GE Energy

Integrated Gasification Combined Cycle (IGCC) Power Plant

imagination at work

Integrated Gasification Combined Cycle and Polygeneration

Gasifier/Radiant Syngas Cooler

- Experience-based design (radiant/quench hybrid)
- High efficiency feed injector
- High pressure steam production (2000 psig)
- 250-335 knm^3/hr of syngas

Syngas Cleanup

- Heavy metals
- Particulate
- Acid gas treatment
- CO_2 separator for storage or EOR

Sulfur Recovery Unit

- Converts H_2S to elemental sulfur

Tail Gas Treatment

High Value Steam (optional)

- Marketable product

Steam Turbine

GE Energy Syngas Turbine

- More than 3 GW on syngas today
- Proven H_2 combustion technology
- E and F class technology

Feedstocks

- Crude oil
- Vacuum residuals
- Asphaltenes
- De-asphalted residuals
- Pet coke
- Other hydrocarbons

Integrated Controls

- Common control platform throughout plant
- Virtual plant simulator reduces time to maturity
- Automatic transient load control

Performance

- High availability and efficiency
- Guaranteed performance, emissions, and schedule, plus a guarantee on optional carbon capture

Energy Innovation and Technology from GE

Customers are looking for a portfolio of power generating solutions to meet growing demand. Continuing a long tradition of innovation in energy-producing technology and a commitment to developing innovative ways to generate electricity, GE Energy offers the Integrated Gasification Combined Cycle (IGCC) power plant. Our proven technology converts petroleum-based feedstocks—crude oil, vacuum residuals, asphaltenes and de-asphalted residuals, pet coke and other waste hydrocarbons form refineries—into higher value products, such as power, hydrogen and steam.

Taking on Emissions

Critical in the fight to stem emissions, GE Energy's IGCC solutions use our proven gasification technology to reduce emissions from oil-fired power plants. With IGCC, we can convert the heavy oil and refinery bottoms into a fuel called synthesis gas, or syngas, and then use the syngas to generate electricity in a gas turbine combined cycle system. GE Energy's gasification process provides the mechanism for effectively capturing key pollutants—nitrogen oxides, mercury and vanadium—during the precombustion process.

Leadership, Experience, Innovation

GE Energy's leadership in the development of innovative energy technology is well known throughout the world, and GE Energy has one of the largest global installed bases of industrial gasification facilities in operation today. GE Energy provides the technological solutions to help customers expand operations while at the same time providing cleaner energy.

Worldwide and World-Class

With our IGCC technology, GE Energy combines industry-leading experience with world-class technological innovation to achieve increased efficiency, performance and profitability for our customers.

Since in 1948, GE Energy has been a leader in gasification process technology. Today, we have 65 plants operating on GE Energy gasification licenses, with another 20 under construction.[1] We have more than 40 years' experience in heavy oil gasification, with more than 27 plants operating on liquids including naphtha, crude oil, heavy fuel oil, visbreaker tar, steam cracked tar, heavy residue, vacuum residue and asphaltenes.

We have taken our expertise in gasification and in power generation technologies to offer customers proven IGCC and polygeneration solutions. Our syngas turbines have more than one million operating hours and are producing more than 3GW of power around the world. Refinery customers rely on our expertise to enhance operations from refinery residuals. For example, since 2001, at Sarlux Refinery Polygeneration in Sardinia, Italy, our gasification and power generation technology has been producing steam, hydrogen and 551MW of electricity.

[1] As of January, 2008

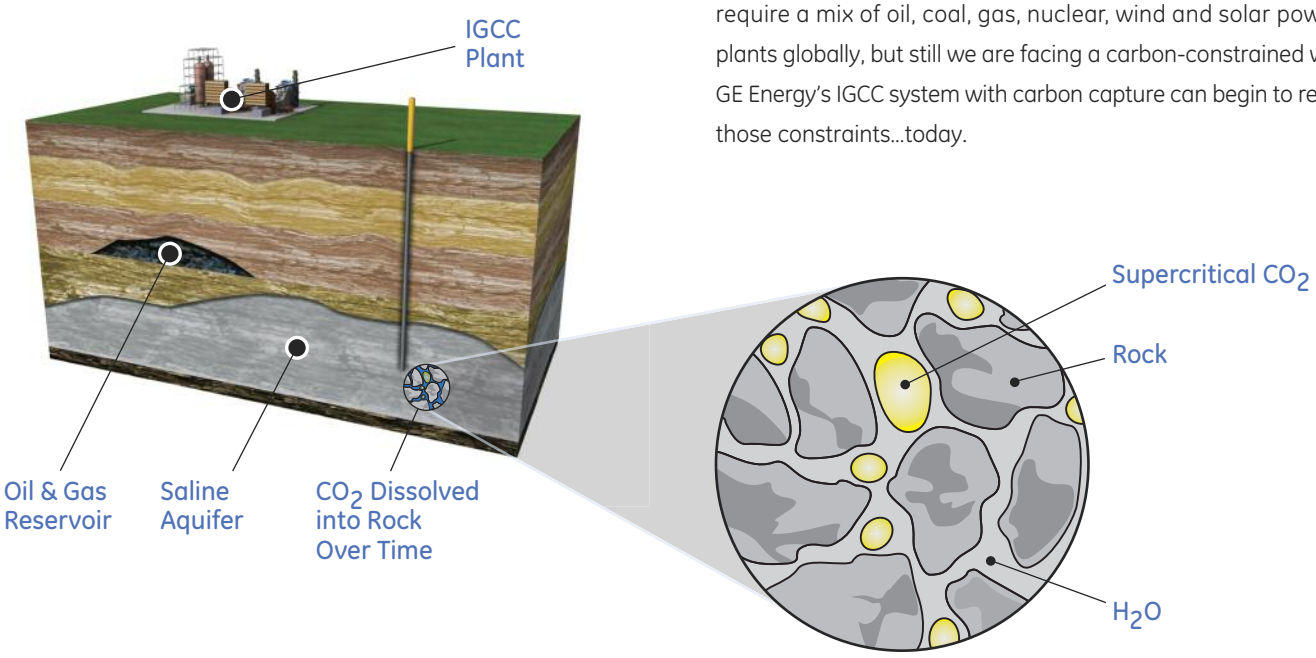
An Alliance for Excellence

Carbon Capture and Storage (CCS)

GE Energy's leadership in IGCC technology has brought about a unique, "first-of-its-kind" alliance. GE Energy and Schlumberger have signed a Carbon Sequestration agreement, enabling the two companies to combine their respective expertise to accelerate the application and use of IGCC technology. GE Energy will now be working in concert with Schlumberger Carbon Services, a leader in the geologic storage of CO_2, to align and address the technical needs of CCS to offer customers a complete, cost effective solution that can be readily implemented.

GE Energy can design and supply IGCC plants with carbon capture capability today, or as a retrofit, with CO_2 emissions that are at parity with, or even lower than, that of advanced natural gas plants. However, that alone does not resolve the environmental issue posed by the release of CO_2 into the atmosphere. The commercial alliance with Schlumberger Carbon Services, whose expertise includes 80 years of experience in geologic subsurface evaluation, along with comprehensive CO_2 storage solutions consistent with care for health, safety, and the environment, provides the missing piece.

Meeting the global demand for energy today, and in the future, will require a mix of oil, coal, gas, nuclear, wind and solar powered plants globally, but still we are facing a carbon-constrained world. GE Energy's IGCC system with carbon capture can begin to release those constraints...today.



For more information, see your GE sales representative or contact us at gasification.info@ge.com

Visit us online at ge-energy.com/gasification

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