

DECARBONIZING HEAVY INDUSTRY

with Asia Pacific's first 100% hydrogen engine power plant

Background

Hyosung Heavy Industries Co., Ltd. is a total energy solution leader in South Korea with a mission to develop innovative, sustainable solutions as part of the energy transformation. With grid volatility rising as more variable renewable energy sources are added to the energy mix, Hyosung believes that hydrogen (H₂) commercialization is key to achieving the shared goal of carbon neutrality.

At the company's sister Hyosung Chemical Yongyeon Plant, hydrogen is created as a by-product of its polypropylene production process. The hydrogen is then purified and sold to other chemical plants and hydrogen vehicle charging stations. Searching for a more direct way to put the hydrogen to use, the company sought a hydrogen engine solution that would enable it to sell cleaner energy to the grid in accordance with established incentives from the South Korean government's Clean Hydrogen Production Standard (CHPS).

Hyosung Heavy Industries turned to INNIO Group's Jenbacher technology to pilot the Asia Pacific (APAC) region's first power plant fueled by 100% H₂. The company chose the Jenbacher technology for its megawatt-scale power output, high efficiency, and fast frequency response, and for INNIO Group's exceptional service and proven global experience in special gas applications.

A first-of-its-kind sustainable H₂ solution

Commissioning of the pilot H₂ genset co-located at the site of the Hyosung Chemical Yongyeon Plant in Ulsan, South Korea, began in early 2024. The highly efficient Jenbacher J420 engine operates on the hydrogen produced at the chemical plant and is delivered via 50 meters of piping from the plant's main hydrogen pipeline.

RNP Enterprise Ltd.—the long-time official distributor and service provider of Jenbacher engines in South Korea—delivered the Jenbacher genset to Hyosung. Additionally, Hyosung opted for a Jenbacher multi-year agreement (MYA) covering services for the unit's first 20,000 operating hours.

»Hyosung is striving to improve our impact on climate change by embracing the global energy transition. We have joined forces with INNIO Group to support our efforts to reduce carbon emissions while exploring commercial and sustainable opportunities related to our hydrogen by-product production. Our climate change response strategies have set the goal of reducing emissions and energy consumption while increasing energy efficiency. INNIO Group's Jenbacher technology provides an efficient and proven solution to help us meet this goal.«

Taehyun Yang,
Director of Hydrogen Business at Hyosung Heavy Industries



Results

Producing up to 1,042 kW of electricity, this new Jenbacher genset will serve as a pivotal example of how a reciprocating engine can run on hydrogen to effectively decarbonize heavy industry in the APAC region.

This pilot project furthers INNIO Group's goals of preparing for a secure, affordable, and climate-neutral energy future while also aligning with the South Korean government's efforts to encourage hydrogen use as it moves toward carbon neutrality by 2050. In fact, the government's CHPS auction began in 2024.

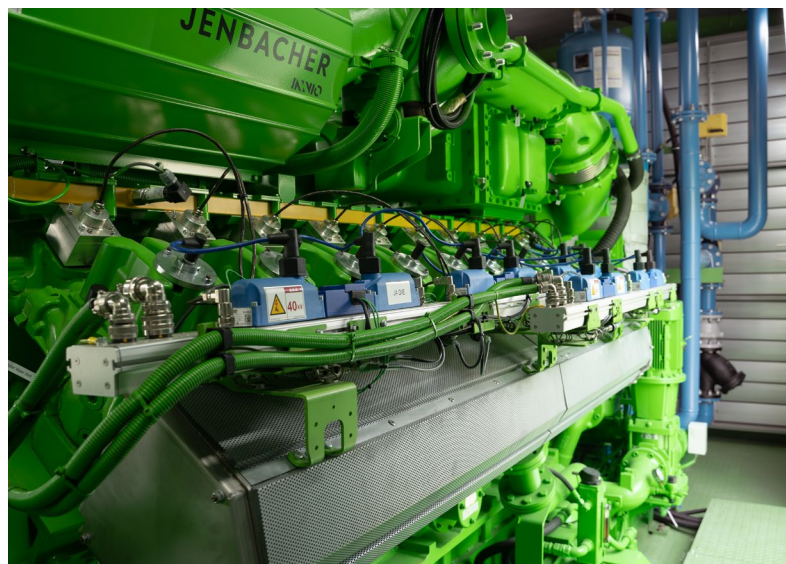
Key technical data

Installed engine	1 x J420
Electrical output	up to 1,042 kW
Thermal output	1,136 kW ¹
Energy source	100% hydrogen
Commissioning	2024

¹ Achieved in combined heat and power (CHP) applications only

Customer benefits

- Effective use of the by-product hydrogen—based on INNIO Group's extensive global experience with Jenbacher technology operating on special gases
- Highly efficient, megawatt-scale output
- Fast frequency response for grid volatility support



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