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The Outline of Osaki CoolGen Project of Oxygen-blown IGCC Demonstration

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Abstract

Coal is a valuable primary energy source that has excellent supply stability and economic efficiency. Japan has extremely low energy self-sufficiency and coal-fired power generation is positioned as an important base load power supply. However, the amount of CO2 emitted by coal utilization is larger than that of other fossil fuels. One urgent issue we face is to find realistic countermeasures that greatly reduce CO2 emissions from coal-fired power plants Therefore, we have launched the Osaki CoolGen Project since April 2012 as an "Integrated coal Gasification Fuel Cell combined cycle (IGFC) demonstration project" 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 aims to realize innovative low-carbon coal-fired power generation that combines an IGFC, an extremely efficient coal-fired power generation technology with high-performance CO2 capture technology for the purpose of dramatically reducing CO2 emissions from coal-fired power generation.

This project consists of three stages. The first stage implement demonstration tests of the oxygen-blown Integrated coal Gasification Combined Cycle (IGCC) which is the base technology for IGFC. The construction of the first step was started in March 2013 and commissioning of it was started in April 2016. The demonstration operation of the first step started in March 2017, and we have been implementing verification of basic performance and reliability. In the second step, we plan to carry out demonstration tests of the oxygen-blown IGCC with CO_2 capture equipment. In the third step, demonstration tests of an IGFC system combined the demonstration plant of the second step with fuel cell is planned.