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China Energy and Environment Update

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CS China Energy and Environment Update

is an electronic publication produced by the U.S. Commercial Service in China. The *Update* provides U.S. companies with information and analysis on China's energy and environmental technology market, project alerts, highlights from the U.S. Mission in China and U.S. Department of Commerce, U.S. Government activities in the clean-tech sector, and a listing of upcoming events and activities.

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U.S. GOVERNMENT HIGHLIGHTS

Department of Commerce



Buyer Delegation to RETECH 2011 Show

CS Beijing worked with China National Energy Administration (NEA) and China Renewable Energy Industries Association (CREIA) to organize a Chinese delegation of 31 members to attend the RETECH 2011 Conference, held in Washington D.C on Sept. 21-22, 2011. This marked the first time a Chinese delegation in the renewable energy sector participated in the International Buyer Program.



CS Specialist Sherry Cai, and Deputy Director General of the Renewable Energy Department of NEA Liang Zhipeng

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U.S. Industry Attends Shanghai Green Building and Energy Efficiency Conference

On Sept 8, CS Shanghai co-sponsored the 4th Conference on Green Building and Energy Efficiency, organized by the Shanghai Municipal Urban-Rural Development & Transportation Commission, Shanghai Green Building Council, and the Architectural Society of Shanghai. The two-day conference attracted over 500 attendees and featured over a dozen speakers from academia, businesses, and government officials, as well as U.S. companies such as UTC, Kohler, AECOM, and Dow Corning.

For more info contact ricardo.pelaez@trade.gov

U.S. Pavilion at Shanghai Electric Power Show

From Sept 21 to 23, CS Shanghai organized a U.S. Pavilion at the 8th International Exhibition on Electric Power Equipment and Technology Expo. The expo featured over 300 businesses from around the world, showcasing power transmission, power generation, energy saving equipment, and alternative energy sources.

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USA Week in Wuhan

The U.S. Ambassador to China, Gary Locke, and Wuhan's Vice Mayor Yuan Shanla, provided opening remarks at an energy event held at the opening of "Hubei Wuhan USA Week" on Sep 22, 2011.

Five U.S. energy companies participated in this event: AECOM, Cummins, GE Energy, LP Amina, and Solatube. Working with the U.S.-China Commercial Match-Making Program's Wuhan office, CS Beijing representatives led the seminar between the five U.S. companies and Wuhan Development and Reform Commission, Wuhan Science and Technology Bureau, Wuhan Environmental Protection Bureau, Wuhan Construction Commission, Wuhan Industrial and Information Technology Bureau and Hubei Hua Zhong Science and Technology University in the morning. In the afternoon the companies had one-on-one meetings with potential working partners in Hubei Province.



U.S. company representatives with U.S. Ambassador to China Gary Locke

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Department of State



New Emission Standards on Thermal Power Plants Released

On September 21 The Ministry of Environmental Protection (MEP) published tougher emission standards for thermal power plants. The new standard that takes effect on January 1, 2012 will replace the current standard, in place since 2003. The new standard covers soot, sulfur dioxide (SO₂), nitrogen oxide (NO_x) and mercury. This is the first time mercury has been included in any emission standard. Relevant industries will need to install appropriate monitoring devices, a potential growth area for U.S. technology and expertise. This item may be highlighted during the upcoming MEP trade mission, conducted under the U.S. Environment Working Group of the Joint Commission on Commerce and Trade (JCCT). SO₂ and NO_x emissions from the power industry account for 47% and 49% of total emissions in China, respectively. With this revision, MEP Vice Minister WU Xiaoqing claims China will reduce emissions of SO₂ by 6.2 million tons and of NO_x by 5.8 million tons by 2015. Vice Minister Wu said in an interview that by 2015, approximately 260 billion Yuan (\$40.7 billion) needs to be invested on upgrading industrial

facilities in order to meet the new standards.

NOTE: Mercury Emissions Control Technologies Reverse Trade Mission winter/spring 2012 TBC: CS Beijing will lead Chinese Ministry of Environmental Protection and Industry Representative to meet with U.S. EPA and American Industry Executives to showcase U.S. mercury emissions control technologies.

Deqingyuan Egg Farm: An Example of the Circular Economy

The Environment, Science, Technology and Health Section of the US Embassy was accompanied by the Ministry of Science and Technology on a visit of the Deqingyuan Egg Farm, <http://www.dqy.com.cn>, (pictured below) to see the circular economy in action. The farm uses the waste generated by the chickens as a biofuel for their on-site power generator and sells the energy to State Grid. The plant produces enough energy to cover its needs as



ESTH Section Chief Erica Thomas with members of the section and MOST officials.

well as over 30 nearby villages. After energy production, the treated waste is used as fertilizer for nearby orchards and corn fields. The local villages use the fertilizer to grow crops and sell the produce back to the farm to feed the chickens, closing the loop.

For more info contact the State Dept. at BeijingUSEmbassyESTH@state.gov

Department of Energy



Secretary Chu Oversees the Signing of IP Protection Agreement

U.S. Energy Secretary Chu and Dr. Wan Gang, Chinese Minister of Science and Technology oversaw the signing of this landmark agreement. The two sides completed the signing of the first ever agreement between the US and China for intellectual property rights protection for private-public and full life-cycle protection.

Secretary Chu leads the U.S. Delegation to the Carbon Sequestration Leadership Forum (CSLF)

Secretary Chu headed up the US delegation which took part in the CSLF and was attended by leaders from companies and institutions from around the world pursuing various carbon capture, utilization and storage challenges and opportunities. Dr. Chu and multiple energy ministers discussed policy needs to encourage the mitigation of carbon and other greenhouse gas emissions.

China International Oil and Gas Pipeline Conference and U.S. Industry

The 2011 China International Oil and Gas Pipeline Conference 5-8 September was attended by about 200 government and industry leaders and provided an outstanding platform for sharing lessons learned, best practices, advancing international standard use in China and providing access to China's huge pipeline market. China has plans to triple their pipelines to over 200,000 KM over the next few years and this well organized forum opened market doors for US industry.

The 11th U.S.-China Oil & Gas Industry Forum (OGIF) in Chengdu

This year's OGIF was held in Chengdu, Sichuan Province, China on September 24-27, 2011. The event attracted over two hundred senior government officials, business executives and representatives from both U.S. and Chinese oil and gas companies. The OGIF is an annual event organized by the U.S. Departments of Energy and Commerce with China's National Energy Administration. This year's event focused on developments and opportunities in unconventional gas fields with talks on a wide range of areas: categories and reserves of unconventional gas; gas market developments; opportunities and challenges; technology advancement; best practices; and means for enhanced cooperation between the U.S. and China. The event concluded with a field trip to Wei Yuan shale gas field near Chengdu. The 12th OGIF will be held in the

United States in 2012 and dates TBD.

LP Amina and Gemeng International Energy sign MOU

LP Amina, a multinational environmental engineering company, and Gemeng International Energy (GMIE), signed a Memorandum of Understanding to build the world's first poly-generation facility using LP Amina's Integrated Fractionation Conventional Generation (IFCG) technology. This innovative technology is a new process to produce chemical intermediates from coal, while reducing production costs and lower emissions compared to the conventional petroleum process in use today. The first IFCG unit will be installed at GMIE's facility in Shanxi, China, and is scheduled to be fully operational in the first half of 2012.



LP Amina Will Latta, MOST Minister Wan Gang, U.S. Secretary of Energy Stephen Chu, Ren Xiaotong, GMIE
For more info contact doechina@gmail.com



The US China Energy Cooperation Program (ECP) is a commercial sector-initiated public-private partnership offering a unique platform to generate clean energy business.

ECP is the only private sector-initiated, managed and financed NGO focused on US-China business development in the clean energy sector. It's mission is to leverage private sector resources to support the sustainable development of the energy sectors in the US and China.

Since its founding in 2009, the ECP has grown from 24 to 47 member companies who come together in nine sector-based working groups through a unique bilateral government recognized platform to pursue sector-based business development objectives, linked to both US and Chinese national clean energy priorities.

In Mar. 2011, the working groups presented their sector roadmaps, 2011 work plan objectives and implementation strategies with officials from NEA, MOFCOM and the NDRC. Chaired by the NEA Vice Administrator, the meeting was attended by senior executives of ECP member companies. The groundbreaking event marked the beginning of an annual dialogue between ECP and its Chinese government partners.

Delivering Results

ECP's planning process has empowered member companies to further opportunities in clean energy business. For LP Amina, a US firm that develops advanced emission reduction solutions for coal-fired power plants, ECP has provided a platform for the firm to gain critical recognition from key stakeholders.

"Without ECP, it would have been very difficult for us to stay on the path outlined by policymakers," said Will Latta, LP Amina's China-based managing director.

As founding member and co-chair of ECP's Clean Coal Working Group, LP Amina led the development of the clean coal industry roadmap that outlined sector-focused carbon abatement strategies. Using the ECP platform, the working group shared the roadmap with the NEA, DOE and key executives from Chinese power sector.

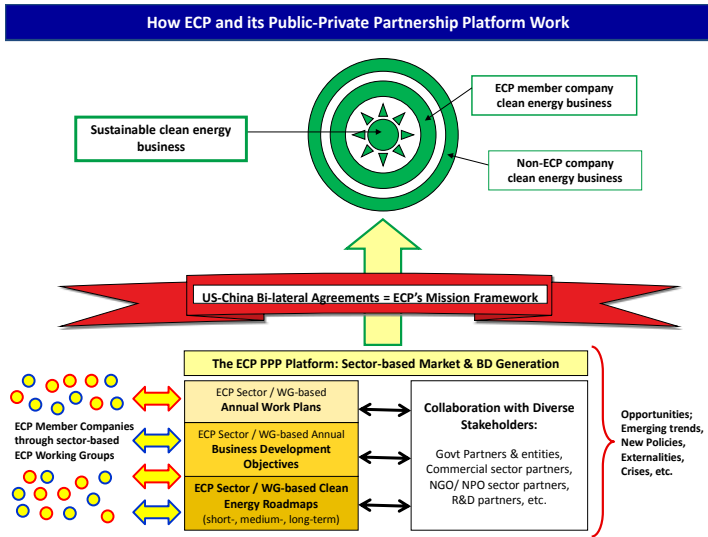
The bilateral engagement enabled LP Amina to establish a JV to pilot its patented technology in Shanxi province. The technology can curtail greenhouse gas emissions at coal plants by as much as 25% while generating cost-competitive chemical feedstock. Once fully operational, the Shanxi-based project will generate half a million tons of chemical feedstock per year, valued at over US \$250 million.

Another founding member, California-based Solatube, has become a leading force in creating the market through ECP. Solatube produces patented daylighting devices that use advanced optics to bring natural lighting into interior building spaces.

When Solatube first arrived in China in 2009, the daylighting industry was nonexistent. To develop the market, the firm sought to establish the design standards of its industry, which would then spur demand for its products.

In 2010, Solatube became a founding member of ECP and joined in ECP's Energy Efficient Building and Design Working Group. Through the working group, Solatube participated in a training mission that sent 19 mayors to the west coast, where they visited Solatube customer sites and saw demonstrations of its unique daylighting. The mission resulted in Solatube capturing a 20,000-square meter project in Shanxi.

When asked about ECP's value, Solatube General Manager Catherine Zhou puts it best: "ECP gives small and medium enterprises, especially those leading a new industry, the leverage needed to work with the government, reach out to the Chinese market and get results."



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China Greentech Initiative Hosts Greywater Working Session

On August 30, CS Beijing and Shanghai attended the second Clean Water Sector Working Session, organized by the China Greentech Initiative 2011 Partner Program. The workshop was attended by more than 30 water industry participants from 25 companies in both Beijing and Shanghai. The focus of the working session was recent market developments, government efforts in the water sector, plans for the next decade and greywater systems adoption opportunities. Findings will be published in the China Greentech Initiative White Paper. Based on participants' input the current greywater market faces a few major issues.

- 1) Many greywater systems have been installed, but remain underutilized in most buildings.
- 2) The grey water market can be further developed if the Chinese government issues financial incentives to equipment and solution providers.
- 3) Commercial buildings have sufficient market incentive to use grey water systems, but residential buildings continue to offer lower market potential, as the owner/purchaser and user/beneficiary incentive structures remain misaligned.

On the whole, Northern China has more to gain from implementing greywater systems, as water is far more scarce and costly. It was also concluded that local government policies, government demonstration projects and development of the green building market will play a critical role in facilitating greywater market opportunities.

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PROFILE OF THE MONTH:

LanzaTech, a Chicago-based clean energy company produces various chemical intermediates, from carbon monoxide rich sources (biomass, syngas and industrial wastes). They're converting steel mill off-gases into biofuel, reducing carbon emissions while creating new revenue streams.

An SME's 18 Month Rise

LanzaTech, a company with 78 employees worldwide, needed to quickly gain the recognition and support of the Chinese government in order to deploy and commercialize its technology. By joining with ECP, LanzaTech was better able to raise awareness of the company's technology among critical Chinese government agencies, and to have the necessary leverage to quickly register the technology and implement its commercialization strategy. LanzaTech is part of the Clean Coal Working Group (CCWG), in which LanzaTech's partnership with Henan Coal and Chemical Industrial Cooperation (HNCC) and the Chinese Academy of Sciences is enabling the reduction of the CO₂ footprint of China's coal industry. Also part of the Clean Transportation Working Group, (CTWG) LanzaTech has been able to demonstrate its gas fermentation technology with the potential to produce over 50M gallons fuel ethanol/year. These ECP working groups enable projects and activities to be executed in a more timely and smooth manner, while giving them a higher profile than if performed without the association with the NEA.

LanzaTech CEO, Jennifer Holmgren believes LanzaTech's membership in ECP has been important in its efforts to garner Chinese government support. Talking about the ECP, Dr. Holmgren said, "Membership helps put us at the forefront"; it also gives "important signals to our Chinese government and commercial

LanzaTech

partners....along with an early alert system within this dynamic landscape so as to help us better position ourselves."

Achieving Results

At the Shanghai Expo last year, LanzaTech signed a joint venture with BaoSteel Group Corporation (BaoSteel), China's largest steel producer. Together with the Chinese Academy of Sciences, in March 2011 the three began construction of a demonstration plant to produce 100,000 gallons of fuel ethanol a year from mill off-gases using LanzaTech technology. In conjunction with the demonstration facility, the three partners are also forming a Beijing R&D center to be unveiled in late 2011 as well.

LanzaTech has attracted several other top tier Chinese companies -- signing four MOUs for similar partnerships slated to follow the BaoSteel model once the initial demonstration plant is fully operational and proven.

Impact Going Forward

LanzaTech's China projects will have positive economic impacts in the areas of detailed project design, management, and implementation, as well as in manufacturing (fermenters, bioreactors, and other unique materials). Through the success of the demonstration plant in China, LanzaTech anticipates multiple commercial plants being deployed globally.

LanzaTech derived fuels and chemicals will also provide energy security as the process reduces dependence on petroleum. For example it is estimated that using biomass resources available in the US alone, the process has the potential to produce 190 billion gallons/year of fuel grade ethanol.

To learn more: www.lanzatech.com and <http://www.uschinaecp.org/lanzatech/>

UPCOMING EVENTS

CS Beijing leads delegation to Greenbuild International Conference and Expo - Toronto - Oct 4-7: Green building and construction trade show with delegates from over 100 countries.

For more info contact: Shujuan.Cao@trade.gov

CS Beijing Leads Delegation of MEP Officials and Cement Plants leaders—Oct 23-28: The delegation will examine U.S. emissions reduction technologies in North Carolina and Washington D.C.

For more info contact: Elizabeth.Shieh@trade.gov

US Led Coal Sector Trade Mission-Oct 25-28: Led by the Director General of the Commercial Service Suresh Kumar.

For more info contact: Jianhong.Wang@trade.gov

Energy Outreach to Jinan—Nov 28-29: ECP members to Jinan, Shandong to meet with government and industry leaders.

For more info contact: Hongying.Cai@trade.gov

Mercury Emissions Control Technologies Reverse Trade Mission - early 2012 (TBC): CS will lead Chinese Ministry of Environmental Protection and industry representatives to meet with U.S. EPA and explore U.S. mercury abatement technologies.

For more info contact: Elizabeth.Shieh@trade.gov

The 12th China International Petroleum & Petrochemical Technology & Equipment Exhibition - Mar 19-21, 2012: CS will be hosting a USA pavilion at what is advertised as the largest petroleum exhibition in the world

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