

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



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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-



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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