

Energy field

Hitachi Research Laboratory

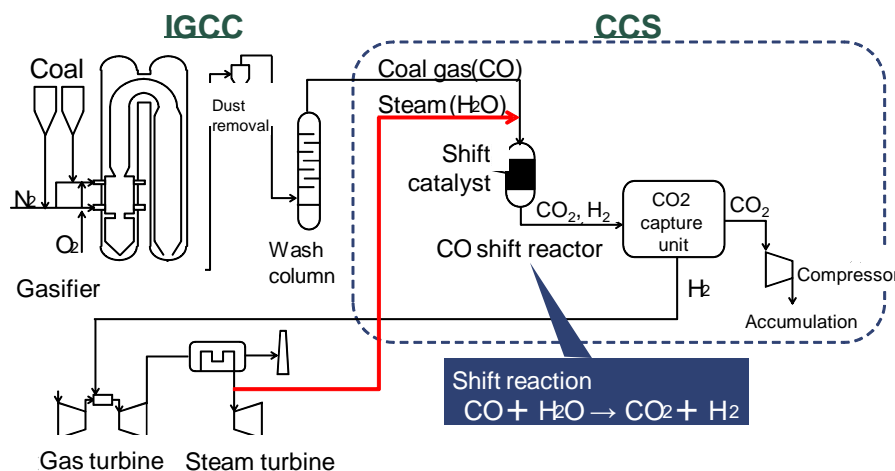
Department of Coal Science Research

Hitachi, Ltd., web site 【13th Sep 2011 News Release】 <http://www.hitachi.co.jp/New/cnews/month/2011/09/0913a.html>

Shift catalyst reactive at low temperatures for next-generation coal-fired power generation

Integrated Coal Gasification Combined Cycle with CO₂ Capture(CCS-IGCC)

CCS-IGCC is next-generation technology that turns coal into gas and which makes CO react with H₂O (steam) on a shift catalyst producing CO₂ and H₂. The CO₂ is then captured and stored and the remaining H₂ is used as fuel.



【Achievement】

The shift catalyst contributes by-reducing the steam supply during CO₂ capture by 30%.

⇒ More steam can be used for power generation.

Highly efficient power generation has been achieved.

■ Characteristics

- ① The shift catalyst uses molybdenum on the surface of the catalytic site. By optimizing the catalytic site component, a higher dispersion of molybdenum particles than conventionally achieved can be attained.
- ② The molybdenum needs to be sulfurized before the shift catalytic reaction. By adding a new ingredient to promote the sulfurization of molybdenum, the catalytic surface was successfully increased.
- ③ ■ Plan
A pilot test will be conducted, and then, we will promote the research and development for commercial application.

A word from the development team

This technology will contribute to the protection of the global environment through reducing CO₂ emission in coal-fired power generation and by the generation of chemical by-products.