Nordic Energy
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Changes in operating conditions coupled with changes in commercially manufactured catalysts can produce both power generation increases and significant cost savings at **Integrated Gasification Combined Cycle (IGCC) power plants**, according to new research from a U.S. Department of Energy (DOE)-sponsored project.

Results from the project at DOE's National Carbon Capture Center (NCCC) could ultimately lead to lower-cost carbon-capture technologies and help provide affordable, reliable, and clean energy from our nation's domestic coal resources. Carbon capture, utilization and storage (CCUS) technologies are viewed by experts as an important option in helping reduce atmospheric carbon dioxide (CO2) emission linked to potential global climate change.

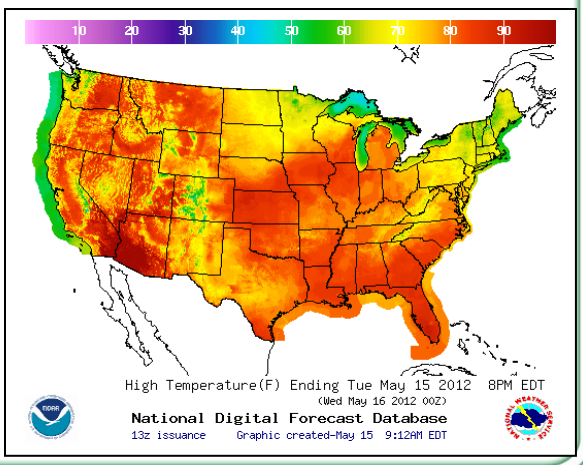
Advanced power plants using IGCC technology convert coal into a synthesis gas, or "syngas," which can then be combusted to produce electricity. The syngas contains combustible hydrogen and carbon monoxide (CO), along with water, nitrogen, and CO2, a greenhouse gas. To capture CO2 and prevent its release into the atmosphere, the syngas is "shifted" in a chemical process called the water-gas shift (WGS) reaction. The reaction converts CO into CO2 in the presence of a catalyst and steam and produces additional hydrogen for combustion. A large amount of steam ensures maximum conversion of CO and inhibits side reactions, but it also reduces the overall efficiency of the IGCC plant. The amount of steam is quantified by the steam-to-CO ratio of the gas fed to the WGS reactor. Testing a variety of commercially available WGS catalysts, NCCC researchers were able to significantly reduce the steam-to-CO ratio while still achieving high CO conversion without side reactions. A reduction in the ratio translates into increased net power output and a smaller increase in the cost of electricity associated with carbon capture. Specifically, the 1.0 reduction in steam-to-CO ratio that was achieved corresponds to a 40-megawatt increase in power generation in a 500-megawatt IGCC plant. This could result in cost savings of more than $275 million over a plant's estimated 30-year lifespan at current IGCC power costs of about $33 per megawatt-hour. NCCC researchers are providing the test results to manufacturers to assist them in specifying future WGS systems for IGCC plants that incorporate carbon capture. The researchers are also planning further tests with other commercially available, newly formulated WGS catalysts. In addition, the findings are being implemented at a commercial IGCC plant now under construction in Kemper County, Miss. The plant will showcase a transport gasifier technology developed at the NCCC. Located in Wilsonville, Ala., the NCCC is a state-of-the-art test facility dedicated to the advancement of clean coal technology.

Electricity Pricing Areas – May 15, 2012
May

On-Peak	Per kWh
West Hub	$.03350
NI Hub	$.02800

ComEd Average Day Ahead LMP Electric Price

Time Period	Average per Kwh
May1- May 31, 2011	$.03954
June 1 - June 30	$.03851
July 1 thru July 31	$.05170
Aug 1 – Aug 31	$.04064
Sep 1 - Sep 30	$.03058
Oct 1- Oct31	$.02968
Nov 1- Nov 30	$.02816
Dec 1 – Dec 31	$.02971
Jan 1 –Jan 31	$.03043
Feb 1–Feb 29	$.02963
Mar 1 thru Mar 31	$.02894
April 1 – April 30	$.02659
May 1 thru May 14	$.02620

Extended Temperature Forecast: Chicago Area

	Tue	Wed	Thu	Fri	Sat
High	79	62	69	78	80
Low	51	44	52	58	61