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ADA ENVIRONMENTAL SOLUTIONS

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Construction Begins on Nation's Largest Activated Carbon Plant

In August, construction started on ADA's first activated carbon (AC) production plant in northwestern Louisiana. This plant is part of the company's business strategy to provide complete mercury control solutions for coal-fired power producers in North America through the supply of engineering services, AC storage and injection equipment, and high-quality activated carbon sorbents.

This is a logical step for ADA, whose name has been associated with mercury control since performing the country's first pilot plant demonstration of activated carbon injection in 1990 and performing more than 40 full-scale power plant control demonstrations beginning in 2001.

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The new AC plant is designed and permitted to produce 350 million pounds per year of AC from two production lines. Initial plans call for one production line to be built, with the second line permitted and engineered to respond to the additional expected market demand. When fully built out with two production lines, ADA would become the largest producer of AC in the U.S.

Planning to build and finance this $350 million plant has been an exciting, challenging process for ADA and reflects the company's commitment to meet the needs of its customers. ADA took this step to vertically integrate its business once it became obvious that the existing AC producers were not able to meet new market demand. With the current mercury control rules in seventeen states and the regulations enacted for newly constructed power plants, ADA estimated that an additional 400 million pounds per year of AC were needed for the power industry.

In addition, a potential new federal rule could significantly increase AC demand, which would require additional production of up to one billion pounds per year of AC. The likelihood of a federal rule has increased significantly with the recent court vacatures of both CAMR and CAIR. Therefore, ADA is taking the necessary steps to meet the larger market demand.

Partnership with Energy Capital Partners Provides Financial Resources

To provide the financing required for new AC production plants, ADA has formed a 50-50 joint venture with Energy Capital Partners I LP and affiliated funds (ECP).

ECP is a private equity firm dedicated to investing in the power generation, midstream gas, renewable, and electric transmission sectors of North America's energy infrastructure. Dr. Michael D. Durham, President and CEO of ADA, commented, "We are thrilled to be partnering with ECP. With their $2.25 billion fund established for energy infrastructure projects, they will be able to provide the resources to help us implement our plan of building multiple AC production plants to serve the growing demand in the power plant mercury control market. In addition to their extensive financial resources, they bring significant transaction and project development experience to our team."

Artist rendering of the new activated carbon plant being built in Coushatta, Louisiana. Expected production will start in mid-2010.

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(continued . . . Nation's Largest Activated Carbon Plant)

Validation of Market for AC

The process to build the plant began several years ago with the decision to allocate funds to find building sites, design the plant, and test AC produced from several potential feedstock coals. This forward thinking has allowed the company to be in a position to sell AC into this developing market. Our early estimates for the timing and volume of AC requirements have been validated, as to date we have provided bids for over $500 million of AC, with new RFPs continuing to be sent out by power companies. In addition, we have already announced AC contracts with major power producers that, with all options exercised, would take more than half of the AC output from the first production line. We expect the remaining capacity to be sold out in the near future.

ADA Advancing CO_2 Capture Research

One of the most important challenges for effective long-term CO_2 emissions management will be retrofitting the current fleet of coal-fired power plants for removing and storing CO_2. Post-combustion CO_2 capture using solid-sorbent-based technologies is a promising solution that could be appropriate for both new and existing pulverized coal-fired power plants.

ADA has been awarded a 27-month CO_2 capture research project from the Department of Energy's National Energy Technology Laboratory (DOE/NETL). The project, which began in October, is also co-funded by six utilities.

The primary objectives of the project are to assess the viability and accelerate development and scale-up of solid-sorbent-based CO_2 capture. The project goals are as follows:

1. Demonstrate that 90% CO_2 removal is achievable in actual flue gas
2. Limit the increase in the cost of electricity for capture to < 16%

Regenerable sorbents will be evaluated for the application of CO_2 capture using temperature swing adsorption. More than twenty sorbents will be tested on simulated flue gas in a fixed-bed contactor. The most promising sorbents will then be tested on actual flue gas in the same apparatus.

On a larger scale, a novel contactor will be built and used to remove one ton of CO_2 per day from flue gas. This contactor will be used to evaluate the most promising sorbents at three field sites.

In parallel with sorbent testing, process equipment will be evaluated for commercial-scale operation. First, a technology survey will be completed to identify existing process equipment that may be applicable for sorbent-based CO_2 capture.

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Left to right: Rich Miller–ADA, Trent Kososki–ECP, Sheila Glesmann–ADA, Mike Durham–ADA, Jean Bustard–ADA, Tyler Reeder–ECP, Jeff Smith–ADA, Peter Labbot–ECP, Mark McKinnies–ADA.

Safety First at ADA

ADA has grown rapidly over the past few years and so has our emphasis for working safely. ADA Environmental Solutions believes that our people are our most important asset and that the preservation of employee safety and health must remain a constant consideration in every phase of our business.

Working safely is a culture that starts at the top of our company with our executives and flows down into all of our projects and programs. It is an important part of our professional approach to the work that we perform for our customers and our internal research.

As of October 1, 2008, the employees of ADA have worked 936 days without a reportable injury. That is more than 2.5 years of safe and responsible work being performed in challenging environments.

CONGRATULATIONS on this great record!

ADA Develops New Logo

ADA Environmental Solutions (ADA) has a new logo that reflects our relationship to the power industry and the environment. Historically we have been known as an R&D firm, but as we branch out and move into new areas such as mercury control systems, powdered activated carbon (PAC), and CO_2 control technologies, we felt it was time to update our logo to better reflect the expansion and growth of our business.

The graphical element of our logo depicts the concept of the inter-relatedness of all the elements involved in the production of energy.

Black—represents coal
Orange—represents a flame
Green—represents our environmental commitment
Blue—represents clean air and water

The ADA logo reflects our company's commitment to the coal-fired electric power industry and to a clean environment.

Clean Air Innovations—Our tagline aligns with our core mission as a company that develops cutting-edge technologies that benefit the earth. Through our heritage of R&D, we are continually developing advanced technologies and solutions that will benefit the power industry, the environment, and the world around us.

Patent Awarded for Enhancement of Mercury Control Equipment

On April 22, 2008, the U.S. Patent and Trademark Office issued ADA a patent covering technology to improve the performance of activated carbon injection (ACI) equipment for the control of mercury emissions from coal-fired electrical generating units. U.S. Patent Number 7,361,209 "Apparatus and Process for Preparing Sorbents for Mercury Control at the Point of Use" includes claims for the addition of jet-milling equipment to the ACI system to precisely control the size of activated carbon particles being injected into a plant's gas stream.

POWER PAC PREMIUM

New Sorbent Excels in Test

ADA has created its own activated carbon sorbent. The new product, Power PAC *PREMIUM*™, is a bromine-enhanced powdered activated carbon. It is designed for optimum mercury capture at power plants that burn low-halogen PRB or lignite coals, or plants with elevated flue gas temperatures above 325 ºF.

The new Power PAC *PREMIUM*™ activated carbon sorbent was tested recently at a power plant burning PRB coal and equipped with a hot-side ESP and a TOXECON™ baghouse. The sorbent was injected downstream of the ESP and upstream of the TOXECON™ baghouse. Mercury emissions reductions of 90% were achieved with an injection ratio of only 1.2 lb/MMacf of flue gas. The Power PAC *PREMIUM*™ sorbent was easy to handle in the activated carbon injection system and performed well for the duration of the multi-day testing.

ADA is selling Power PAC *PREMIUM*™ sorbent for tests, spot purchases, and long-term contracts. The product is available in 1,000-pound bulk bags and 40,000-pound truckload quantities.

Please contact Jon Barr at 303-339-8842 (jonb@adaes.com) or Rich Miller at 610-760-1555 (richm@adaes.com) for more information on testing or purchasing this product.

Fifteen days of extended tests were conducted at AmerenUE's Labadie Power Plant in October 2007 to compare the performance of as-received and milled activated carbon (AC). Labadie fires low-sulfur subbituminous coal and uses SO_3 for flue gas conditioning. SO_3 impacts the effectiveness of AC for mercury control. The results indicate that more than 10 lb/MMacf of as-received AC were required to achieve 85% mercury removal.

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FUN FACTS

Did You Know . . . ?

2000 ADA Revenue – $4,250,000
2000 ADA Employees – 17

2007 ADA Revenue – $19,248,000
2007 ADA Employees – 58

(continued . . . ADA Advancing CO_2 Capture Research, page 2)

Detailed capital and operating costs will be determined with a final result of $/ton CO_2 removed. A conceptual design for integration of CO_2 capture into a 500-MW plant will be completed. Finally, for the most economical sorbent, a specific 1-MW pilot contactor will be designed to provide a clear next step. For more information on this research, contact Sharon Sjostrom–Vice President, Technology at 303-339-8856 (sharons@adaes.com).

(continued . . . Patent Awarded, page 3)

With the patented ADA onsite milling system, the AC needs were reduced by nearly 60%, a significant potential cost savings for the plant. Results from other sites also indicate improved performance. Additional tests are necessary to further characterize the process at multiple sites and prove the commercial design.

ADA is currently conducting full-scale demonstrations using this new technology. If you are interested in participating in a demonstration, please contact Sharon Sjostrom–Vice President, Technology at 303-339-8856 (sharons@adaes.com). Demonstration equipment can be retrofit into existing ACI systems. If you would like to discuss the status of commercially available ACI equipment, please contact Cameron Martin–Vice President, Emissions Control Systems at 303-339-8849 (camm@adaes.com).