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Demonstration of hydrogen co-firing power generation at existing thermal power plants

Daichi Utsunomiya
Technical Engineer, Hydrogen Business Strategy Division,
The Kansai Electric Power Company, Inc.
Osaka, Japan

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Abstract

As one of Japan's initiatives to achieve carbon neutrality by 2050, Ministry of Economy, Trade and Industry (METI) and New Energy and Industrial Technology Development Organization (NEDO) have established Green Innovation Fund (GI Fund). Several projects are supported through this fund, and the "Establishment of Hydrogen Power Generation Technology" project is one of them.

To promote the social implementation of hydrogen, it is necessary to create large-scale hydrogen demand, and one means of achieving this is through power generation using hydrogen gas. Aiming to establish operational technologies of hydrogen power generation, supported by the GI Fund, our company is conducting demonstration of hydrogen co-firing power generation using existing gas turbine power generation facilities at our thermal power plants.

This project progresses through 3 phases: the FS phase (FY2021–FY2022), the FEED and Installation phase (FY2023–FY2024), and the Demonstration phase (ongoing in FY2025).

In this project, we have installed ON-SITE water electrolysis system and hydrogen gas cylinders, to produce the hydrogen for co-firing. Additionally, we have modified the combustors and other related facilities to accommodate hydrogen co-firing in the power generation equipment. The demonstration is being conducted with a maximum co-firing rate of 30 vol%.

We will conduct demonstrations of hydrogen co-firing power generation to establish operational technologies during EXPO 2025 OSAKA, KANSAI, JAPAN.