



PROJECT SNAPSHOT



COMPLETED PROJECT

CALLIDE OXYFUEL DEMONSTRATION

The Callide Oxyfuel Project was the largest oxyfuel demonstration in the world when it completed its demonstration phase in March 2015. The project has helped create a pathway for the design and construction of larger-scale oxyfuel combustion plants with carbon capture.

PURPOSE

The Callide Oxyfuel Project confirmed that carbon capture technology could be applied to a coal-fired power station to generate electricity with almost no emissions. By capturing CO₂, the project demonstrated that large reductions could be made in power station emissions .

The project also undertook an initial screening study of potential geological storage opportunities in south-east Queensland, within a reasonable distance of the Callide power station where the oxyfuel demonstration was located.

ACHIEVEMENTS

As one of only a small number of coal-fired, low-emission projects in the world to move beyond concept to construction, the project represented several firsts for Australia and the world:

- the world's first industrial-scale demonstration of oxyfuel combustion and carbon capture technology
- the world's first power station to be retrofitted with oxyfuel carbon capture technology
- the first injection underground of CO₂ from an Australian power station
- the world's first injection of CO₂ from an oxyfuel power station.

At the start of this project, very little was known about Queensland's geological storage potential. The project's screening study eliminated those regions with little or no potential as storage sites, allowing further work to focus on regions with good prospects.



TIMING

A Memorandum of Understanding between CS Energy and the project's Japanese partners was signed in 2004 to commence a project feasibility study, with the project culminating in a three-year demonstration phase which was completed in March 2015.

The project achieved 10,200 hours of oxyfuel combustion, 5,600 hours of carbon capture and the generation of a significant amount of electricity into the grid – on a commercial basis – over three-and-a-half years.

PROCESS

The Callide Oxyfuel Project demonstrated the capability of production of electricity from coal with almost no power station emissions to the atmosphere by capturing a major portion of the flue gas CO₂ as liquefied gas.

Other waste gases such as oxides of nitrogen (NO_x), oxides of sulphur (SO_x), and heavy metals were captured in benign form for safe disposal. The project involved the following key technologies and activities:

- ① oxyfuel combustion of coal to achieve a 60 percent to 70 percent reduction in the actual volume of flue gas and a proportionate increase in the CO₂ concentration
- ② separation and recovery of industrial grade CO₂ from the power station flue gas stream
- ③ assessment of CO₂ storage capacity in Queensland and injection testing of oxyfuel CO₂.

Callide
Oxyfuel Project

MORE INFORMATION

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