasures for problems specific to boilers (scaling, corrosion, carryover), treatment of cooling water, and pure water production.
- 3) Overview and operational status of IPP (Marifu Refinery, JX Nippon Oil & Energy Corporation): Marifu Refinery is a unique refinery in Japan, in that



At Tobata Co-Operative Thermal Power Company, Inc.

it produces high-purity needle coxes for electrodes and also possesses power generating facilities that use petroleum coke as feedstock.

#### 4. Observation

As mentioned at the beginning, this course was developed in response to requests from oil-producing countries for a new course that provides training in fields related to power generation facilities. A certain level

of evaluation was attained from the participants of the course, but we do not intend to take this result for granted. As in our courses in the advanced process control field, we intend to make active improvements to implement an even more practical program by incorporating the use of JCCP's latest training simulator in this field, and particularly the use of the No. 6 simulator, which was renewed in 2011 and the No. 5 simulator, which has just finished being retrofitted this October.

*<by Teruhiko Sasaki, Training Dept.>*

Personnel  
Exchange

## FY2013 JCCP Program Seminar

The fiscal 2013 Program Seminar was held over an eight-day period, from July 3 to 10, 2013. The objective of the seminar is to invite managers of JCCP counterpart departments to Japan so they may personally deepen their understanding of JCCP activities, as well as exchange views and hold specific discussions about future training programs with JCCP staff.

To provide a full picture of JCCP activities, JCCP members gave an overall description of JCCP's operations, introduced the training facilities installed in JCCP Headquarters, and explained the annual schedule of regular courses. The participants, for their part, were each asked to give a presentation on their company, their human resource development policy, and evaluation and requests of JCCP. Additionally, in regard to CPO (Customized Programs-Overseas) and CPJ (Customized

Programs-Japan), the participants and JCCP members exchanged views on specific contents suited to each country, and not only deepened mutual understanding, but also established stronger relationships of trust.

During the course of the seminar, the participants visited JX Nippon Oil & Energy Corporation's Marifu Refinery, to acquire first-hand experience in the type of lecture regular course participants receive when they visit offsite facilities as part of their regular course program.

The seminar ran for only a short eight days, but most of the participants said it gave them a good idea of the activities JCCP engages in. As the seminar is instrumental in deepening understanding of JCCP, we intend to continue making improvements to offer an even more enlightening seminar in the future.

*<by Takashi Hori, Operations Dept.>*



*Seminar participants*



*At JX Nippon Oil & Energy Corporation's Marifu Refinery*

# CPO Seminar on Water Management for ADNOC (UAE)

## 1. Overview

JCCP and the ADNOC Group Environment Committee held a joint-seminar (Customized Program-Overseas (CPO)) on Water Management from June 10 to 12, 2013 at the Sofitel Abu Dhabi Corniche. The effective utilization of water resources has been an important ongoing concern at ADNOC. Thus, after implementation of the Seminar on Energy Efficiency last year, ADNOC and JCCP continued dialogues and reached an agreement to hold the Seminar on Water Management.

Water management is an integral part of a wide range of operations in the oil business in the form of oilfield-produced water and refinery wastewater. As the water quality, treatment technologies and its reuse and recycle applications widely vary according to the type of water resource, lecturers from various industrial fields took part in the seminar, as shown below.

- (1) Mr. Takashi Matsumura, Swing Corporation
- (2) Mr. Daiki Toyohara, Toray Industries, Inc.
- (3) Mr. Shigeya Furuya, JFE Engineering Corporation
- (4) Mr. Bassem Osman, Hitachi, Ltd. (residing in UAE)
- (5) Mr. Mark Sueyoshi, Shimizu Corporation (residing in Oman)
- (6) Tetsuo Aarii, Japan Cooperation Center, Petroleum

In addition to the above lecturers, the participation of lecturers from UAE University and Abu Dhabi University, both with which JCCP has established cooperative relationships through technical cooperation projects, enriched and deepened the content of the seminar.

The ADNOC Group Environment Committee, which acted as a co-organizer of the seminar, is an organization that reports to ADNOC's top management and manages the progress of all environment-related matters of the entire ADNOC Group. As the seminar was held jointly with the Committee, water resource and management experts from various affiliate companies of the ADNOC Group also attended the seminar and contributed to making it an active and productive seminar.

## 2. Background

Last year, JCCP co-hosted a CPO Seminar on Energy Efficiency in the Oil Industry in Abu Dhabi with the aforementioned ADNOC Group Environment Committee for the first time. The seminar was reported to ADNOC's HSE Steering Committee and was so well received that ADNOC and JCCP continued discussions and decided on "water management" as a main theme of the seminar.



*Seminar lecturers and participants*

### 3. Seminar Content

#### (1) Session 1: Overview of Water Utilization

##### Technologies

##### <Day 1 morning session>

The seminar opened with a speech by Mr. Abdulqader Al Kamali, Chairman, ADNOC Group Environment Committee, who gave a general introduction of ADNOC's environmental policy of promoting effective utilization of water resources, and also thanked JCCP for its cooperation in realizing the opportunity of the seminar.

In Session 1, Arii from JCCP first gave a general explanation of the increasing volume of wastewater that is discharged from the oil industry and its treatment technologies, and presented a brief discussion on the possibilities for effective utilization of water resources from a macro perspective. As the background to why the effective utilization of water resources is particularly important to the oil industry, he discussed the reciprocal relationship between the increasing need for water to respond to the growing demand for oil energy, and the increasing need for oil to produce and recycle water. In addition, he clarified the importance of taking a micro approach to recycling water resources, by dividing water that is used as heating media and water that is used as a solvent media and by closely investigating the properties and physical conditions of intermediate water in each process.

Mr. Matsumura from Swing Corporation introduced initiatives his company is making in two water resource projects that are currently being implemented as JCCP technical cooperation projects. One project is a study on the effective utilization of associated water in Iraq, and the other is on the recycling of wastewater in Qatar.

Mr. Bassem from Hitachi, Ltd. lectured on the latest technologies of membrane bioreactor, Mr. Sueyoshi from Shimizu Corporation reported on his company's efforts to develop remediation technologies for oil-contaminated soil and groundwater pollution, and Mr. Toyohara from Toray Industries, Inc. gave an exhaustive explanation of membrane treatment technologies used for water treatment and their performance.

These lectures aimed to provide the participants from the ADNOC Group new technologies and a new perspective on addressing the issue of water management and utilization in the oil industry. By introducing efforts that are being made by Japanese companies to develop new water treatment technologies and apply them to the oil industry, the lectures inspired the participants to



Opening speech by Mr. Abdulqader Al Kamali, Chairman, ADNOC Group Environment Committee

see possibilities for application of the technologies to environmental operations in their respective workplaces.

#### (2) Session 2: Advanced Technologies and Their Application

##### <Day 1 afternoon session>

Mr. Furuya from JFE Engineering Corporation lectured on an energy-saving approach to water recycling in the production of shale gas in the United States, which uses reverse osmosis (RO) technology in place of the conventional method of evaporation by heating. Dr. Walid Elshorbagy, Associate Professor at UAE University, lectured on a technique for analyzing the impacts of refinery wastewater on the marine environment and desalination using a simulation model.

These lectures provided the participants a good opportunity to broaden their technical perspective and acquire knowledge about the possibilities of applying the RO technology to achieve effective water utilization and methodologies for assessing impacts on the marine environment.



Lecture scene

### (3) Session 3: Advanced Technology Projects

#### <Day 2 morning session>

Mr. Sueyoshi gave a report on the results of a pilot test conducted on the treatment of oilfield-produced water in Oman, as part of a JCCP technical cooperation project. Mr. Toyohara introduced examples of industrial applications of the membrane bioreactor (MBR) and RO technologies to wastewater treatment, and elicited the participants' strong interest particularly in examples implemented in the Middle East. Mr. Bassem introduced a number of projects that have been implemented in UAE, including a small-scale project on desalination using sunlight in the desert, a project on red tide treatment and water recycling. Learning that these projects have actually achieved commercial success in the UAE, the participants asked many questions about the possibilities of applying them to water treatment issues of the ADNOC Group. Mr. Matsumura lectured on individual water treatment technologies in reference to the treatment process of gas-associated water, and received good evaluation for his lucid discussion about the specific characteristics of a water treatment process. Mr. Furuya introduced a JCCP technical cooperation project on VOC (volatile organic compound) recovery technology from a crude oil tank, and garnered the participants' attention particularly with his proposals for its application to offshore facilities.

Following the above lectures, Dr. Muftah H. El-Naas, Associate Professor, UAE University, who is in charge of a JCCP technical cooperation project on wastewater treatment at the university, introduced the project and lectured on the electric coagulation technology. Two lecturers from Abu Dhabi University also offered to lecture at the seminar. Prof. Fares Howari, Chair of Applied Sciences & Mathematics

Professor of Environmental Sciences, lectured on bioremediation technology for oil-contaminated soil and monitoring technologies using remote sensing. Prof. Abdel Mohsen Onsy Mohamed, Dean, lectured on the possibility of utilizing sulfur concrete for wastewater treatment, which is being addressed in a JCCP technical cooperation project, and took the occasion to also introduce the project. These lectures by UAE University and Abu Dhabi University complemented the Japanese lecturers' presentations and effectively communicated JCCP's contribution to the universities and technical development in oil-producing countries. Furthermore, Abu Dhabi University even expressed its wish to continue holding information exchanges with JCCP toward further cooperation in developing a joint program for seminar and training.

### (4) Session 4: Project Development Workshop

#### <Day 2 afternoon session>

In this session, the participants divided into groups according to their companies and engaged in a workshop on developing a new project on recycling and utilizing water resources by applying new technologies to treat wastewater and other water resources discharged by each company. As the participants possessed thorough knowledge of how water is treated at their companies, they were able to create a highly novel project through discussion with the lecturer (Arii). The other lecturers also participated in each group's discussion theme as facilitators and provided guidance on the project development exercise. The workshop was well received as providing a good opportunity to examine and prepare potential projects required by ADNOC in the future from a broad perspective.



*Participants listening to a lecture*



*Active discussion in the Project Development Workshop*

## **(5) Session 5: Project Development Workshop**

### **<Day 3 morning session>**

In this session, the participants divided into four groups to discuss the development of new projects on the following themes, as requested by the ADNOC Group Environment Committee.

- (1) Wastewater treatment and recycling in refineries and chemical plants
- (2) Management of oilfield-produced water and injection water
- (3) Offshore desalination and wastewater treatment
- (4) Waste heat recovery

In addition to discussing the development of a project plan, the groups also discussed an action plan and gave a presentation as a group or company. Through the workshop, the participants discussed a common issue with members from other ADNOC Group companies and reached a shared understanding of new projects. To the Environment Committee, eliminating boundaries between affiliated companies of the ADNOC Group and enhancing the environmental capacity of the Group as a whole also comprised two important objectives of the seminar, so in this respect, the seminar effectively achieved its goal.

## **4. Summary**

### **(1) Establishment of a strong cooperative relationship with the ADNOC Group Environment Committee**

The ADNOC Group Environment Committee, the co-organizer of the seminar, operationally promotes and manages the progress of environmental matters of the entire ADNOC Group under the top management of ADNOC. JCCP is thankful for the opportunity to implement a customized program with the Committee for the second time on a new theme following the seminar held last year, and hopes to further deepen relationships with such environmental organizations in oil-producing countries to respond to their strong needs for environmental technologies and practices.

### **(2) Continued participation of members from the ADNOC Group Environment Committee to JCCP training courses**

JCCP is also establishing ties with the ADNOC Group Environment Committee as a counterpart organization to JCCP regular courses on environmental themes. At the recommendation of the Committee, two members

participated in a regular course on development of new energy efficiency projects in January 2013 for the first time and were satisfied with the results, such that the Committee expressed its wish to continue sending participants to JCCP regular courses in the future. Also at the recommendation of the Committee, many members from ADNOC have already participated in this year's JCCP courses. As various departments of oil companies in oil-producing countries have strong needs for JCCP training on specific themes, deepening cooperative ties with various departments should prove to be most beneficial to enhancing JCCP's training program.

### **(3) Participation of carefully selected participants and enhancement of training content**

For this seminar, the ADNOC Group Environment Committee took the initiative in selecting approximately 30 experts and officers in charge of water management from its Group companies. For this reason, the participants were thoroughly knowledgeable about current issues and new plans in their companies, and contributed practical and productive views to discussions. Additionally, in the project development workshop, they staged an active discussion of new project plans based on specific issues in their companies, and made for a highly practical seminar. Furthermore, as the lectures were selected to include an introduction of JCCP technical cooperation projects implemented in UAE and other GCC countries and actually provided reports of seven such projects, it can be said that the seminar efficiently communicated the advantages of JCCP technical cooperation projects to affiliated companies of the ADNOC Group.

### **(4) Active cooperation by Japanese companies and business matching opportunities**

Owing to an expanding water business market in UAE, the seminar was able to receive active cooperation from many Japanese companies operating in the country. Water resource issues are an area where ADNOC's technical needs and Japanese companies' business development needs match well. The seminar was thus highly meaningful in that it provided a good opportunity to explore new developments for future JCCP training programs. That is, in addition to its educational effects, the seminar shed light on the role of JCCP training in responding to the technical needs of oil companies in oil-producing countries and in laterally supporting the businesses of local Japanese companies.

### (5) Cooperation with universities and possibilities for new cooperation

Of the four lecturers from UAE University and Abu Dhabi University who participated in the seminar, three previously took part in a JCCP technical cooperation project, and played an active role in introducing the technical cooperation scheme to ADNOC. Thanks to their cooperation, the seminar appealed to the ADNOC members in terms of the comprehensive engagement of JCCP activities in UAE, including their contribution to university initiatives.

After completion of the seminar, a meeting was held with Prof. Mohsen and Prof. Nazmy, Dean, Graduate Study, Engineering Study, Abu Dhabi University, to thank them for their participation as lecturers and to exchange views. It was agreed that sending ADNOC personnel and government personnel to Japan to participate in a JCCP training program as part of a university program would be beneficial to all three



Meeting on future cooperation with Abu Dhabi University

parties—ADNOC, the university and JCCP—, and could be a possible new framework for future cooperation.

We hope to continue to enhance the framework and content of JCCP training programs and seminars in response to changing needs in oil-producing countries.

<by Tetsuo Arie, Training Dept.>

Personnel Exchange

## CPJ Seminar on the Latest Power Turbine and Boiler Technologies for Vietnam

### 1. Background

The seminar was recently held in Ho Chi Minh City, a central city in southern Vietnam well known for its role in leading the market economy in the country. In recent years, it has become home to rapidly increasing numbers of regional and branch offices of Japanese companies.

With this year dubbed the Vietnam-Japan Friendship Year in commemoration of the 40th anniversary of the establishment of diplomatic ties between Vietnam and Japan (1973), Prime Minister Shinzo Abe and top members from government, bureaucracy and the business community have been interacting proactively with their counterparts in Vietnam, as widely reported



Group photo taken after the opening ceremony

in the media. It is also a fresh memory that JCCP exchanged a Memorandum of Understanding (MOU) with Petrovietnam in 2011 in regard to training activities and formally commenced a Special Cooperation Program for Vietnam.

The background to implementing customized programs in Vietnam has been explained in a previous newsletter (JCCP NEWS No. 115 May 2013), but a priority issue among Petrovietnam's various operations that has become an issue of particular urgency is the efficiency improvement of Petrovietnam's power plant facilities and countermeasures for enhancing power supply.

In response to a request from Petrovietnam following last year's customized programs, JCCP planned and organized a new program for transferring to Petrovietnam the latest technologies related to power plant facilities, including technologies for enhancing the reliability of power turbines and boilers, which are the heart of power plants. The program was designed in two parts, with Part 1 consisting of a Customized Program-Overseas (CPO) in Vietnam and Part 2 consisting of a Customized Program-Japan (CPJ) as a complement to Part 1, to provide training that aims to deepen and increase participants' overall level of understanding, in line with the primary purpose of customization. Part 2 of the program is scheduled to be implemented in Japan in October 2013 (seminar featuring workshop training, including hands-on training at a power plant).

## 2. Content

The seminar was designed as a five-day program (July 29 – August 2). In addition to a lecturer from the JCCP Training Department (Miyawaki), members from Japan were selected with the cooperation of a facility and equipment manufacturer that boasts vast experience in the relevant field, and included Mr. Takashi Suzuki (Suzuki Technical Consulting Ltd.), Mr. Kozo Okuyama (Torishima Pump Mfg. Co., Ltd.), and Mr. Taro Ichihara (Mitsubishi Heavy Industries, Ltd.). Thanks to the participation of these specialized experts, all sessions of the seminar were able to be offered as initially planned.

As the seminar focused on efficiency improvement, loss prevention and reliability enhancement in Petrovietnam's power plant facilities, the participants were composed mainly of mechanical engineers from across Petrovietnam's offices and refineries, with engineers from five power plants accounting for the



*Lecture session*

majority of the group (comprising a total of 32 members).

In the opening ceremony, a general introduction was given of JCCP's activities, with a focus on initiatives taken within the framework of the Special Cooperation Program for Petrovietnam that has proceeded stably between JCCP and Petrovietnam, and on the development and implementation status of customized programs based on concrete examples.

### **(1) Reliability enhancement of power turbo-machinery (JCCP)**

This lecture explained the various principal equipment that compose the heart of a power plant in reference to an example of Kaizen activities implemented in Japanese refineries for improvement of machinery reliability. An actual case example was introduced to show how reliability enhancement of gas turbines and other principal power machinery contributes to preventing energy loss in plants. Additionally, from the perspective of loss prevention and energy conservation as essential measures for achieving sustainable utilization of energy resources, a detailed explanation was given of the effects of safe and stable facility operations on reducing operation costs.

### **(2) Latest pump technologies for power plants (Torishima Pump Mfg. Co., Ltd.)**

As a company that boasts a leading record in the manufacture of pumps, a specialist from Torishima Pump provided a simple rundown on the company's development history of production technologies, from its founding to the present, with reference to water supply and cooling water systems for power plants. Furthermore, an introduction was given of the practical performances of the latest boiler feed pump and turbine circulating water pump, which are the company's two key products, as well as examples of their usage in

various plants and their characteristics, and key points for selecting models, with reference to specific examples. In the latter half of the presentation, the lecturer discussed actual examples of damage experienced during pump operations in power plants. In regard to troubleshooting, a local technical service staff described the activity status of repairs by giving actual examples.

### **(3) Water quality management in power plants (Suzuki Technical Consulting Ltd.)**

Technologies for controlling the water quality of boiler feed water and turbine cooling water are extremely important elemental technologies for improving the reliability of facilities that compose turbine and boiler systems. Particularly in recent years, they are increasingly important as indispensable technologies for achieving high-efficiency performance of power plant facilities. Thus, this lecture discussed the impacts of water quality on the stability and equipment performance of power plant operations.

A detailed explanation was given on the basis of the theory that increasing the efficiency of thermal power plants requires even more advanced water quality management compared to the conventional management of boiler feed water, because a high-efficiency plant (including supercritical steam) demands far higher temperatures and pressures than normal steam turbines. A summary explanation was also given of methods of water quality management using actual applied examples.

### **(4) Latest technologies for high-efficiency boilers and combined cycle generation (Mitsubishi Heavy Industries, Ltd.)**

In this lecture, a detailed description was given of the

latest technologies in thermal power plants, which support the foundation of economic growth, while presenting a general overview of the technical development status of high-efficiency thermal power plant facilities that are becoming a keyword in power plants in recent years. The lecture also discussed the overall trend of power plants and how the latest technologies contribute to advancements in the environment and energy fields, with a particular focus on the latest technologies in fields in which Japan is widely expanding overseas, such as gas steam turbines and combined cycle generation facilities.

Furthermore, with respect to the technical development of turbines and boilers, which compose the heart of a power plant, various case examples were given to explain the reasons why various new issues must urgently be addressed from the perspectives of environment protection and energy conservation.

The lecture thus presented the future direction of sustainable energy supply that is hereafter expected to be in greater demand than ever before, and introduced the concepts and characteristics of future technologies for achieving that direction, initiatives being made in relevant development fields, and the status of efforts toward practical application of various new technologies.

### **(5) Case studies in a power plant**

Water quality management of boiler feed water and turbine cooling water systems was one of the central issues examined in an onsite study of case examples. An observation tour of a plant site was made to gain a general understanding of concrete examples and implementation status of relevant measures in actual operations, including a monitoring system that uses observation cameras to check river water intake. Through such onsite observations, the participants gained hands-



*Lecture session*



*Onsite case study at Nhon Trach Power Plant*

on knowledge of various issues during actual operations of a power plant and received additional comments and explanations from the lecturer. In this sense, this onsite study achieved its intended goal.

At the same time, the onsite study also served to reaffirm the sense that providing such opportunities for onsite assessment of plant operations and supplementary explanations by lecturers in future seminars could prove to be an extremely effective means for further enhancing the practical nature of customized programs.

### 3. Summary

The seminar was themed on the latest technologies for processes related to power plant steam turbines and boilers as an issue of particularly high concern to Petrovietnam among other needs, and consisted of lectures on various topics related to that theme. Part 1 was planned and organized as part of the Special Cooperation Program for Vietnam in response to a request from Petrovietnam, and a questionnaire conducted after completion of the seminar revealed that all of the participants wish to also attend onsite

training in Japan on the same theme. By clarifying that thorough understanding and acquisition of the content of the seminar could be achieved through the combination and mutual complementation of Part 1 (CPO) and Part 2 (CPJ) of the program, and by fostering participants' expectations of Part 2, which is subsequently scheduled to be held in Japan in October, Part 1 effectively set the groundwork for the successful implementation of the seminar as a whole.

Vietnam is not only known as a long friend and partner to Japan, but the two countries are said to share similarities in national character and many other aspects. With Vietnam and Japan celebrating a friendship year this year, as mentioned earlier, the relationship of trust that ties the two countries together has grown even stronger, owing in part to frequent visits and approaches made between leading figures in both countries, including JCCP. As members of the recent seminar were mostly promising young engineers in their 30s who will lead their country's future, we hope the results of the seminar will contribute to forming the foundation of national growth and further strengthen the cooperative relationship between the two countries in the future.

*<by Shintaro Miyawaki, Training Dept.>*



*Group photo taken after the completion ceremony*

# Report on the Training Cooperation Program

## —Kazakhstan—

Kazakhstan has a population of approximately 16 million living in a land area that is seven times larger than Japan. It is a resource-rich country, with some of the world's largest reserves of oil and natural gas and vast deposits of rare metals and other minerals. As the country is expected to become a major supplier of resources in the future, Japan is one of many countries taking part in various resource development projects in Kazakhstan.

Of particular note among recent interactions between Kazakhstan and JCCP was the policy dialogue held between Mr. Masataka Sase, Executive Director of JCCP, and top leaders in Kazakhstan on the occasion of Mr. Sase's participation in the First Joint Commission of the Japan-Kazakhstan Government and Private Sector on Economic Cooperation held in Astana, the capital of Kazakhstan, in October 2009. Thereafter, JCCP members visited Kazakhstan again in July 2011 to obtain requests and proposals toward the renewal of JCCP training programs.

JCCP has received almost 200 Kazakh participants to regular courses since 1997, so it can be said that Kazakhstan's participation in JCCP regular courses has practically taken root. However, JCCP members recently visited Kazakhstan once again to provide greater understanding of customized programs, which allow for even more efficient training.

### 1. KazMunayGas

KazMunayGas is a 100% state-owned oil and gas company in Kazakhstan, which controls all oil and gas operations in the country, from the upstream to



Head office of KazMunayGas



At KazMunayGas:  
Mr. Andar M. Shukputov, Chief of Staff (second from left) and  
Ms. Alma Tulebayeva, Director HRD (far right)

downstream operations, based on national energy policy. In recent years, it has achieved remarkable economic growth driven by the development of the oil and gas industries, and as a company that occupies the central stage of oil and gas development, it is poised to further expand its businesses, and is garnering the strong interest of Japanese companies.

On August 19, JCCP members visited the head office of KazMunayGas to hold a meeting with Mr. Andar M. Shukputov, Chief of Staff; Ms. Alma Tulebayeva, Director HRD, who attended a JCCP regular course on HRM in 2005; and Ms. Dana Albekova, who also participated in a regular course on HRM in 2009 and has been acting as a counterpart to JCCP since April.

Kazakhstan has been directing its efforts to human resource development since gaining independence. The Kazakh members thus hold high expectations of JCCP training, and said they wish to continue sending participants to regular courses. They also indicated interest in customized programs, and expressed a positive preference for the implementation of such programs, not in a single location but multiple locations throughout the country.

Ms. Tulebayeva asked about the length of time a customized program requires for preparation, and JCCP members explained that it usually takes around six months, from the host organization's indication of intent to implement a program to its actual implementation.

## 2. KAZENERGY

KAZENERGY is an association of major players in the energy sector and the oil and gas business in Kazakhstan, and enjoys a strong relationship with the Kazakh Ministry of Oil and Gas. JCCP members visited the association for the first time, mainly for the purpose of introducing JCCP.

On August 20, a meeting was held with Mr. Asset Maganov, General Director; Ms. Togzhan Kozhaliyeva, Executive Director; and Ms. Assel Bekimova, Manager HRD, who attended a JCCP Program Seminar (TCJ) last year when she formerly worked for KazMunayGas.

The members of KAZENERGY explained that the company operates with the aim of establishing standards for knowledge and technologies that professionals should possess, and expressed their interest in JCCP from the perspective of knowledge and technology standardization. Also from this perspective, a question was raised about the JCCP certificate, and JCCP members responded that it is an independently established certificate. JCCP members also noted that participation in JCCP programs would be restricted to KAZENERGY's Kazakh employees, although the association comprises members from transnational oil and gas companies.



At KAZENERGY:  
Mr. Asset Maganov, General Director (center), Ms. Togzhan Kozhaliyeva, Executive Director (second from right), and Ms. Assel Bekimova, Manager HRD (second from left)

The recent visit to Kazakhstan by JCCP members was made with the purpose of deepening understanding of customized programs, and successfully elicited a positive response from KazMunayGas. The company's wishes will hereafter be discussed toward prompt implementation of a program.

On a personal note, it was also a delight to be able to once again see Mr. Rustam Karabalayev and Mr. Konuspayev Baurzhan, who previously participated in a regular course implemented in the past as coordinator.

<by Kazuhiro Suzuki, Training Dept.>

Personnel  
Exchange

# Report on the Training Cooperation Program —Saudi Arabia—

A JCCP delegation visited Saudi Arabia from August 27 to September 7, 2013, under the Training Cooperation Program, which aims to strengthen relations with major oil-producing countries and provide cooperation in human resource development. More specifically, Eiji Okuyama from the Operations Department and Fumihito Tone from the Training Department visited Saudi Aramco and its subsidiaries and met with key persons in relevant departments to present the FY2014 schedule of regular courses, discuss JCCP's assistance in Saudi Aramco's educational programs, and explain about the alumni meeting JCCP is planning to hold in Saudi Arabia next year.

## 1. Jeddah Refinery

The JCCP delegation held a meeting regarding training issues with Mr. Khalid Al Sanie, Supervisor (A), Training Unit, and Mr. Rayyan S. Taybe, Training Coordinator, Training Unit. They first introduced new JCCP regular courses that will be offered in fiscal 2014, and gave a description of each course and improvements that have been made. They also noted that course names have been reviewed and the content of some of the courses has been significantly upgraded during the past two years, to respond to needs in each country and present-day situations. The members of Jeddah



*At Jeddah Refinery:  
Mr. Yahya A. Abu Shal, Jeddah Refinery Manager (second  
from right) and Mr. Khalid Al Sanie, Supervisor (A),  
Training Unit*

Refinery showed strong interest in the new course on strategic management for managers, and advised the JCCP members that courses for managers should be strengthened, as managers have the power to make business decisions. In regard to customized programs (CPO), the JCCP delegation proposed a seminar that combines visualization activities in the refinery, safety training, and an onsite HAZOP study, based on the previous refinery manager's request for a CPO on improvement of behavior patterns for enhancement of safety, made on the occasion of a previous visit to the Jeddah Refinery by Mr. Masataka Sase, Executive Director of JCCP. After receiving a tour of the refinery, the JCCP delegation met with Mr. Yahya A. Abu Shal, Jeddah Refinery Manager, to give an overview of the foregoing meeting.

## 2. Petro Rabigh

At Petro Rabigh, the JCCP delegation met with Mr. Hisam H. Azzouz, Manager, Employee Relations & Training Department, and Mr. Mohammed O. Mehani,



*At Petro Rabigh: Mr. Hisam H. Azzouz, Manager, Employee  
Relations & Training Dept. (left), and Mr. Mohammed O.  
Mehani, Section Head ER&T/T&CD (right)*

Section Head ER&T/T&CD. Showing primary interest in JCCP customized programs, the Petro Rabigh members strongly requested the implementation of a CPO seminar by JCCP experts. In regard to content, the JCCP delegation explained that JCCP could accommodate seminars on themes that are covered in regular courses, and recommended Petro Rabigh to come up with an appropriate theme at a later date. The Petro Rabigh members also expressed positive response to implementing a seminar on visualization activities, so the two sides agreed to hold continued talks in that regard. Furthermore, they favorably accepted the improvements made to FY2014 regular courses, and said they wish to continue sending their employees to participate in the courses next year. They also expressed interest in participants' feedback of the results of their training, with Mr. Azzouz pointing out that a feedback mechanism should be established. The JCCP delegation explained that after each course, all participants are required to write a brief report on their initial expectations of JCCP training, impressions after attending the course, and a future plan of action, to clarify what they have learned and be consciously aware of how it may contribute to their present jobs. The Petro Rabigh members agreed to the delegation's proposal to send these reports along with the evaluation of participants that is sent out after each course, so that Petro Rabigh could provide its feedback to JCCP about the results of training.

## 3. Yanbu Refinery

At Yanbu Refinery, the JCCP delegation met with the following members: Mr. Adel Misfer Al-Ghamdi, Yanbu Refinery Head; Mr. Basim A. Zarie Superintendent, Planning & Training Division (participated in a regular course on maintenance management in 2008); Mr. Saleh S. Al-Nahdi, Superintendent Maintenance Division; Mr. Fahd E. Shetairi, Superintendent Operations Division; Mr. Hasan M. Asiri, Superintendent Engineering Division; and previous participants of a JCCP seminar.

Based on the understanding that the management of Yanbu Refinery has an interest in practical training, the JCCP delegation proposed Part 3 of a seminar on visualization activities, following two that have previously been implemented at Yanbu Refinery. As the Yanbu management is focused on improving employee mindset and behavior patterns, it requested the continued implementation of the seminar with the awareness that it is an important theme, particularly given the increasing



*At Yanbu Refinery:*

*Mr. Adel Misfer Al-Ghamdi, Yanbu Refinery Head (second from right), Mr. Mohammed S. Aidarous, YR Training Unit Supv P&T Div. (far right), and Mr. Mustafa M. Almahdi, Manager, Yanbu Refinery (center)*

number of young employees in the company.

Mr. Al-Ghamdi noted that the program includes a lecture on accident examples in Japan and said it would be highly beneficial, but also requested the inclusion of an explanation of problems experienced at Yanbu Refinery and discussions with the instructor. He said that since approximately half of the staff at the refinery are engineers with less than five years' experience, having them acquire practical skills on site is more important than providing book knowledge, and asked what is needed to change their mindset so they become capable of making independent, active efforts within the proposed five days of the seminar. The JCCP delegation responded that particularly necessary are the proper understanding and change in mindset of superintendents and supervisors, the adaptation and application of TPM to Saudi Arabian culture as a means for understanding Saudi Aramco's culture, and follow-up of activities through ongoing efforts and diverse other means including email. In these ways, the meeting provided a good opportunity to deepen mutual understanding between Yanbu Refinery and JCCP. On a final note, Mr. Al-Ghamdi expressed his opinion that the



*Participants of a previous JCCP seminar*

proposed seminar would be highly meaningful, and would like JCCP to continue its implementation.

After the management made their exit, the JCCP members held a feedback meeting with the participants of a previous JCCP seminar. They said training is meaningless unless it is implemented in a manner that is easily understood by all participants, and in this respect, they rated the JCCP seminar on visualization as having been extremely easy to understand. They also explained that previous participants of the seminar are making ongoing efforts to implement visualization activities in their respective workplaces under the leadership of Mr. Mohammed S. Aidarous, YR Training Unit Supv P&T Division. Additionally, Mr. Yousef Saleh Al Ghamdi, Frmn Multicraft Maintenance, who attended a CPJ information exchange seminar for young engineers, talked about how his Japanese experience triggered a change in himself, and about how he was struck throughout the course of the seminar by the Japanese people's way of life that highly values use of time. He also mentioned that Japanese culture has become a topic of interest after being featured in a program broadcast in Saudi Arabia titled "Khawater" (literally meaning "thought" or "insight"). ("Khawater Japan" can be searched on YouTube.)

#### **4. Training & Development Administration Area**

At the Training & Development Administration Area, the JCCP delegation met with Mr. Nasser A. Al-Nafisee, General Manager Training & Development, and Mr. Dandany F. Jamil, Director, Educational Partnerships Department, to introduce the FY2014 schedule of JCCP regular courses and seek continued support of JCCP activities. Mr. Al-Nafisee thanked JCCP for its cooperation and expressed his wish to continue receiving and drawing on JCCP's far-sighted support to benefit employee training at Saudi Aramco. Junichi Kasuya, General Manager of the JCCP Riyadh Office, then joined the meeting to discuss the planning and implementation details of the JCCP alumni meeting scheduled to be held in Saudi Arabia next year.

#### **5. Professional Engineering Development Division (PEDD)**

PEDD is responsible for developing and implementing in-house training programs on carefully selected technologies to enhance the expertise of professional



At PEDD:  
*Dr. Thurston M. Williams, Supervisor (right), and  
 Mr. Rasid K. Rahman, Engineer III (left)*

engineers in all sectors at Saudi Aramco. In a meeting held last year, PEDD showed interest in the educational materials on refinery maintenance management that were compiled by the Japan Petroleum Institute and translated by JCCP, and requested a customized seminar on inspection based on the materials. PEDD and JCCP thus mutually examined the possibility of its implementation.

In this year's meeting, JCCP members met with Dr. Thurston M. Williams, Supervisor Engineering Curriculum Design (A), and Mr. Rasid K. Rahman, Engineer III, to verify the content of the seminar and discuss dates for implementation. As a result, the seminar was decided to be held from February 9 to 13, 2014, according to the program proposed by PEDD. Furthermore, as a new initiative, it was agreed that a mini-test would be held at the end of each day to verify the participants' degree of understanding. Through such initiatives, PEDD and JCCP agreed to continually implement programs that probe deep into various technologies.

## 6. Dhahran Head Office: Professional Development Department, Training & Development

At the Dhahran Head Office, the JCCP delegation met with Mr. Raed H. Al-Rabeh, Director, Professional Development Department, to discuss training programs for fiscal 2014. They explained that the regular course on refinery management has been replaced by a new course entitled "Strategic Management," designed to promote strategic thinking about future corporate activities among current and future management personnel of business planning departments in oil companies. Mr. Al-Rabeh said he thinks the course would greatly benefit Saudi Aramco, as the company strives to

operate based on long-term strategies, and shared his view that it is extremely important to seek added value in petrochemical business based on an analysis of market needs and future trends. Besides the chemical departments in which Saudi Aramco is currently expanding its business, Mr. Al-Rabeh explained that the company's main concerns lie in maximizing added value through the efficient utilization of energy, conserving the use of oil for combustion purposes through the use of alternative energy sources, and optimizing the sale of products, and said JCCP courses offer important value by providing an opportunity to study the interrelationship of various topics from a wide perspective instead of from a single field only. Furthermore, he stated that the course is precisely what Saudi Aramco and companies in the GCC countries have been seeking.

The JCCP delegation also received an important assignment, to give due consideration to responding to greater expectations of the new course and to design a seminar that addresses the following issues: (1) In what areas should future investments be made? (2) What is the ideal unit configuration in a refinery? As it is becoming necessary to create production plans that meet product demand, a course that can satisfy this need is sought; (3) Cooperation with related business fields, particularly in the supply of raw materials for products; (4) Importance of enhancing energy efficiency, not independently, but as a collective effort through joint ventures and projects; (5) Alternative industrial energies and the establishment of a value chain in which oil products are not only burned but are given added value as feedstock for petrochemical products; and (6) How can efficient and effective operations be achieved in the chemical field?

In regard to JCCP activities as a whole, Mr. Al-



At Dhahran Head Office:  
*Mr. Raed H. Al-Rabeh, Director, Professional Development  
 Department (center)*

Rabeh emphasized that they are extremely effective in helping build human networks. He described how he met Ms. Salma Al Hajjaj, then Director, Center for Leadership Development, KNPC, while participating in a JCCP International Symposium, and later invited her to Saudi Aramco to give a lecture on female initiatives in companies. He said the undertaking was so popular that they have maintained their ties, and thanked JCCP for the opportunity to participate in the international symposium and acquire such an important relationship.

## 7. Refining & NGL Fractionation Administration Area / Ras Tanura Refinery Training Unit

There had been no participants to JCCP regular courses from the Ras Tanura Refinery for the past few years, but the JCCP delegation created an opportunity to meet with Mr. Omer Al-Ghamdi, HRDU Supervisor (scheduled to participate in a regular course on HRD in FY2013), and Mr. Yahya Q. Daghri, HRD Supervisor (participated in a regular course on human resource management in FY2009).

The JCCP members first introduced the FY2014 schedule of regular courses, explaining that a course on strategic management had been newly launched in place of the refinery management course. The refinery members said they will consider the participation of management level personnel from Ras Tanura.

The meeting next moved on to a discussion of onsite visualization activities as part of a customized program. The Ras Tanura Refinery was well aware of the results of training programs implemented at the Yanbu Refinery to date, and thus requested a seminar at Ras Tanura as well, saying they would contact JCCP at a later date about their preferred number of participants and suggested improvements to the content of the seminar.

Ras Tanura Refinery members explained that, for the refinery, the advantages of JCCP regular courses are that they offer participants an opportunity to interact with people from other countries and to acquire an awareness of diverse issues that lie beyond the course. By participating in a regular course, Mr. Daghri said he personally learned a great many things in Japan, including not only about how to work efficiently, but also about ways of life, proper conduct and behavior, mentality, and how people are objectively viewed by others. He said he has never forgotten his JCCP experience, as it underlies the motivation for all of



*At the Refining & NGL Fractionation Administration Area:  
Mr. Omer Al-Ghamdi, HRDU Supervisor (right), and  
Mr. Yahya Q. Daghri, HRD Supervisor (left)*

his activities. Mr. Daghri's words that JCCP regular courses have special meaning by offering a forum for cooperation and networking and not merely for training, and that he wishes the courses will continue to manifest this meaning in their implementation, left a particularly strong impression on the JCCP members.

## 8. Southern Area Industrial Training Division

The JCCP delegation met with Mr. Muhammad S. Al-Muraikhi, Superintendent (A), and 14 staff members from three training centers for upstream operations (branch organizations of the Head Office Industrial Training Division in charge of developing operators and technicians) located in the southern area of Abqaiq, where the center of Saudi Aramco's Ghawar Oilfield lies. After receiving a general introduction of the training division, the JCCP members introduced JCCP, presented the FY2014 regular course schedule, and proposed the implementation of practical training in the form of a Customized Program-Overseas (CPO).

The JCCP delegation's presentation met with a favorable response on the whole, and elicited a variety



*With staff members of the Southern Area Industrial Training Division*

of questions. Given the nature of the training division, the presentation seemed to provide useful information for considering the participation of their staff members in JCCP courses. The JCCP members also introduced a record of customized programs implemented at Saudi Aramco to date while noting that no seminars have been held in the Southern Area since a CPO for maintenance departments was implemented in fiscal 2010, and urged the future implementation of a seminar.

## 9. Summary

By introducing the FY2014 regular course schedule and discussing possible customized programs for Saudi Aramco, the JCCP delegation achieved the intended objectives of its recent visit. With respect to regular courses, the meetings with relevant personnel revealed a high level of expectation in the course on strategic management that will be newly offered in place of the course on refinery management. The JCCP delegation also received positive responses toward

the course improvements and the changes in course titles that were made to more closely correspond to the content of each course. In regard to customized programs, the JCCP delegation received formal requests for implementation of the same practical training on visualization that was held at the Yanbu Refinery, also at the Jeddah Refinery, Ras Tanura Refinery and Petro Rabigh. Detailed meetings on the content and dates for their implementation are planned to be held hereafter. As a follow-up to regular courses, the JCCP members informed the Saudi Aramco side that JCCP will launch a new initiative to promote further understanding and cooperation by JCCP counterpart departments, by having regular course participants write a review of their course and sending these reports to the counterpart department along with the participant evaluations that are sent out after each course. This initiative was met with strong approval by all departments. In the meantime, JCCP will make ongoing preparations toward the organization of an alumni meeting in Saudi Arabia next year.

*<by Fumihito Tone, Training Dept.>*



# Report on the Training Cooperation Program

## —Kuwait and UAE—

### 1. Overview

A JCCP delegation visited Kuwait and UAE from September 6 to 13, 2013 under the Training Cooperation Program, which aims to promote JCCP training programs in oil-producing countries. The visits to Kuwait and UAE, in particular, were made as part of the effort to renew JCCP's training programs, and specifically aimed to promote the program that is scheduled to be offered to management candidates beginning next fiscal year, the new university collaboration program for national oil companies, and customized seminars on environmental issues. The delegation comprised Mr. Eiji Okuyama, General Manager of the Operations Department, and Tetsuo Arai, Master lecturer of Training Department, JCCP.

In regard to the new program for management candidates to be commenced next fiscal year, national oil companies in Kuwait (Kuwait Petroleum Corporation (KPC) and Kuwait National Petroleum Co., (KNPC)) and national oil companies in UAE (ADNOC and TAKREER), which the JCCP delegation visited, welcomed its commencement and expressed their intention to cooperate in sending participants. They also shared the understanding that the program content would focus on the management practices of manufacturing businesses in Japan.

In regard to the new university collaboration program for national oil companies, all relevant departments at ADNOC welcomed the program. JCCP will thus examine specific details of the program hereafter with the Petroleum Institute (PI), Zayed University, and other relevant institutions.

For customized programs on environmental issues, which JCCP has recently been expanding in oil-producing countries, the JCCP delegation discussed specific preparations for future cooperation with environment-related departments in both countries.

### 2. Kuwait

#### (1) KPC Center for Leadership Development (K-LEAD)

The JCCP delegation met with Mr. Husain Ali Sanasri,



At K-LEAD:  
Mr. Husain Ali Sanasri, Team Leader,  
Executive Performance Management (center)

Team Leader, Executive Performance Management, Leadership Development Department, who gave a lecture on KPC's leadership development program at last year's JCCP symposium. The KPC Center of Leadership Development (K-LEAD) is a department that reports directly to the Managing Director of the personnel affairs department at KPC. As a department that mainly takes charge of training and developing future management personnel, it welcomed the launch of JCCP's new training program for management candidates.

K-LEAD has cooperative relationships with many universities and oil companies, but it has never engaged in cooperation with Japan. Toward the first cooperation between the two institutions, the JCCP delegation gave a general description of the new course on strategic management that is scheduled to be offered to management candidates next fiscal year, which mainly focuses on management practices in Japan's manufacturing industries and exhibits Japan's distinct strengths. The members of K-LEAD expressed their understanding of the course, and said they would like to recommend the course to their close-to 200 manager-level employees. They also noted that the approval of management is necessary to send their employees to participate in the course, and requested sufficient time to make the necessary preparations.

#### (2) KNPC Personnel Development Department

The JCCP delegation visited KNPC's Personnel Development Department and met with Mr. Fadhel Mirza Abdulla, Team Leader, Employee Development

and Mr. Abdulrahman Al-Olayan, Team Leader, Training Project.

The JCCP members explained JCCP's efforts for the renewal of its training programs in response to changing needs accompanying the initiatives taken by oil-producing countries to expand their training efforts. The KNPC side responded favorably to the strategic management course, noting that the combination of basic knowledge and technical management practices is a novel approach. In particular, they said the program uniquely offers both classroom lectures and offsite training at plants and other oil-related facilities, which major universities cannot, and requested not only the implementation of the course for managers, but also that of a short-term course for team leaders. Besides the above, the KNPC members expressed interest in receiving training programs on optimization in the refinery and finance management, and also mentioned that KNPC is seeking partners able to cooperate in providing an attachment program for KNPC employees.

### **(3) KPC Petroleum Training Center (PTC)**

At the Petroleum Training Center (PTC), which undertakes all training programs for the KPC Group, the JCCP delegation met with Mr. Khaleel E. M. Husain, Team Leader, Coordination & Follow-up. The Center mainly provides training programs to the KPC Group through external training institutions, and provides programs designed for each employee level across the Group. Further information exchanges with the Center could be useful in the renewal of JCCP training programs and in offering improved programs that exhibit Japan's strengths.

### **(4) KPC Environment Department**

JCCP has recently had two occasions to strengthen its friendly relationship with KPC's Environment Department—the implementation of the Customized Program-Overseas (CPO) on Carbon Management held two years ago, and the Environment Conference on Water and Waste Management held last January. This year, the two organizations agreed to again hold a Customized Program-Japan (CPJ) on environmental management and advanced technology in November, and took advantage of the JCCP delegation's recent visit to discuss the specific content of the program and preparations for sending participants to Japan. The JCCP members met with Dr. Fatimah Al Shatti, Manager and other relevant members of KPC, and further deepened



*At KPC's Environment Department*

their mutually cooperative relationship, which has been growing stronger in recent years, as seen in the increasing participation of KPC employees in JCCP regular courses on the environment and energy at the recommendation of the Environment Department.

## **3. UAE**

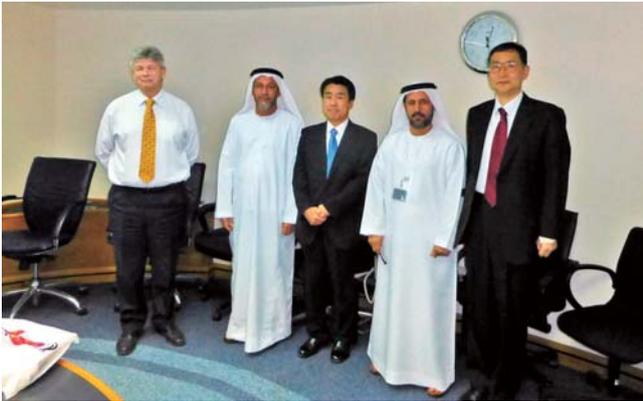
### **(1) ADNOC Administration Department**

At ADNOC, the JCCP delegation met with Mr. Zayed Mohamed Al Shuaibi, Manager, Travel Department, who participated in this year's JCCP Program Seminar. Mr. Al Shuaibi noted that cooperation in training between ADNOC, universities and JCCP coincides with ADNOC's aspiration to develop a broad range of personnel, and that the Administration Department is responsible for arranging a meeting with top management. He also mentioned that ADNOC has the need for an attachment program on public relations.

### **(2) ADNOC Training & Development Division**

The JCCP delegation met with Mr. Jumaa Rashed Al Ali, Manager, and other relevant members of the Training & Development Division to introduce the new training program for management candidates and to discuss possible collaboration with universities cooperating with ADNOC's training programs. The JCCP members explained the improved content of JCCP regular courses for fiscal 2014, as well as the new course on strategic management for management candidates, which will include lectures on management practices in Japan's manufacturing industries, visits to plants, and discussions. The ADNOC side agreed that the new course fully features the characteristics of Japan's manufacturing industries, and expressed its cooperation in sending participants to the course.

With regard to ADNOC's training cooperation



At ADNOC:  
Mr. Jumaa Rashed Al Ali, Manager (second from left)

scheme with universities, the ADNOC members explained that the company has a study leave system, which employees use to study at universities inside and outside of UAE. As university cooperation fully coincides with ADNOC's policy, they welcomed JCCP's new initiative to collaborate with universities, and advised the JCCP delegation to begin making specific preparations by sending a letter to the top management of ADNOC.

### (3) TAKREER Training & Career Development Department

At TAKREER, the JCCP delegation met with Mr. Anwer Mahmoud Ghalib Al Mutawa, Head Training Section, Training & CD Department and presented an overview of new JCCP regular courses that are scheduled to be offered in fiscal 2014. In regard to the new course on strategic management, Mr. Al Mutawa noted that it would be suitable to division manager-level employees at TAKREER, and expressed his cooperation in sending participants to the course. He also said he would continue



At TAKREER:  
Mr. Anwer Mahmoud Ghalib Al Mutawa, Head Training Section, Training & CD Department (second from right)

to send participants to regular courses related to human resource development.

Mr. Al Mutawa welcomed JCCP's training cooperation with universities in UAE, as TAKREER also has a study leave system for employees desiring to acquire an academic degree. He also expressed his interest in customized programs on human resource development, maintenance and new technologies, and said he looks forward to receiving a proposal from JCCP. Finally, in regard to regular courses, he explained that since there have been numerous applications, the training department sends formal application to JCCP after making adjustments.

### (4) ADNOC Group Environment Committee

The JCCP delegation next met with Mr. Abdulqader Al Kamali, Chairman of the ADNOC Group Environment Committee, which is responsible for all environment-related matters of the ADNOC Group. Mr. Al Kamali is also Vice President, HSE of Abu Dhabi Gas Industries Ltd. (GASCO). Through the implementation of two customized programs with the Environment Committee over the past two years (CPO on Energy Efficiency and CPO on Water Management), JCCP has deepened its cooperative relationship with the Committee, which sends an increasing number of participants to JCCP regular courses related to the environment. With respect to the new course on strategic management, Mr. Al Kamali advised the delegation that shortening the duration of the course could be one way to offer a program that management-level employees could more readily attend.

In regard to training cooperation between the ADNOC Group, universities and JCCP, Mr. Al Kamali



At the ADNOC Group Environment Committee:  
Mr. Abdulqader Al Kamali, Chairman (second from left)

suggested engaging in cooperation with the Petroleum Institute (PI), with which ADNOC has a cooperative relationship. PI offers lectures to an environmental management team comprising mechanical, chemical, electrical, civil and process engineers from the ADNOC Group, and members of the group can receive university credits by attending them.

The JCCP delegation also received an inquiry from the ADNOC Group Environment Committee about possible cooperation with JCCP on environment-related issues, and agreed to hold continued exchanges of information hereafter.

#### (5) ADNOC Marketing & Refining Directorate

The JCCP delegation met with Mr. Mahmood Al Mulla, Administration Coordinator and Ms. Naeima Al Maskari, Controller, Marketing Budget Accounting in ADNOC's Marketing & Refining Directorate. A new division, the Business Integration & Performance Division, was established in the directorate to take charge of the directorate's medium-term plan, so inquiries concentrated on the possible implementation of the following types of courses that would correspond to the direction of the plan.

- Special courses on each type of oil product (LPG, base oil, gas & sulfur, supply of crude oil & refined products, etc.)
- Quality management courses that cover content intended for inspectors from marketing divisions
- Courses that provide an environment friendly to female participants

Since the training program for future management personnel and collaboration with universities are a means for social contribution to ADNOC, the refining and



*At the ADNOC Marketing & Refining Directorate:  
Mr. Mahmood Al Mulla, Administration Coordinator (second from right)*



*At Zayed University:  
Prof. Abdel Mohsen Onsy Mohamed, Vice Provost*

marketing departments also expressed their cooperation.

#### (6) Zayed University

At Zayed University, one of the most representative national universities in UAE, the JCCP delegation met with Prof. Abdel Mohsen Onsy Mohamed, Vice Provost, who has cooperated in JCCP technical cooperation projects and training programs in the past. He welcomed the framework of cooperation between ADNOC, universities and JCCP as representing a mutually complementary relationship, and proceeded to a discussion of specific preparations, agreeing first of all to cooperate in formulating a plan for an environment-related program. Prof. Mohamed pointed out that university management would be willing to provide full cooperation if the content of the program is beneficial to all parties.

#### (7) Petroleum Institute (PI)

At PI, a higher education and research institution of the ADNOC Group, the JCCP delegation met with Dr. Ismail A. Tag, Acting President & Provost and Dr. Ebrahim Al Hajri, Director of External Relations & Collaborations to discuss the possibility of future cooperation.

After sharing an understanding of JCCP's training programs through Q&A, the two sides discussed a framework of cooperation between PI's lectures and JCCP's training programs. As PI is also working with the ADNOC Group Environment Committee to implement training on water treatment, HSE and soil remediation, Dr. Tag noted that cooperation with JCCP could help PI further improve its programs. He also implied the possibility of PI and JCCP joining hands in an academic-industry partnership in preparing an intensive summer course. Furthermore, the two sides held an active



At Petroleum Institute:  
 Dr. Ismail A. Tag, Acting President & Provost (third from left),  
 and Dr. Ebrahim Al Hajri, Director of External Relations &  
 Collaborations (fourth from left)

discussion on combining JCCP's customized program with a plant visit in UAE, and agreed to hold continued information exchanges on the possibility of future cooperation.

## 4. Summary

### (1) New training course for management candidates

Each of the departments of the KPC and ADNOC Groups welcomed JCCP's plan to strengthen its training programs for management candidates, evaluating it as incorporating contents they seek.

In regard to the commencement of the new training programs next year, the JCCP delegation explained and engaged in Q&A on the main contents of the programs. With the understanding of each of the departments of the KPC and ADNOC Group, JCCP gained an impetus to prepare programs that mainly include visits to representative manufacturing industries in Japan, lectures and discussions with experts on Japanese management practices and technologies, and workshops (on environment and energy strategies, new projects, etc.).

As the courses will be intended for employees with a certain amount of management experience, their participation would require necessary procedures based on the approval of top management. Furthermore, since there was also a request to increase the participant capacity by designing a separate course for team leaders, JCCP will hereafter make further consideration to improve the content of the programs.

### (2) ADNOC/JCCP/university collaboration program

JCCP programs, which are made possible by the participation of business experts and industrial technical specialists, were confirmed as having complementarity with universities and other higher education institutions. Particularly in UAE, the various departments of the ADNOC Group widely expressed their support of JCCP's plan, as the ADNOC Group is strengthening collaboration with universities from the perspective of comprehensive human resource development.

JCCP will continue to hold information exchanges for future cooperation, and hopes to proceed with specific preparations soon with the approval of top management.

### (3) Cooperation with environment departments in national oil companies in oil-producing countries

JCCP has deepened its cooperative relationship with the ADNOC Group and KPC Group especially since last year through continued implementation of customized programs on environmental issues. As a result, the central organizations of the environment department in each Group have begun to send a continuous stream of participants to JCCP regular courses. A relationship of trust has begun to develop between the JCCP and the two companies, but JCCP hopes to further strengthen ties with them, as they share an awareness of environmental issues and have strong interest in Japan's environmental technologies.

<by Tetsuo Arai, Training Dept.>

## JCCP Regular Courses Completed

### **TR-9-13 Practical Training for Young Instrumentation and Control Engineers May 28 – July 5, 2013**

**Lecturer: Shigeru Matsui**

**Content:** Engineering Design for Instrumentation;  
Plant Information System; Latest DCS & Related Systems (Hardware & Software);  
Practice of Field Instrumentation (Transmitter, Level Meter, Flow Meter, Control Valve);  
Practice of Operation Support System;  
Practice in Building a Control System;  
Practice of Model Predictive Control;  
Wireless Instrument Systems;  
Vibration Measurement & Diagnosis;  
Refinery Information and Control System;  
Engineering Work Flow for Instrumentation;  
Latest Analyzer; Theoretical and Practical Training in Process Control; Safety Instrument System;  
Instrument Engineering Using a Computer;  
Discussion about the Maintenance of Instrumentation

**Site visits:** Yokogawa Electric Corporation (Mitaka Headquarters & Kofu Factory);  
Endress+Hauser Yamanashi Co., Ltd. (Kofu Factory);  
Azbil Corporation (Fujisawa Techno Center & Shonan Factory);  
Oval Corporation (Yokohama Operation Center);  
Emerson Japan Ltd. (Mizushima Solution Center);  
Shinkawa Sensor Technology, Inc. (Hiroshima Factory);  
DKK TOA Corporation (Tokyo Engineering Center)

**Countries:** Indonesia, Iraq, Kazakhstan, Libya, Nigeria, Pakistan, Saudi Arabia, Uzbekistan, Vietnam, Yemen



*<10 countries / 15 participants>*

### **TR-10-13 Safety Management for Refineries June 18 – July 5, 2013**

**Lecturer: Takaaki Yuasa**

**Content:** Safety Management for the Refinery;  
Environmental Control;  
Safety Regulations and Disaster Prevention;  
Safety Consideration for Plant Design and Risk Management;  
Safety Management for Plant Maintenance;  
Wastewater Treatment;  
Case Study and Discussion

**Site visits:** JX Nippon Oil & Energy Corporation (Negishi Refinery);  
Idemitsu Kosan Co., Ltd. (Tokuyama Refinery);  
Sompo Japan Nipponkoa Risk Management Inc. (Shinjuku Head Office);  
Yokogawa Electric Corporation (Mitaka Headquarters);  
Swing Corporation (Fujisawa Research Center)

**Countries:** Indonesia, Iraq, Kazakhstan, Kuwait, Libya, Myanmar, Nigeria, Qatar, Saudi Arabia, Sudan, UAE, Uzbekistan, Vietnam



*<13 countries / 19 participants>*

**TR-11-13 Diagnostic Techniques and Maintenance for Rotary Machinery**  
**June 18 – July 5, 2013**

**Lecturer: Shintaro Miyawaki**

**Content:** Outline of Petroleum Industry in Japan;  
Reliability Enhancement and Maintenance for Rotary Machinery;  
Operational Practices and Maintenance of Governors;  
Various Technologies for Pumps and Steam Turbines;  
Vibration Measurement and Control Systems;  
Refinery Practices for Maintenance of Rotary Machinery;  
Various Technologies for Gas Turbines;  
Operational Practices and Maintenance of Mechanical Seals;  
Instrumentation for High-efficiency Power Generation;  
Water Management in Steam Turbine and Boiler Systems;  
Vibration Measurement of Rotary Machinery

**Site visits:** Woods Corporation (Head Office and Works); Shin Nippon Machinery (Kure Factory);  
Shinkawa Sensor Technology, Inc. (Hiroshima Factory);  
JX Nippon Oil & Energy Corporation (Mizushima Refinery);  
Mitsubishi Heavy Industries, Ltd. (Takasago Machinery Works);  
Eagle Burgmann Japan Co., Ltd. (Niigata Factory);  
Yokogawa Electric Corporation (Mitaka Headquarters)

**Countries:** Colombia, Indonesia, Iraq, Kuwait, Libya, Myanmar, Nigeria, Pakistan, Papua New Guinea, Qatar, Saudi Arabia, Sudan, Thailand, UAE, Uzbekistan, Vietnam, Yemen



*<17 countries / 19 participants>*

**TR-12-13 Advanced Technology and Control System of Power Generation Facilities**  
**August 27 – September 13, 2013**

**Lecturer: Teruhiko Sasaki**

**Content:** Overview and Practice of Latest Power Generation Facilities;  
Power Generation Facility-related Technologies (Water Treatment, Vibration Sensor and Governor Maintenance Technologies);  
Latest DCS-related Technologies and APC System;  
Control Systems for Actual Power Plants;  
Other Related Technologies (Basic Process Control Theories with Practice Using a Computer Simulator, Optimization System and Dynamic Simulator Technology, Application for Safety Instrument system)

**Site visits:** Yokogawa Electric Corporation (Mitaka Headquarters and Kyushu Branch);  
Tobata Co-operative Thermal Power Co., Inc.;  
Shinkawa Sensor Technology, Inc. (Hiroshima Factory);  
JX Nippon Oil & Energy Corporation (Marifu Refinery);  
Woods Corporation; Invensys Process Systems Japan, Inc.

**Countries:** Indonesia, Iraq, Kazakhstan, Libya, Myanmar, Nigeria, Pakistan, Sudan, Thailand, Uzbekistan, Vietnam, Yemen



*<12 countries / 16 participants>*

**TR-13-13 Environmental Management**  
**September 17 – October 4, 2013**

**Lecturer: Bunsuke Kariya**

**Content:** New Business Strategy of Japanese Oil Industry; Air Pollution Control in Refinery; Waste Water Reuse; Environmental Management in Japanese Refinery; Environmental Management in Showa Yokkaichi Sekiyu; Environment Monitoring Analyzer; High-efficiency Gas Turbine Technology; Monitoring of CO<sub>2</sub> in CCS Site; Industrial Waste Treatment; CCS Demonstration Site; CO<sub>2</sub> Supplier for CCS Demonstration; Waste Water Treatment in Japanese Oil and Gas Fields; Waste Water Treatment Technology; Case Study and Discussion of Environmental Problems in Each Country



*<12 countries / 19 participants>*

**Site visits:** Showa Yokkaichi Sekiyu; Shimadzu Corporation; Kawasaki Heavy Industries (Kobe Works); Mitsubishi Heavy Industries (Hiroshima Research Center); Chugai Technos Corporation; Hayakita Koei Co., Ltd.; Japan CCS Co., Ltd.; Idemitsu Kosan Co., Ltd. (Hokkaido Refinery); Japan Petroleum Exploration Co., Ltd. (Yufutsu Oil and Gas Field); Swing Corporation (Fujisawa Research Center)

**Countries:** Colombia, Indonesia, Iraq, Kuwait, Nigeria, Qatar, Saudi Arabia, Sudan, Thailand, UAE, Uzbekistan, Vietnam

**TR-14-13 Project Management for Mechanical and Chemical Engineers**  
**September 17 – October 4, 2013**

**Lecturer: Fumihito Tone**

**Content:** To promote understanding of project management from the point of view of the owner side, and to improve the project management and leadership ability of mechanical and chemical engineers in the construction or maintenance department in oil refineries. In addition to achieving the above objective, participants will also discuss petroleum plant and petrochemical plant integration projects. The main topics are as follows:



*<11 countries / 17 participants>*

1. Project management activities in oil refineries in Japan
2. Engineering of EPC projects by utilizing IT
3. Project risk management and project contracts
4. Practical exercise and group discussion: "Problems in project management of your project and countermeasures"
5. Visits to: A refinery—to study project planning and management in the refinery; An engineering company—to study EPC project management; A high-pressure vessel manufacturer—to understand recent technologies for high-pressure vessel manufacturing; A boiler and turbine manufacturer—to study recent turbine and boiler technologies

**Site visits:** JGC Corporation (Yokohama World Operation Center); Idemitsu Kosan Co., Ltd. (Hokkaido Refinery); Hokkaido Joint Oil Stockpiling Co., Ltd. (Hokkaido Office); The Japan Steel Works, Ltd. (Muroran Plant); Non-Destructive Inspection Co., Ltd. (Headquarters); Mitsubishi Heavy Industries, Ltd. (Takasago Works)

**Countries:** Colombia, Indonesia, Iraq, Kuwait, Nigeria, Qatar, Sudan, Thailand, UAE, Uzbekistan, Vietnam

# FY2014 JCCP Course Schedule

In FY2014, JCCP will offer 27 courses, including 23 regular courses (TR) and 4 intensive courses (IT), as shown below.

Course No.	Course Title		Period
TR-1-14	Future Advanced Technology for Petroleum Industry		Apr. 7 – 24, 2014
TR-2-14	Advanced Control Technologies in the Oil Downstream		Apr. 7 – 24, 2014
TR-3-14	Petroleum Marketing		May 13 – 30, 2014
TR-4-14	Upgrading Processes of Heavy Oil		May 13 – 30, 2014
IT-1-14	Latest Technologies for Power Plant Turbine and Boiler Systems	NEW	May 20 – 30, 2014
TR-5-14	Advanced Field Devices and Control		May 27 – Jun. 13, 2014
TR-6-14	Advanced Technology in a Transforming Energy Market		Jun. 5 – Jun. 20, 2014
TR-7-14	Maintenance Management		Jun. 10 – Jun. 27, 2014
TR-8-14	Environment Management for Sustainability		Aug. 26 – Sep. 12, 2014
TR-9-14	Project Management for High-Value-Added Petroleum Industry		Aug. 26 – Sep. 12, 2014
TR-10-14	Advanced Technology and Control System of Power Generation Facilities		Aug. 26 – Sep. 12, 2014
TR-11-14	Reliability Enhancement and Maintenance Management of Rotary Machinery		Sep. 30 – Oct. 17, 2014
TR-12-14	Practical Training for Young Instrument and Control Engineers		Sep. 30 – Oct. 31, 2014
TR-13-14	Strategic Management for Petroleum Industry	NEW	Oct. 7 – 17, 2014
IT-2-14	Finance and Accounting Management		Oct. 14 – 24, 2014
TR-14-14	Human Resource Management (HRM)		Nov. 4 – 21, 2014
TR-15-14	Current Situation and Future Perspectives of LNG Technology		Nov. 4 – 21, 2014
TR-16-14	Material Problems and Their Countermeasures		Nov. 4 – 21, 2014
TR-17-14	Wide Scope of Downstream Safety Management		Nov. 25 – Dec. 12, 2014
TR-18-14	Inspection and Reliability Evaluation		Nov. 25 – Dec. 12, 2014
TR-19-14	Utilization of Information and Control Systems in the Oil Downstream		Nov. 25 – Dec. 12, 2014
TR-20-14	Petroleum Distribution		Jan. 13 – 30, 2015
IT-3-14	Turnaround and Inspection		Jan. 13 – 23, 2015
IT-4-14	TPM Activities for Refinery Maintenance Management		Feb. 9 – 20, 2015
TR-21-14	Quality Management of Refinery Products		Feb. 10 – 27, 2015
TR-22-14	Advanced Process Control on DCS		Feb. 10 – 27, 2015
TR-23-14	Human Resource Development (HRD)		Feb. 17 – Mar. 6, 2015

 Marketing & Distribution of Oil Products,  
Personnel Management

 Oil Refining Processes

 Facility Maintenance

 Computer and Instrumentation Control  
Technologies

# MOA Signing Ceremony with GPC (Egypt) for the Joint Project on Practical Use of Sand-Asphalt

JCCP and General Petroleum Company (GPC) held a Memorandum of Understanding (MOA) signing ceremony for the “Joint Project on Practical Use of Sand-Asphalt” on May 21, 2013 in Cairo, Egypt. Mr. Mohamed Abdel Fattah, Chairman of GPC, and Mr. Morihiro Yoshida, Managing Director of JCCP, signed the MOA in the presence of H.E. Mr. Toshiro Suzuki, Ambassador of Japan to Egypt, Mr. Tarek El-Barktawy, CEO of Egyptian General Petroleum Corporation (EGPC), and other key figures.

During the ceremony, Mr. Katsuhiko Saijo, Director of Dai Nippon Construction Co., Ltd. (DNC), gave a speech on behalf of the three participating companies from Japan. The audience was composed of approximately 60 visitors, including Mr. Takayoshi Hayama, President of Green Consultant Co., Ltd. and Mr. Teruyuki Momose, Overseas Branch Director of Nippo Corporation on the Japanese side, representatives from relevant institutions and organizations on the Egyptian side, and members of the press from inside and outside the country.

In Egypt, large volumes of black sand (bituminous sand) contaminated by discarded crude oil lie abandoned in oil fields, and pose a serious environmental concern. As a solution to this issue, the project will attempt to apply Japan’s advanced technologies to convert oilfield



(Back row, from the right)  
H.E. Mr. Toshiro Suzuki, Ambassador of Japan to Egypt;  
Mr. Tarek El-Barktawy, CEO of EGPC  
(Front row, from the right)  
Mr. Morihiro Yoshida, Managing Director of JCCP;  
Mr. Mohamed Abdel Fattah, Chairman of GPC

refuse to road paving material. It is scheduled to run for two years, from April 1, 2013 to March 31, 2015. If successful, the project could serve a dual purpose: both achieving the effective utilization of a previously unwanted matter (bituminous sand) as useful material (road paving material), and mitigating environmental burden. Additionally, if the effectiveness of the technology is demonstrated, it can be expected to be used widely in other oilfield regions in the Middle East that face the same contamination problem.

After the ceremony, GPC invited the Japanese press to visit the Ras Gharib Oilfield, located in the Eastern Desert, 360 kilometers southeast of Cairo. Reporters from The Yomiuri Shimbun, Hokkaido Shimbun, Jiji Press, and Kyodo News participated in the tour and renewed their awareness of the high significance of the project by observing first-hand the state of bituminous sand in an actual oilfield. Their articles providing details of the oilfield tour and significance of the project were published and distributed in various newspapers and other media.

<by Hironao Naganuma, Technical Cooperation Dept.>



Concerned personnel discussing countermeasures in a section of the Ras Gharib Oilfield in eastern Egypt  
Mr. Hassan Abdel Salam Gomma, Chairman Assistant for HSE of GPC (center)

# LOI Signing Ceremony for the Joint Project on Operational Improvement of a Catalytic Polymerization Unit in the Refinery (Qatar)



*Members of the signing ceremony from QP and Japan*

JCCP began two joint projects in fiscal 2013 and held a Letter of Intent (LOI) signing ceremony for them with Qatar Petroleum (QP), its counterpart, on July 2, 2013. The background, development and overview of the two projects—the “Joint Project on Operational Improvement of a Catalytic Polymerization Unit in the Refinery” and the “Joint Project on Wastewater Recycling in the Refinery”—are presented below.

## 1. Background, Development and Overview of the Projects

### (1) Joint Project on Operational Improvement of a Catalytic Polymerization Unit in the Refinery

At the Mesaieed Refinery, a catalytic polymerization unit is used to produce gasoline-based materials and LPG from light olefins produced in an RFCC unit. However, as the catalytic polymerization unit has not been delivering its predetermined reaction rate, QP requested JCCP’s cooperation in investigating the cause of the problem and thereby improving LPG product yield. In response, this project was launched with the aim of first clarifying the problem by checking facility performance based on an analysis of operational

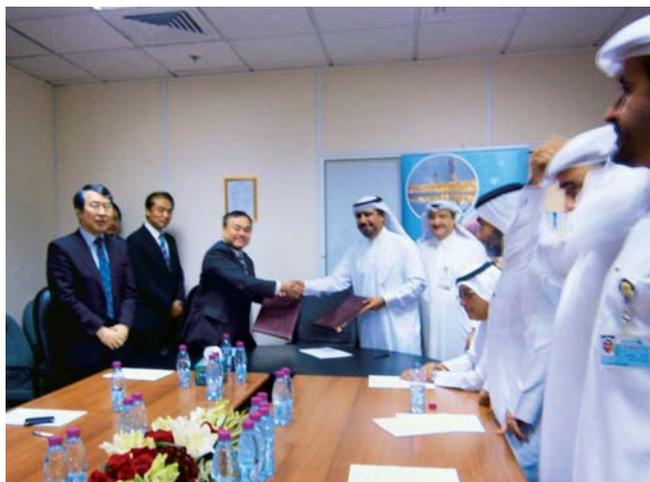
data from relevant LPG hydrotreating and separating facilities, and thereafter proposing a retrofitting plan to improve LPG product yield.

### (2) Joint Project on Wastewater Recycling in the Refinery

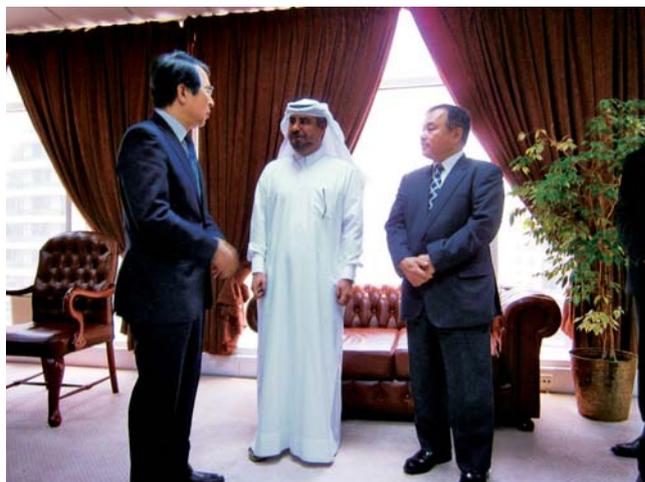
At the Mesaieed Refinery, wastewater that cannot be treated in the refinery’s existing wastewater treatment facility is pooled in a lagoon (reservoir), but contamination caused by underground seepage and overflow of the wastewater in the lagoon has become a serious concern, and prompted QP to request JCCP’s cooperation. In response, the project was launched with the aim of examining an optimal wastewater treatment method after identifying the source and properties of the wastewater.

## 2. Signing Ceremony

The signing ceremony was held at the QP head office. Mr. Hussain M. H. Al-Ishaq, Director – Refining, QP, and Mr. Morihiro Yoshida, Managing Director of JCCP, signed the LOI in the presence of H.E. Mr. Kenjiro Monji, Ambassador of Japan to Qatar, managers from



*Exchanging of the LOI by Mr. Hussain M. H. Al-Ishaq, Director – Refining, QP, and Mr. Morihiro Yoshida, Managing Director of JCCP*



*Friendly exchange of views with Mr. A-Ishaq (center) after the ceremony*

QP departments involved in the project, Mr. Masahiko Hirajo, Director, Cosmo Engineering Co., Ltd., and Mr. Shunichi Shiono, Managing Executive Officer, Swing Corporation.

In his speech, Mr. Al-Ishaq expressed his appreciation of and expectations for the project. He thanked JCCP for the achievements attained through joint projects implemented to date with JCCP, and asked JCCP to continue the cooperative relationship between the two organizations. Next, Ambassador Monji noted how truly gratifying it was to see the implementation of JCCP technical cooperation projects play a large role in establishing closer ties between Qatar and Japan, particularly in the energy field, and said that the Japanese Embassy would cooperate in every way possible. Mr. Yoshida stated that JCCP has implemented numerous projects in Qatar to date, but that the new opportunity to implement a joint project with QP at this time had extremely important significance, and said JCCP would take the opportunity to further strengthen and expand the friendly relationship between Qatar and Japan. Mr. Hirajo thanked QP for allowing his company to take part in implementing joint projects in Qatar since 2006, and expressed his company's wish to make continued contributions, not only in terms of technologies, but also

personal exchanges in the future. Lastly, Mr. Shiono stated that it was an honor to engage in the project on refinery wastewater recycling with QP, and said he hoped the project would contribute to future development in Qatar. After the speeches, Mr. Al-Ishaq and Mr. Yoshida signed the LOI and exchanged commemorative gifts, and the ceremony drew to a successful close amid a friendly atmosphere.

Following the ceremony, Ambassador Monji and Mr. Yoshida were invited to Mr. Al-Ishaq's office, located near the ceremony venue, to enjoy a sociable exchange of views with Mr. Al-Ishaq. As expectations of the results of the two projects run high in QP, their implementation is expected to contribute to expanding mutual friendship between QP and JCCP.

### 3. Summary

The signing ceremony was made possible by QP's thorough preparation, and was held with many relevant parties in attendance, which indicated QP's strong interest in the projects and high expectations for Japan. JCCP hopes the two projects that will be implemented jointly by Qatar and Japan will help take the friendly relationship between the two countries to an even higher level.

*<by Masatoshi Yokotsuka, Technical Cooperation Dept.>*

# MOA Signing Ceremony for the LP Software Technology Transfer and Energy Saving Project (Vietnam)



*Attendants of the signing ceremony*

JCCP launched the “LP Software Technology Transfer and Energy Saving Project” in fiscal 2013 as a joint project with Binh Son Refining and Petrochemical Co., Ltd. (BSR), and held a Memorandum of Understanding (MOA) signing ceremony for the project on June 20, 2013. The background, development and overview of the project are introduced below.

## 1. Background, Development and Overview of the Project

Rapid economic growth in Vietnam has increased domestic oil demand so rapidly that the country began operations at its first refinery (BSR Dung Quat Refinery; 150,000 BD) in 2009 and is pushing forward with plans for a second refinery (Nghì Son Refinery; 200,000 BD). However, refinery operations have just begun in Vietnam, and proficiency in various technologies still needs to be acquired. In principle, refineries must produce various products from crude oil in amounts that correspond to demand, while maintaining consistent quality. Thus, refinery operation planning is an extremely complex task. The LP model is an effective tool for operation planning, but as it is not necessarily widely utilized in Vietnam, there is a need to transfer Japan’s LP software

technology and energy conservation technologies to establish efficient refinery operations in Vietnam.

The “Special Cooperation Program on the Transfer of LP Model Software Technology” is planned to be implemented over a period of two years from fiscal 2013, with the aim of transferring Japan’s LP model software technology to Vietnam. It is expected to not only satisfy BSR’s needs, but also to represent Japan’s contribution to development in Vietnam. Furthermore, the technology will be applied to multiple refinery models next fiscal year toward optimization also of future refineries in Vietnam.

## 2. Signing Ceremony

At the signing ceremony, Mr. Nguyen Viet Thang, Vice President of BSR, and Mr. Morihiro Yoshida, Managing Director of JCCP, signed the MOA in the presence of witnesses that included Mr. Michio Daito, Counsellor at the Japanese Embassy in Vietnam, and Mr. Masahiro Yoshida, Vice President of JX Nippon Research Institute, Ltd.

The ceremony began with greetings by Dr. Phan Ngoc Trung, General Director of Vietnam Petroleum Institute (VPI), and Mr. Thang, who respectively expressed their appreciation of and expectations for the project. On the

Japanese side, Mr. Daito gave a speech stating that as this year marks the 40th anniversary of diplomatic relations between Vietnam and Japan, he expects further growth of the friendly relationship between the two countries. JCCP's Mr. Yoshida reflected on the cooperative relationship that has developed between Vietnam and Japan through the implementation of JCCP projects to date, and expressed his wishes for future development in Vietnam. JX Nippon Research Institute's Mr. Yoshida gave a congratulatory speech that focused on the JX Group's engagement in Vietnam and its expectations of once again providing contributions through the project. After the speeches, Mr. Thang and Mr. Yoshida signed the MOA and exchanged commemorative gifts, and the ceremony drew to a successful close amid a friendly atmosphere.

### 3. Summary

The signing ceremony was made possible by the Vietnamese side's thorough preparation, and was held with many relevant parties in attendance. This indicated the Vietnamese side's strong interest in the project and high expectations of Japan.

Prior to the ceremony, the Japanese members received a tour of a reference room located next to the ceremony venue and a brief history of VPI from Dr. Trung. Information panels on JCCP projects implemented in the past were displayed in the room, and spoke of the longstanding relationship between the Petrovietnam Group and JCCP.



*Exchanging of the MOA by Mr. Nguyen Viet Thang, Vice President of BSR and Mr. Morihiro Yoshida, Managing Director of JCCP*

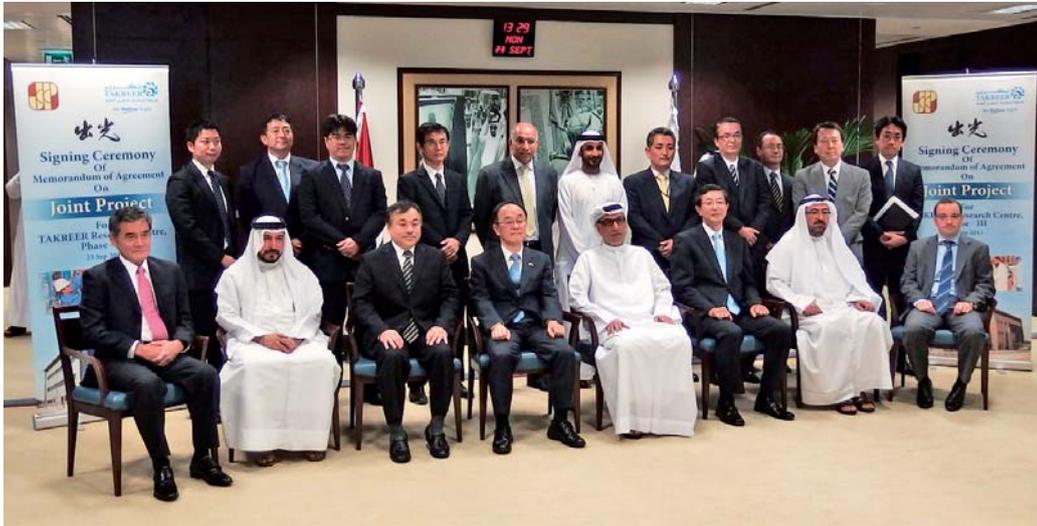


*Tour of the VPI reference room*

As the Vietnamese side holds high expectations for the project, its implementation is expected to contribute to strengthening the mutual friendship between Vietnam and Japan. JCCP hopes the successful completion of the project will bring further development of the friendly relationship between Vietnam and Japan.

*<by Masatoshi Yokotsuka, Technical Training Dept.>*

# MOA Signing Ceremony for the Project on Support for the Operation of TAKREER Research Centre (UAE)



*Attendants of the MOA signing ceremony*

On September 23, 2013, JCCP and Abu Dhabi Refining Company (TAKREER), an affiliate of Abu Dhabi National Oil Company (ADNOC), held a Memorandum of Understanding (MOA) signing ceremony for the “Project on Support for the Operation of TAKREER Research Centre Phase III” at the head office of TAKREER. The MOA was signed and exchanged between Mr. Jasem Ali Al-Sayegh, CEO of TAKREER, and Mr. Morihiro Yoshida, Managing Director of JCCP.

## 1. Background and Overview of the Project

The TAKREER Research Centre (TRC) was established with the objectives of enabling TAKREER to solve technical issues related to oil refining on its own, to accumulate national technical expertise, and to train engineers. In support of this initiative, JCCP launched a technical cooperation project with the participation of Idemitsu Kosan Co., Ltd., and implemented Phase I of the project over a period of four years, from FY2006 to 2009, and Phase II over the following three years.

As a result, the TRC building was completed at the end of April 2009, and outfitted with a pilot plant and

research facilities. Subsequently, new engineers were employed to substantiate the framework of the Centre, and the research facilities came to be utilized effectively.

With the project having arrived at a new stage, TAKREER and JCCP recently agreed to implement Phase III of the project. Phase III will aim to further upgrade and enhance TRC functions with a focus on (1) establishing and increasing proficiency in catalytic evaluation technologies; (2) promoting operational efficiency through technical assistance to TAKREER’s refineries; (3) building a cooperative framework with domestic and foreign research institutions; (4) training domestic engineers and particularly domestic TRC staff; and (5) implementing PR activities for promotion of the TRC at the international level through presentations at scientific meetings.

## 2. MOA Signing Ceremony

In addition to the two signers of the MOA, the ceremony was carried out with great éclat with the attendance of key figures from both the UAE and Japanese sides. They included Mr. Ali A. Abdelrazaq Al Fahim, SVP, Technical; Mr. Ismail Mohammad Al Mulla, SVP, Administration; and Dr. Mikael Berthod,

TRC Manager, on the TAKREER side, and H.E. Mr. Yoshihiko Kamo, Japanese Ambassador to UAE; Mr. Takashi Matsushita, Director, Managing Executive Officer, and Mr. Yoshikuni Yamakawa, Executive Officer, both from Idemitsu Kosan, on the Japanese side.

The ceremony included speeches by representatives from concerned parties and guests of honor, the signing of the MOA, exchange of commemorative gifts, and a presentation on an overview of the project.

In his speech, Mr. Al-Sayegh thanked JCCP and Idemitsu Kosan for their cooperation in the project, and noted that Phase III would prove to be an important phase for the TRC to manifest its functions and provide technical support to refineries. He mentioned that the ADNOC Group also had high expectations on the further development of the TRC.

Ambassador Kamo stated that the project was highly symbolic of Japan's tangible assistance based on its experience and technologies, and said he hoped that the mutually beneficial project would foster an even stronger friendship between UAE and Japan.

Mr. Yoshida reflected on the TRC inauguration ceremony held last year, and said that it was an extremely impressive event that allowed him to witness the wonderful achievement of the project. He then promised

JCCP's full cooperation to help achieve the project's goals of enhancing the TRC's technical capacities and strengthening cooperation with TAKREER's refineries and domestic research institutions.

Lastly, Mr. Matsushita described Idemitsu Kosan's role in the project so far, and said that he looked forward to further contributing to strengthening the TRC's technical capacities and its cooperation with refineries by making full use of the technologies, experience and expertise Idemitsu Kosan has acquired in addressing oil refinery issues through more than 50 years of refinery operations.

Following the speeches, Dr. Berthod gave a presentation on an overview of Phase III of the project.

### 3. Summary

The ceremony was a grand and splendid event, which illuminated the fact that the project is viewed by many as a symbolic joint undertaking by UAE and Japan and is raising extremely strong expectations for the further development of the TRC among concerned parties.

JCCP also holds high hopes of playing a continuing role in deepening ties between UAE and Japan through such technical cooperation projects as this TRC project.

*<by Toshifumi Amemiya, Technical Cooperation Dept.>*



*Signing of the MOA*



*Front entrance of the TRC*

# Project Finding Program for Development of a Refinery Maintenance System in Saudi Arabia

During the 1970s and 1980s, Japanese companies engaged in the construction of numerous oil refinery facilities in the Middle East region. After supporting many years of operations, however, the maintenance of these refineries has become a focus of concern among national oil companies in Middle East oil-producing countries. As JCCP has commenced a technical cooperation project on maintenance of oil refinery facilities in Kuwait and has received high praise for it, possibilities for its lateral expansion were sought.

With the aim of expanding its implementation of technical cooperation projects, JCCP approached Saudi Aramco and discussed preparations for launching a technical cooperation project on the maintenance of refineries and oil refinery facilities. Following these preparations, JCCP commenced the “Project Finding Program for Development of a Refinery Maintenance System in Saudi Arabia” as part of the FY2013 project finding program.

To enhance efficiency, JCCP is implementing the program in consultation with Saudi Aramco’s Inspection and Corrosion Best Practice Committee, as well as with Aramco Asia Japan K.K.

The program features risk-based inspection (RBI) technology. In RBI, the risk of plants and plant equipment is analyzed in blocks, and inspection and repairs are performed in accordance with the analysis. This inspection method has begun to be used by the plants of major oil companies, and is also being adopted by petrochemical and power plants. Given the worldwide dissemination of the technology, it has been introduced

to general refinery facilities at Saudi Aramco as well.

As RBI is based on examples of statistical analysis and accident cases, it is not applicable to LNG and LPG facilities, at which accidents very rarely occur. Additionally, LNG and LPG facilities are not legally subject to overhaul inspection in many countries, so it is common practice around the world not to conduct overhaul inspection even after 20 to 30 years of operation after construction.

However, from the perspective of facility management, it is unsafe not to subject tanks to overhaul inspection. Therefore, the introduction of an inspection method to take the place of overhaul inspections was sought. Meanwhile, Japanese companies have developed an RBI system for LNG and LPG tanks and related facilities, and have begun to introduce the system in Japan.

After consulting with the Inspection and Corrosion Best Practice Committee about introduction of the RBI technology, arrangements were begun for its introduction to propane and butane tanks at the LPG shipping terminal in Juaymah.

In fiscal 2013, a kick-off meeting was held with engineers from Saudi Aramco’s Juaymah LPG Terminal in May, followed by subsequent meetings in July and September. JCCP took the occasion to explain the main features of the RBI technology, in addition to clarifying the objective and providing an overview of the planned project.

At the LPG terminal, propane and butane tanks are subject to overhaul inspection every ten years, as the structure of the tanks differ from those in Japan, but an



Discussion at the Jeddah Refinery



Discussion at the Juaymah LPG Terminal

efficient inspection method was sought to ensure safe operation of tanks that have been used for more than 30 years. Saudi Aramco engineers thus showed strong interest in applying the RBI technology to LPG tanks, as proposed by JCCP.

As a result of repeated consultation with engineers from the Juaymah LPG Terminal, JCCP received a request not only for the application of RBI to LPG tanks, but also for technologies to inspect corrosion under insulation (CUI), a problem plaguing LPG shipping pipelines.

The schedule hereafter includes the implementation

of the title program beginning in fiscal 2014 as a joint undertaking between Saudi Aramco and JCCP, and the signing of an agreement on implementation of the actual project with Saudi Aramco.

At a recent meeting with Saudi Aramco, a graduate of a JCCP regular course, who was among the members of the meeting, helped lead the discussion on promoting the technical cooperation project. Taking a cue from this, JCCP plans to organically combine its training program and technical cooperation program for greater promotion of both operations.

<by Yukio Nobayashi, Technical Cooperation Dept.>

Technical  
Cooperation

## Researcher Invitation Program

The FY2013 JCCP Researcher Invitation Program was rendered to the following three researchers, who arrived in Japan by the end of September to pursue their respective research projects with the cooperation of the Japan Petroleum Institute and universities in Japan.

### 1. King Abdulaziz City for Science and Technology (KACST) / Saudi Arabia

#### Researcher:

Mr. Mohammad Abdulrahman Alowirdy, Chemical Engineer, Petrochemicals Research Institute, KACST (third from left)

#### Host institution:

Graduate School of Engineering, Hiroshima University  
Dr. Takeshi Shiono

#### Study period:

June 11 – July 25, 2013

#### Research theme:

“Olefins polymerization”

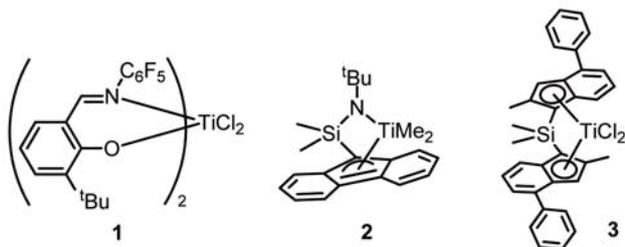
Mr. Alowirdy’s research is on methylaluminumoxane (MAO), a condensation product of trimethylaluminum and water that can be utilized to activate various single-site olefin polymerization catalysts. It is not an exaggeration to say that the study of group 4 metallocene catalysts brought dramatic progress to the development of MAO, and MAO has been utilized as an activating agent in most cases of olefin polymerization using post-metallocene catalysts.

MAO is composed of a complex equilibrium

mixture, and is therefore difficult to analyze in detail. However, recently there has been an increase in studies on changing the promotion effect of MAO by reduced-pressure drying and the addition of a denaturant. Amid this backdrop, Prof. Vincenzo Busico and his team in Italy discovered that combining an MAO promoter doped with the bulky 2,6-di-tert-butylphenol with bis (phenoxy-imine) titanium complex (1) enables living propylene polymerization.

Prof. Shiono’s laboratory also found that controlled polymerization of propylene is enabled by combining MAO (MMAO), 2,6-di-tert-butyl-4-methyl-phenol (BHT) and fluorenyl-amide titanium complex (2). These results could be explained by the understanding that when bulky phenols such as BHT react with the trialkylaluminum remaining in the MAO, the chain transfer reaction from the transition metal center to trialkylaluminum is controlled. However, in order to more deeply understand the effects of BHT, it is





necessary to examine its effect on other metallocene catalysts and accumulate more data.

In Japan, Mr. Alowirdy received research guidance on combining an iso-specific titanocene catalyst (3) with MAO and BHT to enable ethylene and propylene polymerization, and examining how the polymerization behavior of the iso-specific titanocene catalyst (3) changes when MAO is denatured using BHT. The research guidance also aimed to provide Mr. Alowirdy with knowledge of laboratory techniques for olefin polymerization.

Although short, Mr. Alowirdy, during a study period of roughly one and a half months, performed the necessary experiments for initiating a polymerization reaction using an early transition metal catalyst, which requires a rigorous and strict environment. The techniques and knowledge he acquired are certain to be useful in his future pursuit of advanced research and education in the olefin polymerization field. Mr. Alowirdy is believed to have the potential to make a significant contribution to the future development of polymer chemistry in Saudi Arabia.

## 2. UAE University (UAEU)

### Researcher:

Dr. Naeema Ibrahim Karam Aldarmaki, Assistant Professor, Chemical & Petroleum Engineering Department, UAUEU (front row, second from right)

### Host institution:

Graduate School of Environmental Studies, Tohoku University  
Prof. Richard Smith

### Study period:

June 24 – August 1, 2013

### Research theme:

“Development of a hydrate calculation program”

Dr. Aldarmaki is an associate professor of chemistry and petroleum engineering at UAUEU, pursuing research on the development of alternative resources that could

replace oil, and energy conservation technologies. She was awarded JCCP’s research program to pursue her research on methane hydrates as part of the UAE-Japan researcher exchange program.

It is well known that the production of nonconventional crude oils is expected to increase in the future, but these mostly contain heavy components. For effective utilization of crude oils containing a high ratio of heavy components and heavy oils in the future, there is strong need for technologies that reduce the viscosity of heavy components that behave like a highly viscous liquid or even like a solid.

Against this backdrop, research and development is being conducted throughout the world on the enhanced oil recovery (EOR) method. As a technique that can be used at the wellhead of production sites, it uses CO<sub>2</sub> and water as a plasticizing agent or diluent.

In the EOR method, it is necessary to create a supercritical state by injecting CO<sub>2</sub>, and to make sure crude oil and CO<sub>2</sub> fully mix together by setting conditions as appropriate to the composition of the injected gas and crude oil component. In doing so, it is important to assess the phase equilibrium in a state where tens of different types of components are present, but to assess phase equilibrium, it is necessary to develop and establish a correlation equation or predictive equation based on actual measurement obtained in a test.

Dr. Aldarmaki has heretofore engaged in experimental studies on separation and extraction in systems that contain natural products such as palm oil, so she possessed sufficient experimental skills, and knew that at this stage, she needed to acquire a correlation method or predictive method to apply that knowledge to natural products and oil processes. Thus, at the Tohoku University graduate school, Dr. Aldarmaki studied calculation skills related to phase equilibrium under Prof. Smith.

Dr. Aldarmaki first studied the basics of thermal



dynamics and engaged in research on the physical properties of CO<sub>2</sub>. She then focused on the hydrate (solid) formed by CO<sub>2</sub> and water molecules in Prof. Smith's laboratory, and calculated the equilibrium property of CO<sub>2</sub> in the hydrate phase, as a system applicable to reducing the viscosity of heavy components.

More specifically, Dr. Aldarmaki created a model for calculating the physical property of CO<sub>2</sub> using an equation of state that applies to both gases and liquids, and calculated the physical property in a state of equilibrium by changing the initial value of the compression factor, which is a dimensionless number that expresses the difference from the ideal gas. By taking into consideration the stability of the gas-phase CO<sub>2</sub> and internal solid-phase CO<sub>2</sub> from the perspective of interaction between each of the components, it became possible to calculate the amount of CO<sub>2</sub> that is absorbed in the solid-phase hydrate. Producing interactions between dissimilar molecules and calculating the stability of the molecules can be said to be a methodology that is necessary not only for water and CO<sub>2</sub>, as utilized in this study, but also for mixtures of water, CO<sub>2</sub> and carbon hydride (crude oil).

Through her studies in Japan, Dr. Aldarmaki says she has gained essential understanding of phase equilibrium and calculation of physical property, and acquired skills for performing calculations herself. She was able to further enhance the skills she has acquired in Japan and more widely apply them to diverse applications by pursuing her research not only in the measurement of physical properties such as phase equilibrium and viscosity, but also in reaction processes in continued cooperation with Tohoku University. It is hoped that this type of partnership will bring useful knowledge to research groups in UAE and Japan, as well as to the entire oil industry in the future.

### 3. King Fahd University of Petroleum and Minerals (KFUPM)

#### Researcher:

Dr. Muhammad Atiqullah, Full Professor, Center for Refining & Petrochemicals, KFUPM (third from left)

#### Host institution:

School of Materials Science, Japan Advanced Institute of Science and Technology (JAIST)  
Prof. Minoru Terano

#### Study period:

July 19 – August 28, 2013

#### Research theme:

“Supported polyolefin catalyst research”

Dr. Atiqullah came to Japan to gain basic knowledge about the supported Ziegler-Natta catalyst, a catalyst used in the synthesis of polyolefin, the largest group of plastics that accounts for roughly half the world's production of plastics.

The catalyst has high industrial importance, and its unique characteristics are attracting attention as research subjects in catalyst chemistry and surface chemistry. In Dr. Atiqullah's home country of Saudi Arabia as well, the importance of the catalyst is increasing in these industries, particularly given the construction of a number of large polyolefin plants in the country.

Against this backdrop, Dr. Atiqullah engaged in research with a focus on the following four activities.

- To evaluate polyolefin research facilities in Saudi Arabia based on facilities in JAIST as a benchmark
- To engage in deep discussion on the Ziegler-Natta catalyst
- To consider a scheme of cooperation with JAIST
- To perform leading-edge research on supported polyolefin catalyst

While in Japan, Dr. Atiqullah also gave a presentation titled “Polyolefin Catalysis and Application – Activity Overview and Research at CRP.”



JCCP will continue to send advanced Japanese researchers to oil-producing countries to engage in research and study guidance in order to further strengthen relationships with oil-producing countries in the areas of technical transfer and personnel exchanges in the future.

<by Sadao Wada, Technical Cooperation Dept.>

# Report Meeting of the Long-term Researcher Dispatch Program

As part of its international research cooperation, since 2007, JCCP has dispatched researchers to provide assistance on advanced studies at King Fahd University of Petroleum and Minerals (KFUPM) and Saudi Aramco in Saudi Arabia, and Kuwait Institute for Scientific Research (KISR) in Kuwait. Some of their achievements and a glimpse of the report meeting were given at JCCP on June 17, 2013.

In fiscal 2012, the following researchers engaged in research and guidance at their respective host institutions.

## 1. Dr. Hideshi Hattori, Professor Emeritus, Hokkaido University

### (1) Host institution:

Center for Refining & Petrochemicals, Research Institute (CRPRI), KFUPM

### (2) Field of research assistance:

*Support for research of solid acid and solid base catalysts for petroleum refining and petrochemical applications*

Dr. Hattori has been conducting research and guidance at KFUPM's CRPRI since the program was launched in 2007. In fiscal 2012, he provided advice and proposals regarding research themes that are being pursued or planned at CRPRI.

Among his achievements, Dr. Hattori applied for a research grant from King Abdulaziz City for Science and Technology (KACST) for the project on "Development of catalysts for styrene and methylbenzene production through toluene side chain alkylation" in 2010, and received acceptance for the grant in the same year. In 2012, he continued the KACST project on "Styrene production through toluene side chain alkylation" he pursued in 2011 to elucidate the reaction mechanism and improve catalyst performance by modification. He also made a presentation at a scientific meeting and submitted a scientific paper. Furthermore, he provided counsel and research guidance at CRPRI, including the chain alkylation of aromatics, metathesis of butane, hydration of butane, and measurement of the IR spectra of adsorbed pyridine.

2012 was Dr. Hattori's last year of his work at KFUPM under the JCCP program. In the report meeting held at JCCP, he concluded his report by expressing his satisfaction at being able to introduce certain new types of catalysts—a solid-acid catalyst (Pt/WO<sub>3</sub>/Zr<sub>2</sub>) and solid base catalyst (Cs-X zeolite)—and transfer them to KFUPM's research institute, and thereby contribute to boosting technology exchange and building a relationship of trust.

## 2. Dr. Sachio Asaoka, formerly a Professor (Project) at the University of Kitakyushu, presently a part-time instructor at Kogakuin University

Dr. Asaoka has been dispatched to KFUPM in fiscal 2012 to take the place of Dr. Katsuomi Takehira, Professor Emeritus at Hiroshima University.

### (1) Host institution:

Center for Refining & Petrochemicals, Research Institute (CRPRI), KFUPM

### (2) Field of research assistance:

KFUPM and its affiliated Research Institutes and Centers of Research Excellence work in close cooperation with Saudi Aramco in the development of oil-related technologies. Bearing this cooperative relationship in mind, Dr. Asaoka engaged in research counseling at KFUPM in fiscal 2012 with a view to establishing a new research project that addresses Saudi Aramco's needs on the premise of practical application, by combining catalyst chemistry and process chemistry.



Scenes from the report meeting



Scenes from the report meeting

He also aimed to further promote the effective utilization of the fully automatic fixed-bed flow reaction testing and physical property measuring device (BELCAT) which JCCP introduced to CRPRI, by strengthening the technical transfer, guidance and re-training of reaction testing methods and measuring methods.

More specifically, Dr. Asaoka assisted in research on solid catalysts such as zeolite, complex oxides and metals by providing guidance on practical and process-oriented solutions, and by transferring the expertise for selecting measuring methods and analysis techniques needed in the research. He also assisted in creating a scenario for the development of propylene production techniques, provided guidance for a study on the production of butadiene, and provided his assistance in the Saudi Aramco Project being pursued by KFUPM.

In the meeting at JCCP, Dr. Asaoka presented a technical overview map featuring the conversion of  $C_4$  fractions as one of the main achievements of his research at KFUPM in fiscal 2012. The map was prepared to propose new research on the conversion of  $C_4$  fractions based on broad surveys that took in the discussions made on the feedstock situation in Saudi Arabia, the status of petroleum and petrochemical processes, and related research themes. The map proposed to achieve effective utilization of gas resources not limited to  $C_4$  fractions (BB fractions) in refineries, including gas condensates in oil-producing countries. Particularly by evaluating the conversion to petrochemical feedstock by catalytic processes against prospective reactions that have been, are being, or have the potential of being developed, the map presents significant, wide-ranging and comprehensive significance not only for academic applications, but for commercial and industrial applications as well.

Following the presentations by the two researchers

who were dispatched to KFUPM, two letters of appreciation, written by Dr. Sahel Abduljawad, Vice Rector of KFUPM, addressed to JCCP and the two researchers were shown to the audience.

### 3. Dr. Hidehiro Higashi, former researcher at JGC Catalysts and Chemicals Ltd.

#### (1) Host institution:

Kuwait Institute for Scientific Research (KISR)

#### (2) Field of research assistance:

*“Operational improvement of the up-flow reactor using a cold-flow model” and “Study on the application of air nanobubbles to refinery facilities”*

In 2011, Dr. Higashi launched a three-year project for the construction of a cold-flow simulator that would attach a tracking device to the reactor so that flows inside the reactor could be observed. By allowing the interior of the reactor to be seen, the project aims to address the need for operational enhancement and improvement of the existing bottom oil desulfurization unit that has become extremely difficult to operate in its current state.

Dr. Higashi also started a study on the separation of refinery wastewater into water and oil using nanobubbles in a dissolved air flotation (DAF) unit, and on the application of a Maalox (mercaptan oxidation) unit, which is normally used for removal of sulfur content from naphtha and kerosene, to the recycling of the treated water.

In addition to the above research assistance, in fiscal 2012 Dr. Higashi began a study on measures for preventing drifts and differential pressure increases in the guard reactor (Guar. Rx) of a direct desulfurization unit at the Al-Ahmadi Refinery. He also made a study on the impact of the shale gas revolution on refineries in oil-producing countries and measures to be taken by refineries, and a study on processes and catalysts that could separate heavy oil fractions into diesel fuel, kerosene and gasoline to the greatest extent possible.

The characteristics of solvent de-asphalted oil (SDA) and its reactivity are commonly known and antiquated, but it has been used mainly for the production of lubricant base oil and fluid catalytic cracking (FCC) feed oil, and seldom used for the production of feed oil for the desulfurization unit. It has been assumed that fixed-bed processing of DAO quickens the deactivation of catalysts, is unprofitable, and degrades the property of bottom oil, but Dr. Higashi began a study to actually identify their causes. As the increase in SDA yield from vacuum residue

(VR) also causes an increase in impurities and quickens the deactivation of catalysts, he hopes to investigate the cause and provide momentum for launching a project on applicable catalysts and hydrotreatment processes.

In the report meeting held on June 17, Dr. Higashi reported his plans for the future: (1) To propose a study that addresses the US-led shale gas revolution to KPC/KNPC; (2) To provide support for the successful completion of the test to be conducted at the University of Missouri (USA) in the final year of the CFM project, and strengthen exchanges with KISR and KNPC researchers and engineers; (3) To demonstrate

the proprietary nature of the bottom oil hydrorefining process; (4) To demonstrate and collect data from the application of air nanobubbles to the DAF facility at KNPC's Mina Abdulla Refinery; and (5) To launch a research project on the relevance of adding water to desulfurized bottom feed.

JCCP will contribute to strengthening relationships with oil-producing countries in the areas of technical transfer and personnel exchanges by stationing advanced Japanese researchers in oil-producing countries to engage in research and research assistance into the future.

*<by Sadao Wada, Technical Cooperation Dept.>*

Technical  
Cooperation

## FY2013 Meeting of the Technical Cooperation Evaluation Subcommittee

Technical cooperation projects are generally implemented in line with a plan that spans multiple years, and are evaluated by the JCCP Technical Cooperation Evaluation Subcommittee upon their completion. They are evaluated over their entire term from four perspectives—"project goal and status," "management," "results and degree of achievement," and "practical application and spin-off effects"—and the results are fed back into subsequent projects for greater efficiency and effectiveness of future projects.

### 1. Members of the Subcommittee

Members of the Technical Cooperation Evaluation Subcommittee are selected from among external experts,



*Members of the Technical Cooperation Evaluation Subcommittee: (from the left) Dr. Ogawa, Dr. Mizuno, Dr. Tomishige, Dr. Satsuma*

and comprised the following four learned individuals this year.

#### Chairman:

Dr. Noritaka Mizuno, Professor, Department of Applied Chemistry, School of Engineering, The University of Tokyo

#### Members:

Dr. Yoshiki Ogawa, Professor and Dean of the Faculty of Economics, Toyo University

Dr. Keiichi Tomishige, Professor, Department of Applied Chemistry, Graduate School of Engineering, Tohoku University

Dr. Atsushi Satsuma, Professor, Department of Molecular Design and Engineering, Graduate School of Engineering, Nagoya University

### 2. Status of the Subcommittee

The Technical Cooperation Evaluation Subcommittee held its first meeting on June 14, 2013, to listen to presentations on each project. In the second meeting held in August 1, 2013, the members discussed their respective evaluation results among the committee.

### 3. Evaluated Projects

The Technical Cooperation Evaluation Subcommittee

evaluated the following eight projects that were completed in fiscal 2012. (Their dates of implementation and host countries are shown in parentheses.)

- (1) Application of ground deformation monitoring technologies towards preserving the natural resources infrastructure's potential of Saudi Arabia (FY2009 – 2012, Saudi Arabia)
- (2) Feasibility study for hydrogen production (organic chemical hydride method) and storage, transportation, utilization (FY2012, Saudi Arabia)
- (3) Compositional analysis of selected cuts of Kuwait heavy crude oils and its impact on hydroprocessing (FY2010 – 2012, Kuwait)
- (4) Removal of acid gases from natural gas using membrane contactors, Phase II (FY2008 – 2012, UAE)
- (5) TAKREER Research Centre Project, Phase II (FY2010 – 2012, UAE)
- (6) Study for operation improvement at QP Refinery (FY2012, Qatar)
- (7) Study on technical support of introduction of produced water treatment for SOC in the Republic of Iraq (FY2011 – 2012, Iraq)
- (8) Energy conservation study on CDU furnace of Dung Quat Refinery in Vietnam (FY2012, Vietnam)

Each of the above projects was evaluated as having achieved their initial goals with favorable results. Details of how projects are evaluated are provided below, taking project No. 5 above as an example.

Project No. 5 aimed to provide assistance for the operation of a research center (TAKREER Research Centre) established by Abu Dhabi Oil Refining Company (TAKREER). In Abu Dhabi, refinery facilities are being upgraded in response to an increase in domestic demand for fuel and the global trend toward stricter quality regulations. Against this backdrop, the TRC was established to enable TAKREER to achieve greater

operational efficiency, engage in catalyst improvement, and perform troubleshooting measures on its own. Toward this end, the project aimed to provide assistance by transferring refining technologies that Japanese oil companies have cultivated over many years and the operational expertise of R&D institutions.

From the perspective of “project goal and status,” the TRC was recognized as an organization that occupies an important position in Abu Dhabi’s oil refining strategy, and the project was evaluated for offering Japan’s strengths in technologies and experience.

From the perspective of “management,” high evaluation was given to the project’s effective implementation status, including the formulation of a detailed plan in close communication with the host institution and the assignment of a full-time advisor in the TRC.

From the perspective of “results and degree of achievement,” the project was evaluated for contributing to the establishment of TRC’s technological foundation in line with the goal, by making it possible for TRC personnel to operate the pilot plant and evaluate catalysts on their own.

From the perspective of “practical application and spin-off effects,” the project was evaluated for widely promoting awareness of the cooperative relationship between UAE and Japan that developed through this project. A prime example of this is the TRC inauguration ceremony held in November 2012, which was honored by the attendance of many key figures in UAE, and was introduced in a news program by Japan Broadcasting Corporation (NHK) and the *Nikkei Shimbun* newspaper.

With Phase III of the project having begun in fiscal 2013, the Technical Cooperation Evaluation Subcommittee added a remark to the effect that they expected the project to contribute to further strengthening partnerships in UAE and to also be applied to other oil-producing countries in the future.

Based on the realization that project evaluation must be based on the Technical Cooperation Evaluation Subcommittee’s accurate grasp of each project, JCCP has made numerous improvements to the content of informational materials and method of presentation of projects. Also with respect to evaluation method, JCCP intends to make continuous improvements to present evaluation results that could be clearly understood by external parties with the input of the Subcommittee.



*Presentation of a project*

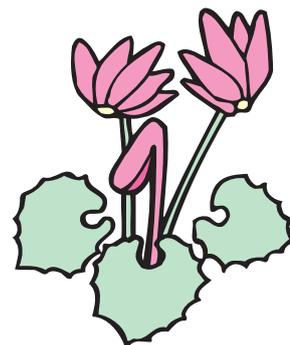
*<by Michio Fujitani, Technical Cooperation Dept.>*

## Announcement

# The 32nd JCCP International Symposium

The JCCP International Symposium is held annually in Japan, bringing together oil experts from oil-producing countries to promote dialogue and cooperation between those countries and Japan. This year it will be held as shown below.

- **Date & time:**
  - Day 1: January 29, 2014 (Wed.)
    - 2:00 p.m. – 6:00 p.m. Opening ceremony
    - Keynote speech
    - Guest speeches
  - 6:00 p.m. – 8:00 p.m. Reception
  - Day 2: January 30, 2014 (Thurs.)
    - 9:30 a.m. – 12:00 p.m. Session I
    - 1:30 p.m. – 4:00 p.m. Session II
- **Venue:** Hotel Okura Tokyo (<http://www.hotelokura.co.jp/tokyo/>)  
Orchid Room (Annex 2nd floor)
- **Main theme:** Innovation Challenges of Oil Industry for the Future Generations
- **Session themes:** (Session I) Management Strategy and HR Development for Changing Times  
(Session II) Technical Possibilities and Environmental Approaches for the Future
- **Program and panelists:** Please see our website (<http://www.jccp.or.jp>)
- **Contact:** International Symposium Secretariat  
Mr. Koichi Io, Operations Dept.  
Phone: (81)-3-5396-6001 / Fax: (81)-3-5396-6006  
E-mail: [symposium@jccp.or.jp](mailto:symposium@jccp.or.jp)



## Announcement

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# Please Help Us Update Our Roster

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Thank you for reading *JCCP NEWS* as always.

JCCP has reached a significant milestone in its history and celebrated 30 years of operations in 2011.

In commemorating this achievement, we extended our deepest appreciation to you all for your support and cooperation in our activities.

All of you who have participated in a JCCP training program in the past (graduates) are a precious asset to JCCP. We therefore wish to take this occasion to confirm your current addresses and update our roster of former participants so that we may reconnect and maintain contact with you into the future.

Our current roster mostly shows information that you provided at the time you participated in a JCCP training program, and could be outdated by now. If there have been any changes in your affiliation (position), email address, or any other contact information, we ask that you provide the latest information on the attached form and return the form to JCCP's Planning & Public Relations Group. Those of you who return the form to us are entitled to receive the latest issues of *JCCP NEWS* and announcements and invitations to exhibitions and reunions.

Also, if you know of anyone who is a former participant but is not receiving copies of *JCCP NEWS*, or anyone who wishes to update his/her contact information, we would appreciate it if you would forward this message and the attached form to that person.

## Announcement

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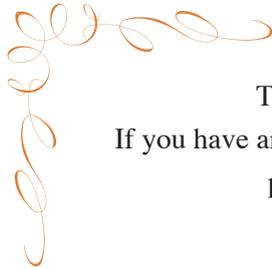
# Please Send Us a Message as Alumni

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Future issues of *JCCP NEWS* will feature a new section for messages from alumni. Please send us the latest news about what you are up to or photos that you wish to share with others. The Planning & Public Relations Group looks forward to hearing from you.

Thank you for your cooperation.

Akio Yamanaka, General Manager, Planning & Coordination  
Masumi Kitahara (Ms.), Manager, Planning & Public Relations



Thank you for reading *JCCP NEWS*.

If you have any comments or feedback about this newsletter,  
please free to contact us by e-mail.  
Your feedback is appreciated.

Planning & Public Relations Group, Administration Department  
E-mail: [planning@jccp.or.jp](mailto:planning@jccp.or.jp)



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### Editorial Postscript

I am pleased to send you the latest issue of *JCCP NEWS*.

This issue contains a special message from Mr. Asaad Ahmad Al-Saad, CEO of Petrochemical Industries Company. We asked if he would contribute a message, even knowing he would probably be busy so soon after his appointment as CEO, but he was generously quick to respond to our request. His warm and friendly personality shines through in his words and photo. We are honored that he still looks back at his training experience in Japan as a fond memory.

In Kuwait, large personnel changes were made this past May, and many JCCP alumni, in addition to Mr. Al-Saad, have been appointed to important posts in national oil companies in the country. It is a source of pride to those of us at JCCP to see people who participated in JCCP training programs in the 1980s and 1990s build their careers and rise to responsible management positions in the oil industry in their countries. We hope to continue tracking the careers of our alumni and introduce their recent positions through special messages.

*JCCP NEWS* is issued three times a year in Japanese and English. Articles are written mostly by the staff of the Training and Technical Cooperation Departments, but as they are often away on offsite training sessions or visits to oil-producing countries, their manuscripts do not always come in as scheduled, and we end up worrying about whether we can publish each issue on time. However, our editorial team is dedicated to making concerted efforts to deliver news about our activities to as many people as possible through *JCCP NEWS*, and thus we ask for your continued support.

Masumi Kitahara  
Planning & Public Relations Group  
Administration Dept.



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