

Progress of Osaki CoolGen Oxygen-blown IGCC and CO₂ Capture Demonstration

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Abstract

Coal-fired power plants, which provide stable power at low cost, will continue to serve as base load supporting the world's increasing power demands. However, the amount of CO₂ emitted by coal utilization is larger than that of other fossil fuels. It is necessary to find realistic solution to this problem for the world's sustainable development. Therefore the Osaki CoolGen Project has been launched to realize innovative HELE (High Efficiency, Low Emissions) coal-fired power generation which combines an IGCC (Integrated coal Gasification Combined Cycle) / IGFC (Integrated coal Gasification Fuel Cell combined cycle) with CO₂ capture. This project is subsidized by the Ministry of Economy, Trade and Industry (until 2015 FY) and New Energy and Industrial Technology Development Organization (from 2016 FY).

This project consists of the following three steps. In the first step, highly-efficient oxygen-blown IGCC which is the base technology for IGFC is demonstrated. In the second step, the IGCC with CO₂ capture process is verified. In the third step, a fuel cell unit is planned to add to the IGCC in order to demonstrate an IGFC with CO₂ capture system. Demonstration testing of the first step commenced in March 2017. We achieved world-class net efficiency, load change rate and environmental performance. Construction of CO₂ capture unit is now underway to start demonstration test from late 2019. In this presentation, operation summary of our 166MW IGCC plant and demonstration test plan of CO₂ capture unit will be introduced.