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Report on Research Trip
to Chiyoda Corporation (Yokohama)
on Jan. 7-9, 2015

Reported by Khusniddin Alikulov (M2)

Introduction

Chiyoda Corporation is one of the frontrunner corporations in Japan. It started its business activities in 1948 on petroleum refining, gas processing and petrochemical fields. In the 1960's, Chiyoda expanded its projects globally with the introduction of environmentally clean technology dissemination for sustainable development.

Figure 1: Solar-assisted clock in Yokohama

The corporation has several subsidiaries and affiliated companies locally and overseas, i.e., Chiyoda Kosho Co., Ltd., Chiyoda Kosho Co., Ltd., Chiyoda TechnoAce Co., Ltd. Arrow Business Consulting, Chiyoda Almana Engineering LLC, CHIYODA-CCC ENGINEERING (PTE.) LIMITED, to name a few. According to the wide-ranged business activities, the Chiyoda Corporation recruited almost 7,700 employees, i.e., Consolidated 6,062 people, and Non-Consolidated 1,630 people as of March 31, 2014.

Figure 2: One of showplaces in Yokohama

Figure 3: Nippon-Maru at Minato Mirai (Yokohama)

Background

Since Chiyoda Corporation had developed petroleum business in diverse spheres, challenging on renewable energy dissemination is also became one of top issues with development of different sources (e.g., Concentrating Solar Power (CSP) Systems with Molten heat storage, Photovoltaic (PV) Power Plant, Hydrogen supply chain concept using SPERA HYDROGEN™ and others) ("Green Energy | Technology | CHIYODA CORPORATION," n.d.).

Based on the initial request from Graduate School for International Development and Cooperation (IDEC) to Chiyoda Corporation (i.e., Business Development Unit 3 – Solar Thermal Energy Business Development Team), main issues of the research trip was the elaboration of research activity and business ties between Japan and Uzbekistan in the field of CSP dissemination. CSP with molten heat storage system is one of the mature business sections of the Corporation ("Concentrating Solar Power Plant (CSP) | Technology | CHIYODA CORPORATION," n.d.).

Figure 4: HQ of the Chiyoda Corporation

Date and Venue

January 7-9, 2015, Assoc. Prof Osamu Higashi and I, Khusniddin Alikulov had research and business elaboration trip to Chiyoda Corporation held at its headquarters (HQ) in Yokohama City, Japan.

Objectives

1. Elaborations of research work in cooperation with Solar Thermal Energy Business Development Team of the Chiyoda Corporation. Particularly, Technical discussion and visit to the Demonstration Plants of the Corporation.
2. Development of business ties between Chiyoda Corporation (Japan) and International Solar Energy Institute (Uzbekistan) for CSP dissemination in Uzbekistan.

Activities

Day 1 (January 7, 2015):

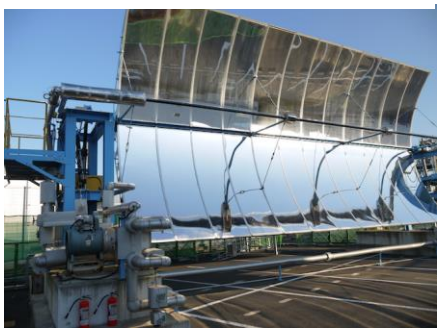
After arriving in Yokohama city, Mr. Hiroshi Nakamura, General Manager of the Solar Thermal Energy Business Development Team, warmly met me, and Assoc. Prof Osamu Higashi. Afterwards, we headed for HQ of the Chiyoda Corporation to begin discussion on the mentioned objectives. Since we arrived in Yokohama city afternoon, the meeting and discussion started in the afternoon. First, Associate Prof. Osamu Higashi had presented comprehensive information about the IDEC, its divisions and departments, and JDS project. Afterwards, staff of the Chiyoda Corporation made a short presentation about the Chiyoda Corporation, its establishment, organization, and Business Development Unit 3.

Day 2 (January 8, 2015):

The second day of the research trip started at 9:30 AM with a presentation of Project Manager, Danny M. Danzuka. He explained the core structure of CSP with molten heat storage system and Chiyoda Corporation's cooperation with Archimedes (Italy) on CSP project development.
After his presentation, I presented my three presentations: State Joint Stock Company (SJSC) "Uzbekenergo", International Solar Energy Institute (ISEI), and my research work: Development of Hybrid Solar-Assisted Energy Systems in Power Industry of Uzbekistan.

Figure 5: SPERA HYDROGEN Demo plant

Figure 6: PT collector Demo Plant



The afternoon session was dedicated to field trips on: parabolic trough collector and SPERA HYDROGEN™ Demonstration plants.

Figure 7: Electric drive car of the Chiyoda Corporation

During the field trip, three interesting points inspired me: smart electric drive car of Chiyoda, the environmentally novel hydrogen plant, and the latest parabolic trough (PT) collector. Many thanks to Mr. Satoshi Moriyama and Dr. Eng. Shinichi Nakata for their extensive explanation of green technologies. Since my research work emphasizes on parabolic trough collector, I was aware about the CSP technology. However, knowledge about the SPERA HYDROGEN™ Demonstration Plant was novel information for me. The plant outlined state-of-the-art design and sophisticated scheme. In my opinion, in the near future we may visit new power plants, and other equipment, which will be replaced by hydrogen energy too.

Day 3 (January 9, 2015):

The last day of the research trip's schedule was only in the morning and began at 9:00 AM. I, along with experienced staff of the Business Development Unit 3 had discussion session related to my research work. In the session, we discussed several factors that affects to parabolic trough collector's efficiency (e.g., optical efficiency, soiling conditions, and others). Moreover, we discussed feasibility study on dissemination of parabolic trough collector.

Figure 8: One of electric-powered cars in Yokohama

Results

During research trip in the Chiyoda Corporation and other facilities, I acquired useful knowledge about the CSP technology, Hydrogen Technology, and Chiyoda's activities. I learned about feasibility study conduction under supervision of the Business Development Unit 3. Furthermore, I, along with, Associate Prof. Osamu Higashi, and Solar Thermal Energy Business Development Team developed initial business ties between the ISEI and Chiyoda Corporation.

Acknowledgement

I express my gratitude to Associate Prof. Tran Dang Xuan, Associate Prof. Osamu Higashi, and JDS budget for supporting the research trip to Chiyoda Corporation. Furthermore, many thanks to Solar Thermal Energy Business Development Team, especially to General Manager Hiroshima Nakamura for his time and organization of very interesting and useful research trip in Chiyoda Corporation.

Reference

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