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- The First KIT Thai Student Alumni/Alumnae Reunion

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# Academic Field of Engineering Design “Monozukuri” An Expansive Approach to Engineering

**MATSUNO, Kenichi**

Head of the Academic Field of Engineering Design  
Professor of Mechanical and System Engineering,  
Graduate School of Science and Technology

Kyoto Institute of Technology (KIT) reorganized in 2006, combining two undergraduate faculties, to enable more organic relationships among our educational and research bodies. The Undergraduate and Graduate Schools of Science and Technology are composed of the three academic fields: Materials and Life Science, Engineering Design, and Design Science. The field of Engineering Design, which I head, is subdivided into four “Monozukuri” or manufacturing programs which stem from our previous engineering-related departments.

Organizing a university into academic fields is unusual and you will be hard pressed to find departments calling themselves Engineering Design in other universities in Japan. Compared with conventional programs, Engineering Design at KIT focuses on a more comprehensive and penetrating approach to engineering. We stress that in creating something, it is essential to have concrete planning and concrete design concepts in place before taking action. After a design becomes a product, an evaluation is necessary to eliminate glitches in functionality. All aspects of this process are interconnected, and every evaluation becomes meaningful feedback when reexamined at the planning, designing and production stages. Planning must encompass design and production. It is meaningless to plan to develop a flying car, for example, if the plan can not be realized. In addition to technical obstacles, cost is an important consideration.

The aim of our academic field is to nurture human resources who can bring innovative projects to fruition and who have an understanding of and can oversee the entire process from planning, to design, production and evaluation. It goes without saying that our graduates have the knowledge and techniques to accurately create a product from a plan. The edge KIT engineering students have over students at other programs is their mastery of comprehensive planning, valuable product development experience and a highly specialized knowledge of the intellectual processes involved in the design

to manufacturing process. More than this, they know at an intellectual and a practical level, about product demands, why they exist and how to meet them.

The four educational research fields composing Engineering Design cover the spectrum of industrial needs: Electronics develops new electronic devices, Information Science innovates computer or information processing technologies, Mechanical and System Engineering develops versatile machinery, equipment and systems and Design Engineering and Management comprehensively develops manufacturing through the fusion of design, management and engineering. Areas of specialization differ but all programs provide an understanding of manufacturing, expanded through numerous experiments and much research. In our practical curriculum, students work cooperatively with industry under a program which has received the “Good Practices in Education” designation from the Ministry of Education, Culture, Sports, Science and Technology, for its unique contribution to community revitalization.

In addition, we encourage students to participate in international conferences, thereby nurturing young people for work in international environments. Again to this purpose, Japanese and international students are studying together in many of our research laboratories.

The intense work load of our students demands they quickly develop time-management skills. As head of Engineering Design, I am proud to see the majority persevere and gain acceptance to graduate schools or find lucrative employment. I will continue to provide support for students and instructors and hope students will make time in their future work schedules to visit the university from time to time after graduation. I have no doubt our graduates will look back with pride on the grounding they receive in Engineering Design.

Academic Field of Engineering Design	School of Science and Technology	Graduate School of Science and Technology	
	Undergraduate Program	Master's Program	Doctoral Program
	Electronics	Electronics	
	Information Science	Information Science	
	Mechanical and System Engineering	Mechanical and System Engineering	Engineering Design
	Design Engineering and Management	Design Engineering and Management	



When the grandson of Japan's 59th Emperor, Uda, constructed the scenic Hirosawa Pond around the year 990, could he have envisioned the research center that would someday be located nearby? The *Drosophila* Genetic Resource Center, located at the KIT Saga Campus, a stone's throw from the pond, was established in 1999 as Japan's only Ministry of Education appointed research facility of *Drosophila* genetic resource. Later in 2002, the center became a core institution of the Ministry of Education, Culture, Sports, Science and Technology designated National Bio-Resource Project (NBRP).

*Drosophila* has been used in genetic research for a century and is an excellent genetic resource whose information sheds light on the function of all organisms. What we refer to as genetic stock is a strain with particular genetic characteristics stable in maintaining a mutation from generation to generation. It consists of a genotype which has a certain combination of mutated genes. Currently, 25,000 different live *Drosophila* stocks, the largest number in the world, are maintained in this center. We accept stock

maintenance requests from any research institute in the world and after rigorous examination and inspection, agree or decline. Increasing our stocks enables researchers all over the world to use these *Drosophila* stocks. We are also providing this live research material to researchers in the United States, Europe, India, China, Japan and other countries.

Why maintain such a large number of stocks? This is to further human understanding of the mechanisms of life at the genetic level. We have observed several curved wing mutations in *Drosophila*. They prove that normal straight wings are produced by a gene combination, not a single gene. Therefore, by pinpointing what is abnormal about the curved wings, we can demonstrate which gene is functioning in what way. For this reason, the greater the number of stocks, the larger the pool of information. The sheer volume of information works to our advantage. By explicating the function, we learn how normal straight wings are formed; the mutation informs us of normal function. Because humans share 70% of genes with *Drosophila*, this research has useful applications to medical and pharmaceutical sciences.

## Genetic Resource Development; the *Drosophila* Legacy

### YAMAMOTO, Masa-Toshi

Professor and Director of *Drosophila* Genetic Resource Center  
Director of Genetic Resource Curator Educational Development Center  
Professor, Graduate School of Science and Technology



In basic biological research, it is important, we believe, to carefully observe and holistically understand the organisms we use. We assign a higher priority to understanding interesting biological phenomena found in insect reproduction, diapause, and symbiosis than in the fields of medical, pharmaceutical or agricultural sciences. Only after achieving this understanding, do we make the best possible use of our findings in ways that improve the quality of life for the human population.



Stock maintenance



Model of *Drosophila* with curved wing mutation

In this sense, I feel it essential to continue to upgrade research facilities and human resources with which we can provide consistent and high level care for these creatures. Today, in the era of post-genome research, an increasing number of laboratories study non-living materials. They study mostly DNA or proteins and have few opportunities to come in direct contact with intact living systems. I doubt that true understanding or knowledge about organisms or life phenomena can be acquired in such a research environment. "Upgraded human resources" must be those whose future organism research ensures a practical response to the "Cartagena Protocol on Biosafety" which protects natural diversity from the potential encroachment of biotechnology. At the *Drosophila* Genetic Resource Center, we take utmost care in maintaining the stocks entrusted to us. As Japan's only research institute of this kind, we use them to further our research and we preserve this living "*Drosophila* legacy" for the use of researchers all over the world.





### Li, Jun

- ① China
- ② Doctoral Program of Applied Science for Functionality (02)
- ③ Associate Professor, Qingdao Technological University

At KIT I obtained useful, highly-specialized and first-hand knowledge of the attitudes and approaches necessary to research. If I had it to do over again, I would again choose to attend KIT. The reputation of KIT is sure to gain widespread recognition as the achievements of distinguished alumni/alumnae are acclaimed. Continued support of this network will in turn, work to elevate the international name value of KIT.



### Kim, Myung Ran

Agreement Coordinator for the University of Suwon

- ① Korea
- ② Master's Program of Design (87)
- ③ Professor, Dean of Design Department, The University of Suwon

KIT's cozy atmosphere and close personal relations are its strength. I have good memories of our study tour to Shikoku and international student parties. My suggestions for improvement involve taking a more active approach to publicizing KIT abroad, by increasing Internet access to professor and student activities and offering more detailed and informative explanations of the academic majors offered at KIT, on the Internet.



### Koo, Kang

Agreement Coordinator for Yeungnam University / Key Station Chair in Korea

- ① Korea
- ② Doctoral Program of Materials Science (93)
- ③ Professor, School of Textiles / Yeungnam University

I remember KIT as a small university where everyone seemed to know each other. A system whereby alumni/alumnae of KIT can introduce new students is needed. I feel increasing the reputation of KIT abroad is our role as former students.



### Kim, Bok-Kyong

Agreement Coordinator for Sila University

- ① Korea
- ② Doctoral Program of Applied Science for Functionality (98)
- ③ Professor, Division of Communication Design Sila University

I remember enjoying the visits to art museums and seminars I took with Japanese friends as a student. I hope that today's seminar will further close ties between Korea and Japan.



### Lee, Kuei Chi

- ① Taiwan
- ② Doctoral Program of Applied Science for Functionality (93)
- ③ Professor / Chairperson, Chinese Culture University

The consistently diligent attitude I learned to take toward my studies at KIT has proven useful in my working life. Please make a KIT promotional DVD for potential international students. We alumni/alumnae, and particularly the ones of us who are now professors, could make use of such a tool to spread the word about the benefits of a KIT education. I hope to increase the number of international students from Taiwan at KIT.



### Lo, Eric

Key Station Chair in Taiwan

- ① Taiwan
- ② Master's Program of Architecture and Design (92)
- ③ Manager, The Formosa Black Tea Co., Ltd.

Tradition and innovation are what make KIT the great school it is. Encouraging new techniques and designs to grow out of a strong academic grounding in traditional design elements is an effective approach to teaching design. If you are looking to increase the number of outstanding international students, it is necessary to get the word out about "the KIT difference" to as many prospective students as possible.



### Tsao, Yung-Chin

- ① Taiwan
- ② Doctoral Program of Applied Science for Functionality (97)
- ③ Chairman, Department of Industrial Design, Tatung University

I was delighted to have this opportunity to meet international graduates from KIT. This seminar benefited us with a personal network. The friendships forged here will prove an asset to us and to KIT. I urge you to improve the interface of the KIT website home page as this is the first place prospective students go, to learn more about this institution.



### Pham Thien Ngoc

- ① Vietnam
- ② Doctoral Program of Applied Science for Functionality (96)
- ③ Associate Professor, Dean of Postgraduate Department, Vice Dean of Biochemistry Department, Hanoi Medical University

KIT has a sincere, professional staff who work with foreign students. Professors and Japanese students were very kind to me. Conditions for studying and researching in KIT involve close personal contact and sophisticated technology. We former students have now become leaders of study and research in Hanoi Medical University. What we have accomplished is certain to show KIT in a positive light in my country.



### Ta Thanh Van

Agreement Coordinator for Hanoi Medical University / Key Station Chair in Vietnam

- ① Vietnam
- ② Doctoral Program of Materials Science (99)
- ③ Associate Professor / Vice Chair of the Dept. of Chemistry and Biochemistry Hanoi Medical University

During my Ph.D course at KIT I was trained in a number of biochemical technologies which are now indispensable to my research. In addition, I learned many things from my friends about culture and language. The KIT Journal should reserve space for information about former students in various countries including their background, published and current work, and future projects. This would help to increase KIT's reputation abroad.



### Dang Thi Phuong Thao

- ① Vietnam
- ② Doctoral Program of Applied Science for Functionality (08)
- ③ Head of Department of Molecular and Environmental Biology University of Natural Sciences, Vietnam National University - Ho Chi Minh

By soliciting the views of non-Japanese students, the seminar gave me the impression that KIT is considerate of and concerned about international students. KIT is working to strengthen the impact of its international appeal by considering the opinions of former international students. I feel certain KIT will act on the recommendations concerning ways to get more international students.

# Valuable Feedback from Former KIT International Students

Brainstorming active approaches to autumn master's program enrollment expansion, flexibility in undergraduate admissions and curricula

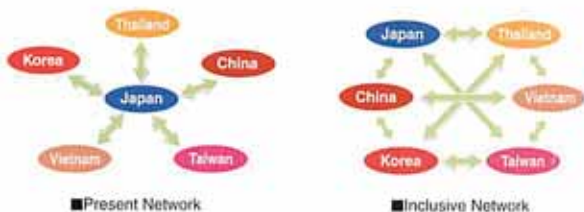
The International Seminar on "Autumn Semester KIT Entrance" was held at KIT, February 17th and 18th, 2009. Seventeen KIT alumni/alumnae from China, Korea, Taiwan, Thailand and Vietnam who fill important roles in their universities and commercial enterprises, participated in this brainstorming session. Some participants work as coordinators between KIT and research institutions in their home country. They are affiliated with the Agreement for Academic Exchange, and serve as Key Station Chairs of the KIT International Academic Exchange Club. Valuable input from the participants during the general debate session included suggestions on ways to publicize KIT abroad and attract top students to our expanded autumn intake. Each participant shared information about specific programs in their fields of specialization and research. We are pleased to publish these warm, sincere participant comments. Through this valuable feedback, we confirmed that support from our former international students is an essential factor in KIT internationalization and diversification.



**Sompong Ngamsangrat**

- ① Thailand
- ② Master's Program of Design (90)
- ③ Freelance Writer

I advise you to move away from the view of Japan and KIT as the hub of a wheel and encourage an interconnected, pan-Asian international alumni/alumnae network. (see: Inclusive Network Diagram)



**Saikwan Trisunan** Key Station Chair in Thailand

- ① Thailand
- ② Undergraduate Program of Applied Biology, Faculty of Textile Science (96)
- ③ Director, Chai Thai Silk Co., Ltd.

I have learned many things about the silk worm and now I can use it in my work. Beside that I learned many good things from Japanese culture. Today, I am happy to know that KIT is confidently approaching foreign students. I think distributing the KIT Journal is a good idea. Maybe you could add more messages from students who are in the school now.

① Country/Region ② Major at KIT (Graduation Year) ③ Present Position



**Liu, Xiaomin** Key Station Chair in China

- ① China
- ② Doctoral Program of Information and Production Science (93)
- ③ General Manager, Radixsoft Co., Ltd.

KIT professors conduct sophisticated, state of the art research and teach students enthusiastically. Now that we former international students of KIT are devoted members of the working world, it is time to give something back to our alma mater. I make it a habit to read the KIT Journal. I am impressed to read about professors' current research and enjoy exploring these topics on the Internet.



**Chen, Bill**

- ① China
- ② Doctoral Program of Information and Production Science (95)
- ③ General Manager, Haso Soft Co., Ltd.

I find the Information Technology I mastered at KIT indispensable to my work every time I hold corporate IT training of personnel, conduct problem analysis or summarize conclusions. Today I enjoyed spending time with professors, staff and students and meeting international students I hadn't met before. I often hear from Japanese people that KIT is a highly respected institution in Japan. I am proud to have studied there.



**Wang, Jian**

- ① China
- ② Master's Program of Mechanical and System Engineering (92)
- ③ General Manager, JAPAN KUBOTA Corp. Suzhou Representative Office

Beyond academics, I learned much about Japanese society and lifestyle choices that has been useful in my work and post-graduate life. Today I was pleased to meet the very professors who meant so much to me at KIT and students from other countries in Asia. KIT would benefit from supporting periodic gatherings of alumni/alumnae with KIT professors and create a gathering of pan-Asian KIT alumni/alumnae.



**Lu, Xing-Meng**

- ① China
- ② Doctoral Program of Applied Science for Functionality (95)
- ③ Professor, Laboratory of Invertebrate Pathology, College of Animal Sciences, Zhejiang University

The friendships I formed with Matsumoto-sensei, other professors and students are invaluable. Through my Kyoto host family, I made friends with many people and deepened my understanding of Japanese history and culture. I am delighted to visit KIT for the first time in 12 years. I would like to see successful KIT international alumni/alumnae establish a scholarship fund to sponsor promising international students at KIT.



**Gu, Jianhong**

- ① China
- ② Master's Program of Applied Biology (96)
- ③ The supervision, Fenghuangshan Administration of the Hangzhou West Lake Administration Committee

When I remember my time at KIT, I am thankful for the guidance of my professors. Another memory that surfaces is the patience and kindness of the staff of the International Affairs Office. I always have a nostalgic feeling on reading the KIT International Journal. I would like to see the journal cover the current situation in greater depth.



## KIT President Hosts Social Gathering

KIT President, Dr. EJIMA Yoshimichi, hosted a social gathering on December 19, 2008 to promote mutual friendship among international students, international researchers and well-wishers of KIT. The guests hailed from foreign consulates in Japan, municipal offices in Kyoto and supporting organizations for international students. The party commenced with the university song performed by the KIT symphony orchestra. Following President Ejima's opening address; the Consul General of the People's Republic of China in Osaka gave a speech which was warm and encouraging for international students.

The large turnout of 223 guests included 14 government and community representatives, 117 international students and international visiting scholars, Japanese students and KIT staff. Musical and choral performances in various languages on the part of international students received an enthusiastic response from the audience. Two, soon to be graduates of our undergraduate and doctoral programs, closed the festivities by recounting their experiences and voicing words of appreciation.



## International Student Study Tour

A group of thirty-nine international students and one Japanese student participated in a field trip on February 23 and 24, 2009. Four KIT staff joined the party as well. Each year, international students visit different places in Japan to gain firsthand experience of Japanese traditional customs and cutting edge technologies. On this occasion, they traveled to Kanazawa City and the surrounding area.

On the first day of the trip, they visited Tojinbo (25 meter high, sheer sea cliffs) and the Museum of Origami (traditional Japanese art of paper folding) on the way to the Traditional Handicraft Village YUNOKUNI NO MORI. They also had a chance to experience Japanese-paper-making at Yunokuni no Mori. For most international students it was the first time to learn Japanese paper making. Everyone was smiling and absorbed in making Japanese paper in spite of their shock at the cold water.

On the second day, they visited Kenrokuen Garden (one of Japan's three most beautiful gardens) and the 21st Century Museum of Contemporary Art after a stop at Myoryuji Temple, the "Ninja Temple." At the museum of art, students wandered on their own, each according to his or her interest. They appreciated the latest in Japanese modern art and were moved by the work they found on display.



## The First KIT Thai Student Alumni/Alumnae Reunion

KIT International Academic Exchange Club members, including former KIT international students from Thailand, held their first meeting in Bangkok. On November 22, 2008 the booth at the Japan Education Fair organized by the Japan Student Service Organization (JASSO) was wonderfully enhanced by the presence of these professionals with first-hand experience of KIT who reminisced about their time on our campus with Vice President Kurugi, Associate Professor Kamei and International Affairs staff. Constructive criticisms and praise from a Thai perspective were welcomed by our faculty who were pleased to find the former students from Thailand felt the promise of a great future for KIT-Thai relations. Former KIT students were reunited with their former professors and alumni/alumnae from various years found they had much to discuss even though they were meeting for the first time.



### Feedback Welcome

Thank you for reading the KIT International Journal. Please send comments, questions and/or suggestions to: **email: [ab7128@jim.kit.ac.jp](mailto:ab7128@jim.kit.ac.jp)**

### Join the KIT International Academic Exchange Club!

This club is a global network for international academic exchange. Its members include current and alumni/alumnae international students, researchers, and members of partner institutions involved in academic exchange with KIT. The club was founded to enable KIT to contribute to academic development and promote science and technology internationally. For detailed membership information, please visit the KIT website:

[http://www.kit.ac.jp/english/01/01\\_080000.html](http://www.kit.ac.jp/english/01/01_080000.html)

### International Affairs / Student Exchange Advisor

We handle the administrative tasks of the International Exchange Center. Please feel free to contact us.



### A Message from the Editor: KUSHI, Katsuhiko (Professor of Architecture and Design)

Cherry blossoms have announced the arrival of spring in Kyoto as this issue featuring feedback from our international graduates, goes to press. Many KIT graduates, especially former international students, may have fond memories of the cherry trees along Takano River. In the time it takes for this to reach you, the trees will have unfurled luxuriant foliage. I hope, if only for a moment, the journal will serve to reconnect you with KIT and fond memories of Matsugasaki, Kyoto in spring.



### Cover photography: Ms. FU, KitMing

International Student from Hong Kong  
Master's Program of Architecture and Design