

# ChinaFAQs

## The Network for Climate and Energy Information



# Road Testing American Carbon-Saving Technology in China

### Key Points

- U.S. environmental engineering company LP Amina developed a new technology that improves efficiency and reduces pollution at coal-fired power plants, and is collaborating with Chinese utilities to demonstrate it.
- LP Amina leveraged its participation in U.S.-China public-private partnerships to find partners for demonstrating the technology and potential buyers.
- The component is being manufactured in Michigan, Ohio, and West Virginia for buyers in the U.S., China and around the globe.
- The new design saves coal and cuts emissions of CO<sub>2</sub> and other pollutants from power plants—promising significant environmental benefits.

### Contact an Expert

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Eastern Texas and eastern China may be a world apart, but they have one thing in common: People, companies and the environment in both places are benefiting from U.S.-China cooperation on developing and deploying a new technology that improves efficiency and reduces pollution at coal-fired power plants.

### A BETTER MOUSETRAP

The technology, known as a “classifier,” isn’t flashy. It’s a funnel-shaped device the size of a subcompact car that sorts pulverized coal—which can look like black talcum powder—and feeds the best-burning particles into a power plant’s combustion chamber. The size of those little particles can make a big difference: Too large, and the coal doesn’t burn completely, meaning a plant uses more coal and produces more waste and pollution, including Earth-warming greenhouse gases.

Although coal classifiers have been around for more than half-a-century, LP Amina,<sup>1</sup> a Charlotte, North Carolina-based environmental engineering company, recognized that there was plenty of room to improve older models installed at many of the world’s power plants. In 2010, the company patented a new design that was easy to slip into existing plants, and promised to save coal and cut pollution. “The technology is quite novel,” says David Piejak, LP Amina’s General Manager in the United States. But the company, which got its start in 2007, faced a classic chicken-and-egg problem, he adds: It had to demonstrate that the technology paid off before customers would buy.

### THE CHINESE OPPORTUNITY

China’s growing energy sector represented a promising opportunity to show off the new technology—but breaking in posed a daunting challenge. Help came from LP Amina’s participation in two Sino-American collaborations: the U.S.-China Clean Energy Research Center (CERC), a \$150 million joint research effort to develop clean energy technologies,<sup>2</sup> and the U.S.-China Energy Cooperation Program (ECP), a unique public-private partnership designed to build commercial ties between the two nations.<sup>3</sup> Through the CERC, LP Amina has participated in joint research projects, workshops, and study tours of advanced coal power plants being built and operating in China. Such activities helped “raise LP Amina’s profile, resulting in inquiries from multiple customers leading to several installations,” says Piejak.

The company’s links to the ECP are also close: In 2009, LP Amina joined with 23 other companies to found the non-profit, Beijing-based group, which works closely with both the U.S. Department of Commerce and Chinese Ministry of Commerce to identify opportunities for clean energy innovation. In particular, LP Amina co-chairs the ECP’s Clean Coal Working Group, which aims to help China’s fast-growing coal power industry improve efficiency and reduce emissions. In early 2011, such ties helped LP Amina ink a deal to install one of its new classifiers at the Fengtai Power Station in Anhui Province in eastern China.<sup>4</sup>

## THE BIG PAYBACK

Studies showed that the Fengtai unit, installed in March 2011, performed as predicted by computer models.<sup>5</sup> It prevented larger coal particles (bigger than 300 microns) from leaking into the boiler, helping reduce nitrogen oxide emissions by up to 15%, and improve efficiency by up to 1%. Given the size of the amount of coal-fired power around the world, a 1% savings is quite significant. In China alone, a 1% efficiency improvement in pulverized coal power plants would mean reducing CO<sub>2</sub> by almost 30 million tons per year.<sup>6</sup>

Moreover, the devices—which can be installed at a cost of about \$5 million to \$10 million per plant—can pay for themselves in some cases within 6 months, and they appear to reduce equipment wear and tear, meaning less downtime for maintenance (known as “curtailment” in the industry). “The payback on being able to avoid unplanned curtailment can amount to thousands if not millions of dollars,” Piejak notes.

Soon, the Fengtai plant had ordered five more of LP Amina’s classifiers, and utilities from Mexico to South Korea were showing interest too. Several U.S. compa-

nies have also signed up including one Texas-based utility that plans to install one of the new classifiers at a plant in that state and collaborate with LP Amina to adapt the technology to the US market.

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— DAVID PIEJAK,  
GENERAL MANAGER - UNITED STATES, LP AMINA

## CREATING AMERICAN JOBS

The story demonstrates just how U.S.-China collaboration on cleaner energy can have mutual benefits, says Piejak. “The technology was developed here, tested in China and is now finding a market here,” he says. And the innovation is already creating U.S. jobs: In Detroit, a former aerospace manufacturer has already built two of the devices, and manufacturers in Ohio and West Virginia have gotten in on the act. Each device can keep 10 to 20 manufacturing workers busy for a month, Piejak estimates. And “our plan going forward

### S-TYPE CLASSIFIER – GLOBAL VALUE CHAIN<sup>7</sup>



- **Research & Development** – SE Asia – Beijing, United States – Columbus, Ohio; Salt Lake City, Utah
- **Manufacturing Locations** – SE Asia – China, United States – Detroit, Michigan; Charleston, West Virginia; Maysville, Ohio
- **Engaged Customers** - multiple

is to manufacture this in the United States for American companies,” says Piejak. And although the market is still early in its development, Piejak says it could be big, with a potential demand for several thousand classifiers in the United States and some 5,000 globally. If the technology takes off, he says, “there is going to be a lot of opportunity for manufacturers” in both the United States and abroad.

The formal Sino-American collaborations may also have an added benefit for LP Amina, Piejak notes: better protection of the company’s intellectual property (IP). “Certainly IP protection is always a concern,” he says. But he predicts that “potential infringers will think twice when considering the legal ramifications of copying a technology that has been sponsored by the U.S. and Chinese governments” through collaborative programs.

In the meantime, better classifiers could mean benefits for workers and manufacturers, and less pollution and cleaner air in Texas, China and around the globe.

This fact sheet is a product of ChinaFAQs, a joint project of the World Resources Institute and experts from leading American universities, think tanks and government laboratories. Find out more about the ChinaFAQs Project at: <http://www.ChinaFAQs.org>.

## CITATIONS

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3. See: <http://www.uschinaecp.org/>  
  
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7. Source: LP Amina