CO_2 MANAGEMENT

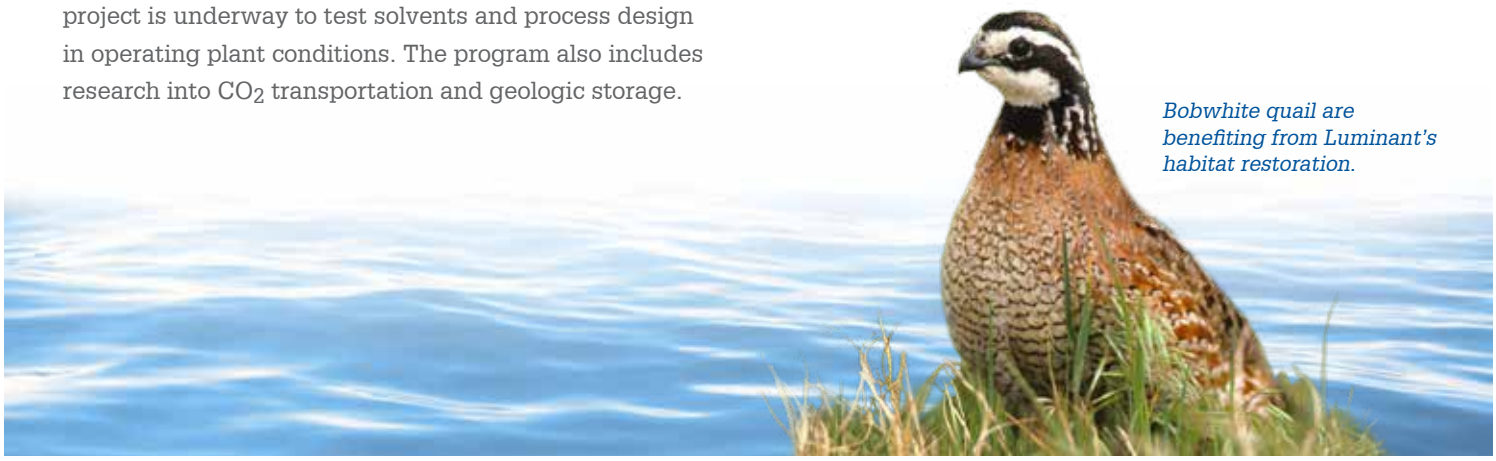
Luminant

Luminant is investing in a number of research and development projects to capture and remove carbon dioxide from the flue gas of coal-fueled generating plants. In addition to exploring emerging technologies that capture and remove CO_2, Luminant is taking action today to address climate change. Its voluntary climate stewardship program, begun in 1991, continues to be a national leader. The company is also a top purchaser of Texas wind power and continues to explore the potential expansion of its nuclear facility, which emits no CO_2.

Restored mined land at Big Brown and Luminant's other mines incorporate water features for livestock and wildlife.

Testing Tomorrow's Technologies Today

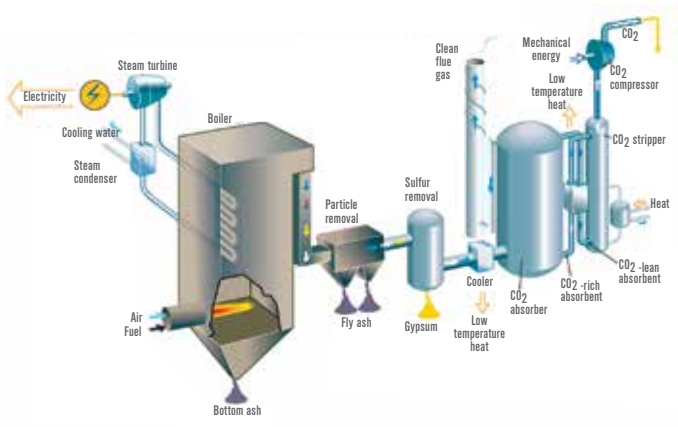
- The University of Texas Carbon Management Program focuses on developing and improving amine-based carbon-capture technologies. Tests are conducted on a pilot scale at the university, and a pilot scale system project is underway to test solvents and process design in operating plant conditions. The program also includes research into CO_2 transportation and geologic storage. Over the past six years, Luminant has contributed $2.8 million in support of this program.
- The National Carbon Capture Center, located in Wilsonville, Ala., is a Department of Energy facility managed by Southern Company Services, which supports the development and testing of cost-effective technologies to capture CO_2 from coal-fueled power plants. Luminant is one of the eight industry co-sponsors of this DOE facility. The center's testing and analysis is on a scale large enough to provide comprehensive data under real operating conditions.
- Skyonic Corporation is developing a sodium-based scrubbing technology that captures carbon in the form of sodium bicarbonate – common baking soda – as well as capturing sulfur dioxide and nitrogen oxide emissions. Luminant's Big Brown coal-fueled generation plant served as a host site from 2006 to 2009 for a prototype system used to evaluate the process chemistry and develop process enhancements.
- Luminant is one of six industry co-sponsors of a DOE partnership to assess the viability and accelerate the development of solid-sorbent-based CO_2 capture. Bench-scale testing and operation of the initial pilot project are complete at Luminant's Martin Lake coal-fueled generation plant, and the pilot has been moved to the second of three test sites as planned. ADA-ES, the contractor on this project, has been awarded an additional grant for a second-phase project to begin a one-megawatt-equivalent-sized system. Luminant will remain a sponsor.



Bobwhite quail are benefiting from Luminant's habitat restoration.

AMINE SCRUBBING

Postcombustion capture (absorption process)

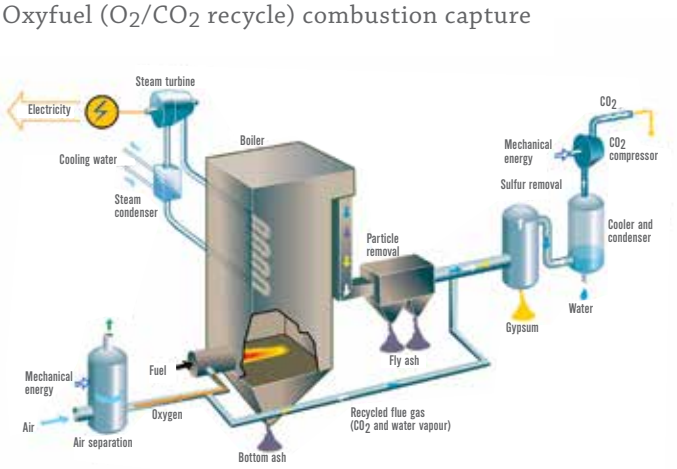


Source: Vattenfall
Illustrator: www.kjell-design.com

- Luminant is one of 10 utility co-sponsors of a DOE project awarded to Alstom in 2009 to develop application of the oxy-firing process for tangential-fired boilers.
- The Electric Power Research Institute completed a demonstration project in late 2009 by Alstom that used chilled ammonia to remove CO_2 from the flue-gas stream of a Wisconsin power plant. Luminant was a participant in the EPRI support of this project.
- Luminant was one of the industry sponsors of a DOE project conducted by the Energy and Environmental Research Center at the University of North Dakota to test the characteristics of lignite for gasification. This project began in 2007 and concluded in May 2010.
- Luminant conducted two engineering studies in 2006 and 2007 to evaluate retrofit of oxy-firing to existing plant designs, including gas- and coal-fueled units.

OXY-FIRING

Oxyfuel (O_2/CO_2 recycle) combustion capture



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- Luminant is also evaluating renewable technologies at its own facilities. One project includes algae production for development of biofuels. This demonstration project, based at the company's Martin Lake plant, includes development of technology to capture CO_2 from flue gas in a proprietary form to enhance the growth rate of the algae. Another Luminant zero-emission renewable project is testing technology to generate electricity using the water flowing from the discharge canal at Martin Lake.

Martin Lake's water-flow project produces zero emissions.

For more information on Luminant's environmental programs, visit **www.Luminant.com/Environment**