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

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

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

Meeting on future cooperation with Abu Dhabi University

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 Arii, Training Dept.>