Students and young researchers interacted at Taisei Technology Center.

Theme: What Is Appealing and Promising About the Construction Industry

We invited eight students to Taisei Technology Center on April 10, 2008 to have a time of interaction with them, as part of our efforts to let students who will play leadership roles in the next generation know more about the construction industry.

The tour of the Technological Center that took place in the morning led the students through our experimentation and other facilities, introducing them to various construction technologies. Then, in the afternoon, the students exchanged opinions about what the appeal of working in the construction field is and about the future of the construction industry with eight of the company's young researchers and other Taisei employees from the Corporate Planning Department, Personnel Department, Legal Department, and Environmental Management Department.

>Students who participated in the tour of the Technology Center and exchange of opinions

Mr. Kunio Okura, Graduate School of Commerce and Management, Hitotsubashi University
Ms. Sana Okada, Graduate School of Global Environmental Studies, Sophia University
Mr. Tetsuya Osada, Graduate School of Engineering, Yokohama National University
Mr. Hideki Kikumoto, School of Engineering, The University of Tokyo
Ms. Mika Kuwahara, Graduate School of Engineering, Yokohama National University
Mr. Kota Goto, Faculty of Economics, Sophia University
Mr. Haruhiko Sato, Graduate School of Science and Technology, Keio University
Ms. Yumiko Tannai, Graduate School of Global Environmental Studies, Sophia University

* Titles omitted below.

The following are the opinions exchanged:

● Technological capabilities of construction companies

Okura: I understand that your company develops many construction technologies to reduce environmental impacts. However, I think that buildings can have more adverse effects on the environment while in operation phase than at the construction phase. What initiatives do you have to reduce negative impacts on the environment after construction is finished?

Taisei: We innovate many energy-saving technologies into the design of buildings to reduce operating energy. As buildings are normally used for very long periods of time, usually 60, 100, or even 200 years into the future, we believe that they need to be designed from a long-term point of view. In addition, given the fact that how you use buildings affects how much of an effect they have on the environment, we are thinking of introducing a system that will enable us to propose how buildings should be used.

Tannai: I think that buildings can have considerable negative effects on the environment even after they are demolished. Are you conducting any research into recycling and reuse technologies?

Taisei: We are conducting research to develop technologies to recover aggregates such as gravel, from concrete for reuse since aggregates, normally obtained from rivers or by breaking mountain rocks, are beginning to deplete gradually. We also recycle steel products. Moreover, mud arising from construction work, which was mainly used as landfill materials in the past, is becoming increasingly recycled.

Kikumoto: The Technology Center which we visited in the morning uses an under-floor air conditioning system. What are the pros and cons of under-floor air conditioning?

Taisei: The under-floor air conditioning system provides a gentle flow of air from the whole floor surface. In fact, this type of air conditioning is more efficient than overhead systems, particularly in open ceiling rooms, resulting in energy being saved. No disadvantages in particular have been identified yet.

Okada: You commenced manufacturing of bio-ethanol in 2007. What made you decide to use construction waste wood as a source material for bio-ethanol fuel? Does this have anything to do with an increase in waste?

Osada: At present, you use construction waste wood as a source material for bio-ethanol fuel. But is there any risk of your company starting to cut trees for this purpose in the future?

Taisei: We started this project because we wanted to make effective use of construction waste wood, which used to be incinerated. Although one of the best applicable sources for bio-ethanol is agricultural products, such as corn, we do not believe that it is realistic to use them as raw materials in Japan, given the country's low food self-sufficiency ratio. This is why we decided to manufacture bio-ethanol using a raw ingredient other than agricultural products, established a project company together with other companies, and constructed the necessary facilities. Given the fact that the world is short of food, it is likely that cellulose-derived ethanol, like our bio-ethanol, will become mainstream in the long run. As large amounts of waste wood and thinned wood are arising at the moment, we never cut down forests to produce bio-ethanol. However, it is true that there is a possibility of a future decrease in these ingredients.

Sato: Generally speaking, society seems to welcome greening the most as a measure to alleviate the heat island effect even though there are many other effective methods, including using water-retentive building materials and increasing heat reflection. What do you think about this?

Taisei: We make proposals as to how to address the heat island effect after carefully comparing different aspects, such as initial costs, maintenance, and comfort. Although landscape-planting does give a pleasant appearance, it is sometimes structurally difficult to add greenery. So we make customized proposals to identify the most appropriate method in each case.

Goto: Many materials are carried in at the construction phase. Do you have any special method to reduce environmental impacts associated with the transport of materials?

Taisei: We are striving to optimize our logistics. For example, we gather materials at a center and then transport them to respective construction sites in effective units, rather than simply transporting individual materials to construction sites directly. We are also considering modal shifts to rail and sea.

Kuwahara: A great deal of research is being done into energy saving among various industries in response to intensifying global warming. Are you working in cooperation with other companies in the industry that share the same goals with you? Do you provide technologies to developing countries?

Taisei: We are working to share information with other companies through exchanging views at occasions like subcommittee meetings of academic associations. However, as it is essential for private companies to remain competitive, we need to have our own distinctive ideas, which we can protect and use as our intellectual properties. We feel that we will be required to provide environmental technological support from a broader point of view in the future. Although we have not provided much support to developing countries yet, we have made technological proposals concerning soil remediation.

● Working environment of researchers

Okura: I understand that female researchers are fewer than male. Could you tell me about the working conditions of female researchers, for example their career progression and personnel evaluations?

Taisei: As public interest in the working conditions of women has grown in recent years, we have also established a section dedicated to provide support for female workers, which runs interviews with front-line working women on the website and conducts hearings with female employees about problems that they face in carrying out their work duties. Although employees are supposed to turn to their bosses for help when they have work problems, we feel that the section acts as a point of contact with which female employees can consult about whatever they want and this helps female employees achieve personal development. As their working conditions are improving, more and more women are beginning to work in actual construction sites. At the same time, systems are being developed to allow male employees to take leaves of absence for childcare and spouse childbirth. We also have a question to ask male students: Do you want to take childcare leaves when you have a family in the future?

Sato: Depending on my wife's situation, I think I would want to take childcare leaves.

Okada: I hear that you are beginning to conduct more operations overseas. What is the secret to maintaining good relationships with local people?

Taisei: First of all, it is essential to be aware that people in different cultures work in different ways. A good solution may be to meet each other halfway by making concessions. We have had interactions with students from overseas and learned that we can reach each other and establish good relationships that help us want to make concessions to further improve the relationships by having good talks to understand each other, as we are all human beings. I believe that this is also true for the world of business.

● What is appealing and promising about the construction industry

Taisei: How did you like today's tour?

Tannai: My impression was that good communication had been established between the civil engineering and building engineering sections. This is due, at least in part, to the renewal of the main building of the Technology Center that seemed to be designed to facilitate communication. The tour has shown me how wide a range of activities the construction industry covers. I look forward to seeing further expansion in the future. I think that the construction industry can further enhance its social raison d'etre if it succeeds in creating a good balance between natural and urban environments.

Goto: As for the technological aspect, we heard about how cutting-edge construction methods, like earthquake base isolation, contributed to reducing disaster damage. I think that efforts should be made to increase public awareness of the significance of these technologies in order to bring them into wider use.

Kuwahara: Interacting with the company's employees has shown me how well they can communicate with each other, irrespective of age differences. Today's tour has introduced me to technologies and facilities that I had never seen before. It was all a new experience to me. I was also surprised to find out that the activities of the company cover not only buildings, but also plants and many other things. I would like to continue to pay close attention to new products and technologies in the future.

Osada: I had been associating general contractors with a sports club type mentality. But participating in today's tour changed my perception of them. As an accumulation of many different technologies is sure to produce major results, I expect you to also continue with minor technological innovations.

Okura: I was impressed by the confident way in which the company's researchers were conducting research. Although I had had negative feelings about general contractors, it was an eye opening experience for me to see the company's employees working with enthusiasm. It was also a revelation to find out that Taisei carries out R&D of the creation of aquatic ecosystems overseas. I hope that your environmental conservation efforts will grow into a major part of your business in the future.

Okada: Now I understand that general contractors offer many advantages to society. I hope that you can spread the word about this to more people. I would like to propose that you put more effort into gaining support and understanding from consumers in general.

Kikumoto: Given that the construction industry is quite mature, it may be difficult for the industry to achieve any dramatic growth in the future. Even so, I think it is still the case that it fulfills the important role of building infrastructures for society.

Sato: I think that the construction industry needs to visualize its effects on society as the builder of social infrastructures, so that the general public can see them.

Taisei: Thank you very much for spending so many hours with us today.

Taisei Corporation has held Stakeholder Dialogues several times in the past, mainly with external experts. We have been particularly looking forward to this exchange of opinions, thinking that we would be able to hear fresh ideas and views from students who will play leadership roles in the next generation. Over the past few years, the construction industry has been undergoing dramatic changes. All the opinions you have given us today were very helpful to us. And will put them to use as we work in the industry that is making concerted efforts to look for effective ways of developing appealing construction companies.