Status of Large-scale Gasification and IGCC Projects

Steve Jenkins
Vice President,
Gasification Services
CH2M HILL, Inc.
April 5, 2012
Examples of Current Large-scale Coal Gasification Projects

- Duke Energy Indiana – Edwardsport IGCC
- Indiana Gasification – SNG
- Kemper County IGCC
- Adams Fork Energy - Gasoline
- Medicine Bow Fuel & Power - Gasoline
- Hydrogen Energy California – IGCC and Fertilizer
- Texas Clean Energy Project – IGCC and Fertilizer
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Duke Energy Indiana Edwardsport IGCC Project

- Edwardsport, IN
- IGCC
- 1.8 million tons/year of Indiana No. 5 coal
- 618 MW net output
- GE Energy gasification and power block
- In construction
- Operation in 2012
Mississippi Power Company
Kemper County IGCC Project

• Liberty, MS
• IGCC
• 582 MW net output
• 5 million tons/year of lignite
• TRIG™ transport reactor gasification technology and Siemens power block
• Capture and sale of 65% of CO₂ for Enhanced Oil Recovery (EOR)
• In construction
• Operation in 2014

Source: Southern Company
Summit Power Group

• Penwell, TX

• Poly-generation: IGCC and urea production

• 2 million tons/year PRB sub-bituminous coal

• 400 MW gross output

• >700,000 tons/year urea fertilizer

• Siemens Fuel Gasification Technology and Siemens combined cycle power block

• >90% CO₂ capture and sale for EOR
Texas Clean Energy Project

• $450 million co-funding from U.S. Department of Energy’s Clean Coal Power Initiative
• Federal and state tax credits
• Contracts in place for:
  – Power to CPS Energy
  – Urea to major fertilizer company
  – CO₂ into local pipeline for EOR in west Texas
  – EPC for entire facility
    • Linde and SK Engineering & Construction for Chemical Block
    • Siemens for Power Block
  – 15-year O&M services contract for entire facility
Indiana Gasification

• Rockport, IN
• Coal to SNG
• $3.5^{+}$ million tons/year Illinois Basin coal
• GE Energy gasification technology
• Sale of SNG to Indiana Finance Authority, which will then sell to gas utilities
• $\text{CO}_2$ capture for EOR (needs long-distance pipeline)
• Applied for $1.875\text{B}$ federal loan guarantee
• Awaiting state legislation for tax benefits
Hydrogen Energy California

• Bakersfield, CA

• Original project was IGCC only

• Project acquired by SCS Energy in 2011

• Project will now be poly-generation: IGCC and urea fertilizer products

• 400 MW gross output

• 1.8 million tons/year western bituminous coal and/or pet coke

Source: HECA
Hydrogen Energy California

• Mitsubishi Heavy Industries gasification and power block
• 1.3 million tons/year urea-based fertilizers
• 90% CO$_2$ capture and use for EOR at nearby Elk Hills oil reserves
• $408$ million co-funding from DOE Clean Coal Power Initiative
• Operation in 2017

Source: HECA
DKRW Advanced Fuels
Medicine Bow Fuel & Power

• Medicine Bow, WY

• 1.8 million tons/year of local bituminous coal

• GE Energy gasification technology
  – Davy process to convert syngas to methanol
  – ExxonMobil methanol-to-gasoline technology

• 10,600 barrels/day gasoline

• Capture and sale of CO₂ for EOR

• Operation in December 2015
U.S. TransCarbon
Adams Fork Energy

- Wharncliffe, WV
- Coal to gasoline
- 2.3 million tons/year of local bituminous coal
- Uhde Prenflo gasification technology
- Syngas converted to methanol
- ExxonMobil methanol-to-gasoline process for 18,000 barrels/day of gasoline
- Operation in 2016

Source: U.S. TransCarbon
Contact Info

Steve Jenkins
Tampa, FL
813-281-7734
steve.jenkins@ch2m.com