

Gasification Technology Expertise

Commercial Application

The Energy & Environmental Research Center (EERC) offers a comprehensive and unique suite of technical services in gasification technologies. Having partnered with almost every major manufacturer of gasification systems and support technologies, the EERC's expertise enhances the commercial guarantee for installing cost-effective and successfully operating gasification plants.

Commercial Opportunities

Gasification converts carbonaceous materials, such as coal, petroleum coke, extra heavy oil, or biomass, into syngas—a mixture of carbon monoxide and hydrogen.

Although oil, gas, and conventional coal combustion will remain critical to the energy business for a number of years, there are major opportunities to utilize gasification as a viable process step to convert carbon feedstocks into a range of products including transportation fuels, chemicals, hydrogen, and electricity.

Current opportunities include coal gasification for electricity production, converting lignocellulosic biomass into electricity for distributed power production, refinery residues such as petcoke into hydrogen for hydrotreatment and carbon dioxide for enhanced resource recovery, and municipal waste to heat.

Current Approaches

Although the gasification process has been utilized since the early 1800s, until recently it was limited to niche applications. Thus the knowledge base of most experts in the field is limited specific to technical areas and gasification technologies.

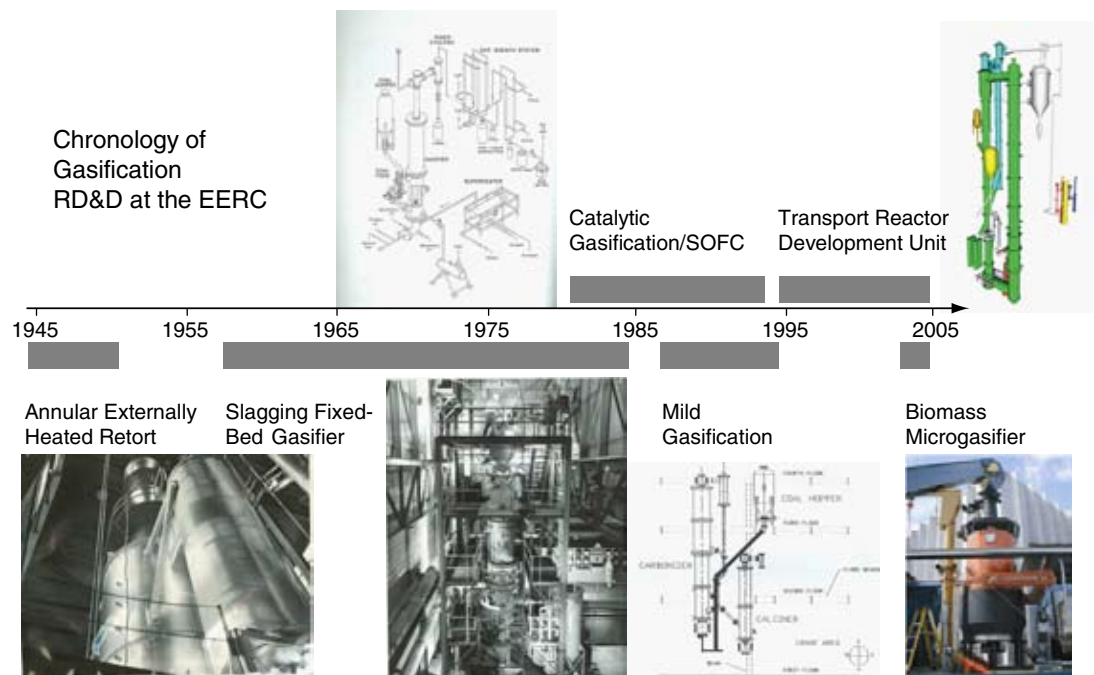
EERC Advantage

The EERC's over 50-year history of working on a variety of gasification and support technologies sets it apart from other knowledge providers in the field. The EERC, which maintains numerous in-house demonstration facilities, was involved in the design and operational aspects of the Great Plains Synfuels Plant—North America's only gasification plant.

Recognized as one of the leading coal research centers in the world, the EERC understands the entire value chain of gasification: operational challenges and opportunities associated with feedstock preparation, gasification technologies, gas cleanup, syngas conversion, and by-product utilization. The latter, for example, includes leading the nation's largest carbon sequestration partnership (Plains CO₂ Reduction Partnership).

EERC Benefits

- Provides critical know-how and technologies for producing low-cost synfuels, as well as electricity and hydrogen, through gasification and subsequent liquefaction.
- Possesses demonstrated experience along the entire value chain of gasification.
- Has worked with almost every major manufacturer of gasification systems.
- Develops and maintains demonstration facilities for testing a variety of feedstocks and synfuels.
- Consistently achieves a high success rate in leveraging market-driven research dollars.



The EERC has worked in gasification for over 50 years.

Market Potential

Gasification's potential is significant, including for large-scale systems in main industries such as coal and oil and gas and for smaller distributed systems in industries such as forest products, agricultural processing, and secondary milling, which can benefit from the waste utilization features of gasification technologies. There is an estimated potential application for at least 100,000 small-scale gasification units in the United States.

Partners

Babcock-Hitachi; Chevron; ConocoPhillips; Destec Energy, Inc.; Dow Chemical Company; ELCOGAS; Electric Power Research Institute; the Energy Research Center of the Netherlands; KEMA Netherlands; Krupp Uhde; Sasol; SenterNovem; the Shell Development Company; the U.S. Department of Energy; and Texaco

Type of Collaboration

The EERC is actively seeking research, development, demonstration, and commercialization partners.

Intellectual Property (IP) Rights

The EERC Foundation holds proprietary knowledge and IP rights available for licensing in different aspects along the gasification value chain, including full-system solutions for microgasification units.



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