November 9, 2026

New Energy and Industrial Technology Development Organization (NEDO)

Kawasaki Heavy Industries, Ltd.

RWE

Europe's First 30 MW-class 100% Hydrogen Gas Turbine Power Generation Facility Begins Operation in Germany
–Advancing Hydrogen Power Generation Through Japan-Germany Collaboration–

With support from NEDO under its International Demonstration Project on Japan's Technologies for Decarbonization and Energy Transition, Kawasaki Heavy Industries, Ltd. (Kawasaki) is advancing the "Hydrogen Gas Turbine Power Generation Demonstration Project for Realizing Hydrogen Power Generation in Europe" (hereinafter, the "Project"*1) in Germany together with RWE, a major German power company.

On November 6 local time, an opening ceremony was held for the power generation facility, which uses Kawasaki's 30 MW-class L30A gas turbine, at the hydrogen park of RWE's Emsland Power Station in Lingen, Lower Saxony, Germany.

At the Emsland Power Station, RWE is developing facilities to produce, transport, and use hydrogen derived from renewable energy. RWE aims to commercialize a system that stores surplus renewable electricity as hydrogen and converts it back into electricity when needed.

Through the Project, Kawasaki aims to realize large-scale use of hydrogen energy and contribute to decarbonization and a stable energy supply worldwide, including in Europe.

In addition, the long-standing cooperation between NEDO and NOW*2, a German government-affiliated organization, has contributed in part to the realization of the Project.



Figure 1: Representatives pressing the green button at the opening ceremony

1. NEDO's International Demonstration Project

Technologies developed by Japanese companies to promote the use of hydrogen and a decarbonized society have strengths in terms of S+3E (safety, energy security, economic efficiency, and environmental compatibility). However, challenges remain in verifying their effectiveness overseas, where conditions differ from those in Japan, and in promoting their adoption in Japan and abroad. Against this backdrop, NEDO selected the Project in fiscal 2021 under its International Demonstration Project on Japan's Technologies for Decarbonization and Energy Transition. Built on the long-standing cooperation between NEDO and NOW, the Project will help expand Japan's energy industry domestically and internationally, advance energy transition and decarbonization worldwide, and strengthen Japan's energy security.

2. Achievements

For the Project, the 30 MW-class L30A gas turbine manufactured at Kawasaki's Akashi Works was assembled and installed on site as a packaged power generation system by Kawasaki Gas Turbine Europe GmbH, a Kawasaki subsidiary engaged in the gas turbine business in Europe. RWE was responsible for the overall hydrogen power plant plan and installation of the auxiliary facilities.

This is the first project in Europe[*3] to conduct hydrogen co-firing and 100% hydrogen-fueled power generation using a 30 MW-class gas turbine.

The gas turbine combustor used in the Project employs a diffusion combustion system (wet system)[*4], balancing economic and environmental performance. The system can flexibly vary the hydrogen co-firing ratio from 0% to 100%, enabling the same gas turbine to support phased decarbonization and power generation from the initial stage, when hydrogen supply is limited, through full-scale adoption.

3. Future Plans

Demonstration testing will now proceed at the site. Using CO_2-free hydrogen supplied from RWE's wind power generation facilities and natural gas as fuels, the tests will confirm the effectiveness of the facility as a power generation system. Specifically, the Project will verify compliance with power station emission requirements for NOx and CO, as well as combustion stability, durability, and operability.

Kawasaki will incorporate the knowledge gained through the Project into product development and bring the technology to market promptly, thereby contributing to the early commercialization of hydrogen power generation and the development of a hydrogen supply chain in Europe. NEDO will promote the adoption, in Japan and abroad, of technologies being developed by Japanese companies through the results of the Project, contributing to the use of hydrogen and the advancement of a decarbonized society.



Figure 2: Hydrogen gas turbine and representatives

[Notes]

*1 The Project

Project title: International Demonstration Project on Japan's Technologies for Decarbonization and Energy Transition / Hydrogen Gas Turbine Power Generation Demonstration Project for Realizing Hydrogen Power Generation in Europe (Germany)

Project period: FY2021–FY2026

Project overview: Hydrogen gas turbine power generation demonstration project for realizing hydrogen power generation in Europe (Germany) https://www.nedo.go.jp/english/activities/activities_AT1_00175.html

*2 Official name: National Organisation for Sustainable Mobility

*3 First in Europe (according to Kawasaki research as of November 2026)

*4 Diffusion combustion system (wet system)

A combustion method that injects water or steam to reduce NOx emissions. It offers excellent combustion stability and readily supports co-firing; however, improving efficiency is difficult because moisture absorbs part of the combustion energy.