

U-GAS[®] Coal Gasification Technology

Summary

Synthesis Energy Systems, Inc. (Houston, TX) holds a license from GTI for the U-GAS[®] coal gasification process (described below). GTI has worked with SES since 2005 on the design of a U-GAS gasification plant in Zaozhuang City (Shandong Province), China, to process waste coal.

The Technology

U-GAS is an advanced, single-stage, fluidized-bed gasification process. It operates at high efficiency with low emissions to produce low- to medium-Btu gas from various feedstocks, including all ranks of coal. This gas can be used to produce power, chemicals or fuel. A special trait of U-GAS is its ability to efficiently convert high-caking, high-ash, high-moisture coals.

The roots of the U-GAS process go back to a major research program that GTI began in 1974 with funding from the American Gas Association and the predecessor to the U.S. Department of Energy.

The Need

As a U-GAS licensee, SES sought technical support from GTI to optimize the design of U-GAS plants for commercial projects. The first of three projects in China serves a methanol production facility owned by Hai Hua Coal & Chemical Company, Ltd., in Zaozhuang City. The U-GAS unit will convert about 150,000 tons of waste coal per year to syngas, which will be used to produce methanol.

GTI's Role

GTI is providing several years of continued technical support to SES. GTI also negotiated an expanded license in 2006 that grants SES worldwide rights to U-GAS technology.

Analyses of fuels have been performed in GTI's gasification and analytical laboratories.

On extended trips to China, and through continuing periodic interactions, GTI staff participate in the design of the Hai Hua U-GAS plant, and in subsequent projects both in China and in the United States.



Outcomes and Next Steps

Construction of the Hai Hua U-GAS plant was completed and commissioning activities began at year-end 2007. Commercial operation began in early 2008.

GTI is also working with SES on the design of additional U-GAS gasification plants in China and the United States.

For example, SES is working with CONSOL Energy Inc. (Pittsburgh, PA)—the largest U.S. producer of bituminous coal—to evaluate use of U-GAS for converting coal to higher-value products at selected CONSOL coal mining complexes.

The evaluation will include testing at the state-of-the-art, \$16 million Flex Fuel Test Facility on GTI's Chicago campus in the first quarter of 2008.

SES also has reserved access to the FFTF for future evaluation of gasification processes and components.

“Working with GTI helped us accelerate construction of the Hai Hua U-GAS plant. We were able to leverage the gasification technology developed by GTI over the past thirty years as well as the expertise of the GTI team.”

– Tim Vail
President and CEO
Synthesis Energy Systems

About GTI

Based in the Chicago area, GTI has been meeting the nation's energy and environmental challenges for more than 65 years by developing technology-based solutions for consumers, industry, and government.

About Synthesis Energy Systems

SES deploys proprietary systems and technology to gasify low-value fuels that can replace high-cost energy and chemical products sold to major global markets.

For More Information

To learn more about U-GAS or about GTI and its technology development capabilities, contact Vann Bush, Managing Director, GTI Gasification and Gas Processing Center, at 847-768-0973; vann.bush@gastechnology.org.