UICC Newsletter

UICC (University-Industry Cooperation Committee), Tsinghua University

Tsinghua University

December 31, 2009

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Special Focus

TSINGHUA, CAMBRIDGE AND MIT ALLIANCE FOR LOW CARBON ENERGY

On November 15, Tsinghua University, the University of Cambridge and Massachusetts Institution of Technology (MIT) joined forces to form a Low Carbon Energy University Alliance (LCEUA) to develop new technology and policy options for the global low carbon economy.

Zeng Peiyan, former China Deputy Prime Minister, inaugurated the alliance. Tsinghua University President Gu Binglin, Pro-Vice-Chancellor of the University of Cambridge Ian Leslie, and Director of the MIT Energy Initiative and U.S. President Obama's Council of Advisors on Science and Technology Ernest J. Moniz attended the ceremony.

"Efficient use of energy" and "global climate change" is the current focus of attention of the international community. Particularly, the global climate change and its adverse effects have become common concerns. The total energy consumption and carbon emissions of the United Sates, China and EU reach more than half of the world combined. Reducing greenhouse emissions, while maintaining healthy development of world economy, is a multifaceted problem which requires new technologies and systems, strong political leadership as well as common understandings on input of proposed solutions and shared interests. Tsinghua University, the University of Cambridge and MIT, as the science and technology leaders located in major global energy consumption and carbon emissions areas, integrate the resources and work together to create a platform to provide advanced energy technology and policy options for tackling climate change. Meanwhile, LCEUA will be an international system which provides education and research opportunities for young researchers and nurtures them with the awareness of environment protection and sustainable development. The establishment of LCEUA also marks a new stage of strategic cooperation among three universities.

The three universities will each select two senior experts to form a steering committee for the LCEUA. The steering committee will be responsible for reviewing, evaluation and approval concerning research projects, fund-raising and collaboration progress. Prof. Yao Qiang, from Tsinghua's Department of Thermal Engineering, is appointed as the first Executive Director of the LCEUA. The central office of LCEUA is established in Tsinghua with two branch offices located in the University of Cambridge and MIT respectively. The daily routine operation of the LCEUA is bolstered by Tsinghua Low Carbon Energy Lab.

Currently, six major areas of cooperation have been identified, including clean coal technology and carbon dioxide capture and storage (CCS); energy efficient buildings, urban planning and sustainable transportation systems; bio-fuels and renewable energy; nuclear energy; smart grid; and energy policy and strategy.

Talks

PIONEERING THE DEVELOPMENT OF GLOBAL ADVANCED LOW CARBON TECHNOLOGIES

Developing low carbon technology has been a global trend. And countries all over the world are seizing high ground on advanced energy technologies. Research-oriented universities can play key roles in leading the development of global advanced low carbon technologies. Recently Prof. He Jiankun, Vice Chairman of Tsinghua University Council, member of LCEUA steering committee and Director of Tsinghua University Low Carbon Energy Lab was interviewed on low carbon energy technology and low carbon economy.

What roles can world leading universities, like Tsinghua, the University of Cambridge and MIT play in the development of low carbon economy?

He: Low carbon energy technology, as a cutting edge technology, indicates a nation's competitiveness of core technologies. Therefore, countries all over the world are seizing high ground on advanced energy technologies. Universities, especially research-oriented universities, are capable of playing vital roles in leading the development of the global advanced low carbon technologies. In "The Eleventh Five-Year Plan", Chinese government has invested RMB 10 billion to sponsor the research and development of new technologies with an aim of tackling climate change.

What achievements has Tsinghua University made in low carbon research in recent years?

He: Well, the achievements made could be reflected in the following areas:

First, the utilization of clean coal and carbon dioxide capture and storage technology. The Department of Thermal Engineering engages in the research in this area and is in the leading position domestically. Technologies such as circulating fluidized bed have been commercialized successfully.

Second, nuclear technologies. Based on Tsinghua's independent background technology on 10 MW high-temperature gas-cooled reactor, a demonstration nuclear power plant is going to be constructed in Shandong Province. With Chinese own intellectual property rights, the power plant is attached much importance and selected in the 16 Mega-Projects under "National Middle and Long-Term Development Plan on Science & Technology (2006-2020)".

Third, power system and the smart grid including power grid safety and long-distance high-voltage power transmission and control. Tsinghua has cooperated with the State Grid Corporation of China extensively. And many technologies have been applied into industrial production.

Fourth, energy efficiency, including energy efficiency on building and transportation, and also new energy vehicles such as electric vehicles, which will play an important role in upcoming Sino-US Energy Technology Cooperation.

Fifth, bio-fuels and renewable energy. Many technologies developed by Tsinghua in this field are mature for commercialization. Currently, Tsinghua is cooperating with local governments to build factories for industrial application.

Finally, strategic study on energy policies and countermeasures tackling climate change. Tsinghua, as one of the main think tanks for national policy research on climate change, has been playing an important role in this area. In the beginning of the year 2008, aiming for national strategic development need and the forefront of technology, the Low Carbon Energy Lab, which integrates resources in related disciplines to promote research and development of low-carbon technology, was established in Tsinghua.

TSINGHUA ACTIVELY EXPLORES DIVERSE PATTERNS TO PROMOTE TECHNOLOGY TRANSFER

"In the process of building up a world-class university, Tsinghua University stands for the idea that scientific research should be kept on the cutting edge of world scientific development, meanwhile, should also meet the strategic demands of the nation. Focusing on indigenous innovation, Tsinghua University, on one hand, is dedicated on fundamental research, and on the other hand, is actively promoting technology transfer. The glorious mission of Tsinghua is to effectively serve the nation's economic construction and social development. And we are committed to make contributions to building an innovation-oriented country. " This is the important message conveyed by Tsinghua President Gu Binglin in his speech on the ceremony, which marked the 15th anniversary of Tsinghua Science Park.

In the past year, Tsinghua University, based on above principles, has actively explored diverse ways and channels to promote technology transfer and gradually formed patterns with Tsinghua Characteristics:

1) Cooperating with local government and serving regional development. Up till now, Tsinghua University has signed comprehensive cooperation agreements concerning R&D and personnel training with 28 provinces and autonomous regions and 87 prefecture-level cities nationwide.

2) Cooperating with enterprises to promote technology transfer. The University-Industry Cooperation Committee of Tsinghua University (UICC) was established in 1995. Now 184 domestic and overseas enterprises have become the members of the UICC. Hundreds of collaborative projects have been carried out. And over 90 joint research institutes have been set up to accelerate technology innovation.

3) Conducting technology transfer in international market. In 2001, the International Technology Transfer Center (ITTC) was established in Tsinghua University aiming of digestion, absorption and re-innovation of foreign technology achievements. The ITTC has established cooperative ties with institutions in Russia, the United States, Germany and other countries.

4) Setting up high-tech enterprises to promote industry-university research. After the policy of reform and opening-up, based on Tsinghua's technology and talent advantage, a number of high-tech enterprises were set up gradually. In 2008, the total revenue of the enterprises under Tsinghua Holdings Co., Ltd. reached RMB 26.497 billion. And the total profit is RMB 844 million. The total research funding of sponsored projects with these university affiliates has occupied one third of the total research funding of university-industry cooperation.

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Work In Partnership

TSINGHUA SIEMENS R&D COOPERATION DAY HELD

On November 9, Tsinghua Siemens Cooperation Day cum Siemens CKI Workshop 2009 was held at the FIT Building of Tsinghua University. More than 100 researchers and experts from Tsinghua and Siemens participated in the workshop. The workshop was focused on the research areas in Energy, Industry and Healthcare.

Tsinghua University Vice President Chen Xu attended and gave a welcome speech at the opening ceremony. Dr. Richard Hausmann, CEO of Siemens Northeast Asia and President and CEO of Siemens Ltd., China, and Dr. Natascha Eckert, Head of Research and Cooperation, Cooperate Technology at Siemens, attended the ceremony and delivered speeches on “Siemens in China” and “University Collaboration” respectively.

The ceremony was hosted by Prof. Li Zheng, Director of Tsinghua-BP Clean Energy Education and Research Center.

Through various kinds of cooperation during the past few years, Siemens and Tsinghua have established a firm relationship. The two have signed a strategic cooperative agreement emphasizing the beneficial combination of knowledge and technology. In 2008, the Tsinghua Office of the Centre for Knowledge Interchange (CKI) was established to facilitate the collaboration between Siemens and Tsinghua.

TSINGHUA-PJM SIGNS AGREEMENT ON AUTOMATIC VOLTAGE CONTROL COOPERATION PROJECT

On October 26, the signing ceremony for Tsinghua-PJM automatic voltage control cooperation project was held in Tsinghua University. The ceremony was chaired by Prof. Zeng Rong, Deputy Head of Dept. of Electrical Engineering. Tsinghua University Vice President Kang Kejun, PJM Senior Strategist Dr. Tong Jianzhong, Head of Dept. of Electrical Engineering Prof. Min Yong and Project Leader Prof. Zhang Boming delivered speeches at the ceremony.

PJM, which is the largest U.S. power grid company as well as the world's largest regional power grid company, is responsible for the safe operation of power grid and electricity markets in the U.S. capital Washington DC and the eastern 13 states. It is recognized as the leader of power technology in North America and even around the world.

Tsinghua University has a long history of carrying on research on automatic voltage control in large power grid. The automatic voltage control (AVC) system developed by Prof. Zhang Boming and Prof. Sun Hongbin in Dept. of Electrical Engineering has been applied in three regional power grids and nine provincial power grids in China. It has generated significant social benefits on ensuring safe operation of power. As a core innovative technology, AVC was selected as one of “China’s top ten Scientific and Technological Progress in Higher Education 2007”, and awarded the second prize of “National Technology Invention 2008”, and made a significant impact on academia and industry.

Tsinghua University began to cooperate with PJM in the early last year. The first phase of the project "PJM power grid automatic voltage control system" (AVC study on the PJM system) had been finished satisfactorily. The agreement signed this time is the second phase of the cooperation project, "Online Implementation of AVC at PJM Control Center". After the agreement was signed, the AVC system, which Tsinghua owns independent intellectual property rights, will be installed in the PJM power grid by the end of this year and put into the test run. This will be the first AVC system installed in the U.S. power grid. And it will also be the first success case of transferring China's advanced power grid control technology to the United States.

In accordance with the plan of PJM, after the success of the second phase of the cooperation project, the commercial operation of AVC in the PJM electricity market will be achieved in the third phase of the cooperation project.

ASSOCIATION OF INTERNATIONAL LICENSING (GERMANY) ANNUAL MEETING 2009 HELD

The 2009 annual meeting of Association of International Licensing (Germany) was held on November 27 in Munich. The experts of technology transfer from the United States, Europe, China, Japan and Germany in business and legal fields took part in the discussions on the problems occurring in technology transfer.

On the meeting, Dr. Ma Jun, Director of Overseas R&D Management Office of Tsinghua University, was invited to give a keynote speech, entitled "The Expectation and Strategy of Technology Licensing". In her speech, Dr. Ma introduced China's laws and regulations on technology licensing, the important points and difficulties in technology licensing, as well as strategies and actual operation of technology licensing in Tsinghua University. The management system of technology licensing in China and the practice of Tsinghua University have aroused the interests of participants of the meeting. The representatives from German and Japanese companies hoped that Dr. Ma Jun could visit their companies and give more detailed introductions to the cooperation between industry and Tsinghua University. Dr. Ma also paid a visit to Siemens and the Advanced Materials Company, exchanged views on how to further strengthen the bilateral cooperation in the future.

DANISH VESTAS TECHNOLOGY REPRESENTATIVES VISIT

On November 17, Mr. Peter Cheng, Managing Director of Vestas Technology R & D Singapore, visited Tsinghua University and awarded Tsinghua University “Preferred Research Partnership”.

Vestas, one of the world top 500 enterprises, is a leading company in

the field of new energy and holds the biggest market share in wind energy sector in the world. Vestas has awarded Preferred Research Partnership to eight top companies and research institutes worldwide with the aim of establishing a solid long-term strategic cooperation relationship.

Mr. David Chai, E.Asia Relationship Manager of Vestas, introduced detailed plans on establishing strategic cooperative relations with Tsinghua. Dr. Ma Jun, Director of Overseas R&D Management Office of Tsinghua University and Dr. Qian Xuelei attended the meeting and exchanged views on how to achieve the above mentioned cooperation plans with Vestas representatives.

TSINGHUA UNIVERSITY - TOYOTA RESEARCH CENTER JOINT RESEARCH SYMPOSIUM HELD

On October 15, Tsinghua University - Toyota Research Center joint research symposium was held at Ziguang International Exchange Center. Tsinghua University Vice President, Kang Kejun, and Executive Vice President and Representative Director of Toyota Motor Corporation, Mr. Takeshi Uchiyamada attended the meeting and delivered welcoming speeches, encouraging the researchers of the two sides work harder to make new achievements. The meeting was hosted by Prof. Hao Jiming, Director of Tsinghua University-Toyota Research Center. Approximately 50 experts and researchers from Ministry of Environmental Protection, Ministry of Science and Technology, Tsinghua University and Toyota participated in the meeting.

During the meeting, focusing on the theme of "Energy • Environment" , researchers from Dept. of Thermal Engineering and Dept. of Environmental Science and Engineering in Tsinghua, Atmosphere Office of the Ministry of Environmental Protection, Pollution Prevention Office of Shanghai Environmental Protection Agency and Toyota Motor Corporation gave key reports and exchanged their views on cutting-edge research areas in vehicle pollution control, energy situation and energy challenges, transportation energy and environmental technology, air quality assessment and pollution control.

THE SCIENCE AND TECHNOLOGY MEGA- PROJECTS MANAGEMENT OFFICE FOUNDED

On the morning of October 15, a mobilization meeting on the implementation of National Science and Technology Mega- Projects was held at the reception hall of the main building in Tsinghua. On the meeting, Party Secretary of Tsinghua University, Hu Heping announced the establishment of Science and Technology Mega-Projects Management Office. Tsinghua University President, Gu Binglin will assume Director of the office. And Tsinghua University Vice President, Kang Kejun is Deputy Director of the office.

Early in the year of 2006, the State Council released “National Middle and Long-Term Development Plan on Science & Technology (2006-2020)”. In the plan, 16 Mega- Projects have specified as main focus of China technological development in the following 15 years. As the only one university, Tsinghua University organized and took responsibility of design, development and construction of one of 16 Mega-Projects, “The High Temperature Gas Cool Reactor Nuclear Power Plant”. Meanwhile, more than 60 professors from nearly 20 departments in Tsinghua University directly participate in other Mega-Projects with some of them appointed as leaders or members of the expert panels. Up till now, Tsinghua University has been assigned 100 research tasks under the 16 Mega-Projects.

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5) Establishing Tsinghua Science Park and achieving remarkable results. In the past 15 years after its foundation, Tsinghua Science Park has incubated over 1000 companies, with an annual volume of more than 3000 patent applied and nearly 1500 patents granted. The annual R&D investment of enterprises in the main park is over RMB 3 billion with sales income over RMB 40 billion. Tsinghua Science Park has become a base for incubating startups, nurturing innovative talents and technology transfer.

In Brief

1. The establishment of Tsinghua University-ROHM Research Center was announced on October 15. Tsinghua University Vice President Chen Xu and Mr. Hidemi Takasu, Managing Director and Member of the Board of ROHM Co., Ltd. , on behalf of Tsinghua University and ROHM respectively, signed the agreement.

The first steering committee meeting was held on the same day.

2. On October 15, Tsinghua University and HP Media Laboratory announced to renew a three-year contract on Tsinghua University (School of Information Science and Technology)-HP Multimedia Research Center . Tsinghua University Vice President Kang Kejun and Mr. Patrick Scaglia, Chief Technology Officer of HP Imaging and Printing Market Group (IPG) signed the agreement.

3. From November 28 to December 1, 2009 mid-term review on cooperation projects of Tsinghua University - Mitsubishi Heavy Industries Research center was held in Harbin.

4. On November 2, 2009 mid-term project report cum steering committee meeting of Tsinghua University (Department of Environmental Science Engineering) -Sanyo Environmental Technology Research Center was held at Tsinghua University.

5. The Eighth Steering Committee Meeting of Tsinghua University-Toyota Research Center was held at Tsinghua University on October 14.