


National Taipei University of Technology

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## Special Report

### Taipei Tech delivers entrepreneurs
### National Taipei University of Technology graduates take top spots in employer polls, innovation contests

by Vallaurie Crawford

President Yao Leeh-Ter isn't kidding when he calls his school "an incubator for entrepreneurs": industry is clearly eager to hire his graduates. Cheers magazine declared this year that Taipei Tech graduates are the favorites of Taiwan's top 1000 enterprises, while Global Views Monthly ranked it as a top graduate school, and Commonwealth called it the best tech university.

What makes these graduates so outstanding? President Yao says, "Our students need to do practical things, as our school emphasizes hands-on practice." Taipei Tech matches every fundamental course with a lab course, so students are able to test their understanding of theory with practice. This is the advantage that a technology university has over conventional universities, the president says. "University of technology students need to do practical things, especially graduate students. Seventy-five percent of our graduate students come from regular universities, but many of them say that in their previous four years they learned nothing useful, and that they want to learn practical things before they graduate and find a job."

All students complete industry internships with businesses before graduation as well, and these internships often turn into job offers.

Taipei Tech professors are just as motivated to innovate as their students are. President Yao says, "We ask our professors to go into business settings to solve problems." Professors' projects for industry count as one-third of their research credits for promotion, so Taipei Tech is clearly not an ivory tower of scholarship set apart from the world.

These partnerships extend far beyond Taiwan, and Taipei Tech's global vision comes from the top. "I don't see any boundaries around the world, so if we can globalize our teaching and research, I believe my faculty and students would benefit from this," President Yao says. "Most of our graduates eventually work abroad, so I want my students to have an international perspective."

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The students come from 35 countries, notably for six all-English graduate programs. “We do our best to recruit as many international students as possible, and we are encouraging every department to invite an international chair professor to teach. So far we have invited more than a hundred international professors this year. While it is very costly, I think it is a way to give our students international perspectives."

The Taipei Tech brand opens many doors to interns and graduates, not least because alumni make up 10% of all founders, board directors and CEOs of Taiwan stock companies. Alumni help their school with guidance through the Taipei Tech Alumni Elite Union and 26 other alumni groups (11 in Taiwan and 15 abroad), so successful alumni provide students with role models from day one. These alumni go beyond being examples; they are generous with funding to help students build their visions. The alumni-funded Taipei Tech Innovation Company provides an “angel fund” to help professors, students and alumni pursue their research and start up their own businesses.


Window of Design

President Yao says Taipei Tech is "the first university in Taiwan to offer an Innovation and Entrepreneurship program, and we have many donations from alumni to financially support our students’ inventions by funding material and travel expenses if they want to participate in international competitions.”

The results of this “incubator for entrepreneurs” are clear: Taipei Tech students rank #4 in all of Asia in terms of Reddot awards for product innovation, and they won the “Best of the Best” Reddot awards again in 2010 and 2012. Beyond the student level, Taipei Tech was the only school to win this year’s national innovation award, and it was also ranked as the #1 “paradigm technology university” by the Ministry of Education.

"We want to be the best partner for small and medium-sized industry,” the president says. “As the second-oldest university in Taiwan, we have developed close relationships with businesses, especially with the enterprises of our alumni."

President Yao has a lot of history with his university: at age 15 he joined it as an undergraduate, and he returned from two periods of U.S. graduate studies to teach for twenty years before becoming its president. But most significant is his own distinction as an innovator: his work for Taiwan Power is saving energy in every power substation across the nation.

"I'm also doing practical research; currently I design facility management systems,” he says. “I'm also building a geographical information system for Taiwan Power transmission lines so that they can locate and see each tower of the transmission line to better manage all their facilities."

The university recently broke the record that it established 19 years ago for an energy-efficient vehicle. Along with LED, sensor, solar and electric vehicle research, Taipei Tech has identified health technologies as a high priority. The president says it will be less than three years until the university’s wireless glucose monitoring patch linked to mobile phones can be marketed to diabetes patients, and this has already been granted five patents in the US and Taiwan.

Virtual of interactive road displays

Virtual of solar powered street light

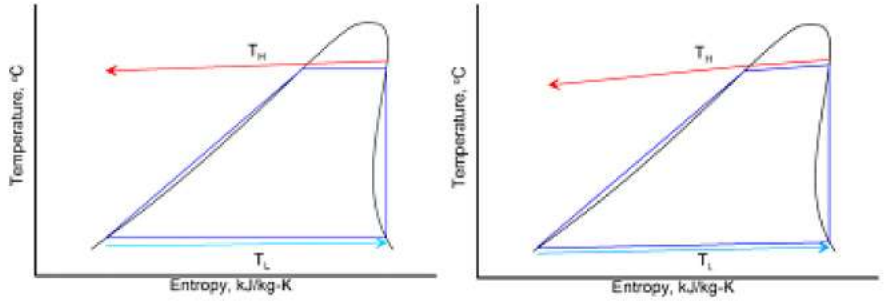
# Prof. Hung Tzu-Chen, Taiwan's Pioneer on Energy Recycling

by Campbell Jen-Wei Cheng

Tzu-Chen Hung was one of the first scholars in Taiwan to research on waste heat recovery. Years ago when the issue of energy shortage and energy crisis still was not prominent to most people, Prof. Hung had already started addressing it.

Being one of the pioneers in the field, Hung is one of the top three cited scholars in the world. For example, his paper "A review of Organic Rankine Cycles (ORCs) for the recovery of low-grade waste heat" has been cited 156 times in SCOPUS and 192 times in Google Scholar. Likewise, another paper "Waste heat recovery of Organic Rankine Cycle using dry fluids" has been cited 143 times in SCOPUS and 181 times in Google Scholar. Hung not only does research on theories, he also invented a waste heat recycling machine. The machine recovers wasted heat within a session and converts it back into energy which increases the efficiency of the machine. In other words, the machine recovers energy. Hung started developing his formulas for energy recycling about 10 years ago. As his theories began to mature, it wasn't until recent years that he started to build an actual machine in which he put his theories into actual physical models for testing.

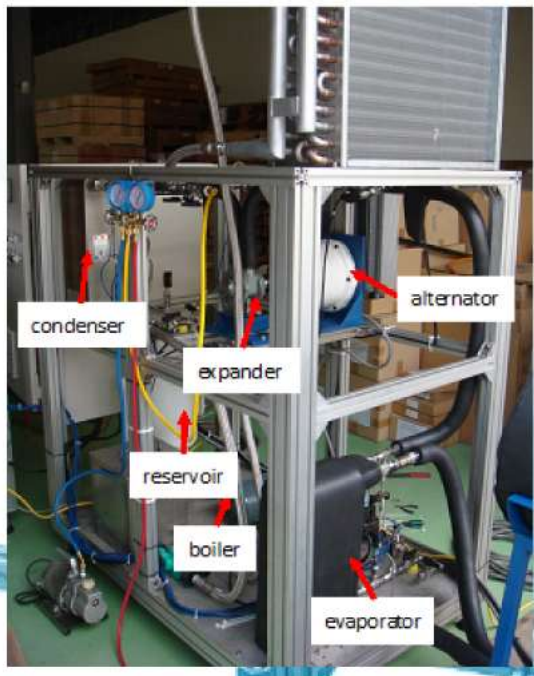
Prof. Hung's main focus right now is to develop and refine his nuclear energy recycling machine. However, Taiwan is too small to ensure nuclear safety. If something goes wrong and nuclear power is detonated, Taiwan as an island country will be wiped out from the face of the earth. So it is important for Hung to seek other remote locations in Southeast Asia to conduct his research.




Because of Prof. Hung's accomplishments in the field of energy recycling, he was invited to speak at the Forum for Developing Low-Carbon towns during Economic Transition. This forum was organized by the National Energy Administration of China and Tianjin Development and Reform Commission. This forum was one of the discussions hosted jointly by Asia-Pacific Economic Cooperation (APEC).

Hung is very devoted to his research and studies. He also co-established one of the first two nuclear programs with Taiwan Power Company (the biggest energy company in Taiwan) for students. This program is targeted towards students who are interested in nuclear power, and offers them an internship program at the company. If students perform well, it could subsequently lead to job opportunities. The idea behind the program is to cultivate students' professional skills in the working field.

Taipei Tech is a technological and vocational university, hence it emphasizes on the importance of practice and learning by doing. Therefore most of the faculties of Taipei Tech are equipped with the ability to put their research into practical use outside of the classrooms. Research and development (R&D) project can be put into use right away in the real world. Rather than focusing entirely on theoretical work, the R&D approach directly reflects on Taipei Tech's outlook for improving the Taiwanese industry.



# Solar-Powered Boat Design for the Environment

Prof. Ginnow hosting the workshop in a Taipei Tech classroom

by Kevin Lan

It was an honor for the students of the Department of Industrial Design to have Professor Ginnow visiting Taipei Tech for the ninth time since 1998. Professor Ginnow had taught at the School of Art and Design Berlin-Weissensee before his retirement. Similar to his previous visits to Taipei Tech, he presented lectures and coached the students during workshops. However, this time around, Professor Ginnow assigned students to design solar-powered boats; solar-powered boats are Professor Ginnow's main focus of development right now. The lectures and workshops took place over a period of 10 days starting from October 26 to November 4. Using what they had learned throughout the 10 days, the students were asked to make a final presentation. The students were divided into three teams by regions: Taiwan, Asia, and Europe. The tasks included developing meaningful concepts, integrating solar technology, applying materials that are locally available, and respecting traditional designs. Each team was to present their own solar powered boat designs on the last day.

students admiring the presentation board

Team Taiwan was the first to make a presentation. Using bamboo from southern Taiwan, the team built a bird-watching boat, "Platalea 1", named after a specific kind of migratory bird in Taiwan. In order to be more eco-friendly, team Taiwan aimed to shift the traditional bird-watching boat from a 45-seater boat to a 6-seater boat. The use of solar technology reduces noise and pollution. Without disrupting the birds' natural surroundings, the photographers could move slowly (20m/hr) and quietly into their habitat.

Team Asia presented Indian houseboat "Ahana". The boat was designed to glide leisurely on rivers. Professor Ginnow appreciated their well sketched boat in the presentation. Ahana, a kind of herb that can cool temperature, was used as one of the materials of the boat. Rather than being able to carry many passengers, Ahana was designed for just two people. It has many amenities including a dining room, a half-opened bedroom, and a deck for Yoga and sun tanning.

Finally, Germany was the target country of Team Europe. Their houseboat "Leuchten" was designed to bring a pleasant vacation experience to ordinary German families with various spaces avaliable for children and the parents. Moreover, the use of solar power doesn't harm the environment. To increase the efficiency of the solar power panels, the shape of the boat was very important. Team Germany conducted lots of discussions with Professor Ginnow on how to come up with the best shape, and the final design of the boat turned out to be very satisfactory to Professor Ginnow.

Prof. Ginnow with students of Taipei Tech

Professor Ginnow was especially impressed by the excellent design skills of Taipei Tech students. This reminded him of an experience a few years ago on an exceptional project that was done with the collaboration between German and Taiwanese students. Whereas German students would have plenty of opportunities to work and gain assistance from international companies, the Taiwanese students' creations would be limited due to the lack of industrial foundation and cooperation with the universities. In order for the excellent work of students to have opportunities to be presented and gain experiences, university-industry cooperation is what Professor Ginnow wishes for the future.

Wish you have a great day ahead,

President

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