

World's first 100% hydrogen combustion technology for residential water heaters

Rinnai Corporation (headquarters: Nagoya, Aichi; president: Hiroyasu Naito) has successfully developed the world's first 100% hydrogen combustion technology for residential water heaters. Rinnai has spent many years developing gas appliances and accumulated exceptional combustion and fluid control technologies in the process. Deploying these technologies, we have succeeded in the development of a water heater powered by hydrogen, which is sought after as a clean fuel source with zero CO₂ emissions, in a way that addresses the issues of "explosion risk" and "combustion stability."



Concept model of water heater equipped with 100% hydrogen combustion technology

Evolution of our 100% hydrogen combustion technology development

- The "carbon neutral" movement, a more serious effort to address global warming, gains momentum around the world
- Rinnai announces RIM 2050, its policy for carbon neutral initiatives, in November 2021
- Rinnai succeeds in developing a household water heater powered by 100% hydrogen that emits zero CO₂
- Plan to begin demonstration test of 100% hydrogen water heater in Australia, where environmental initiatives are advanced

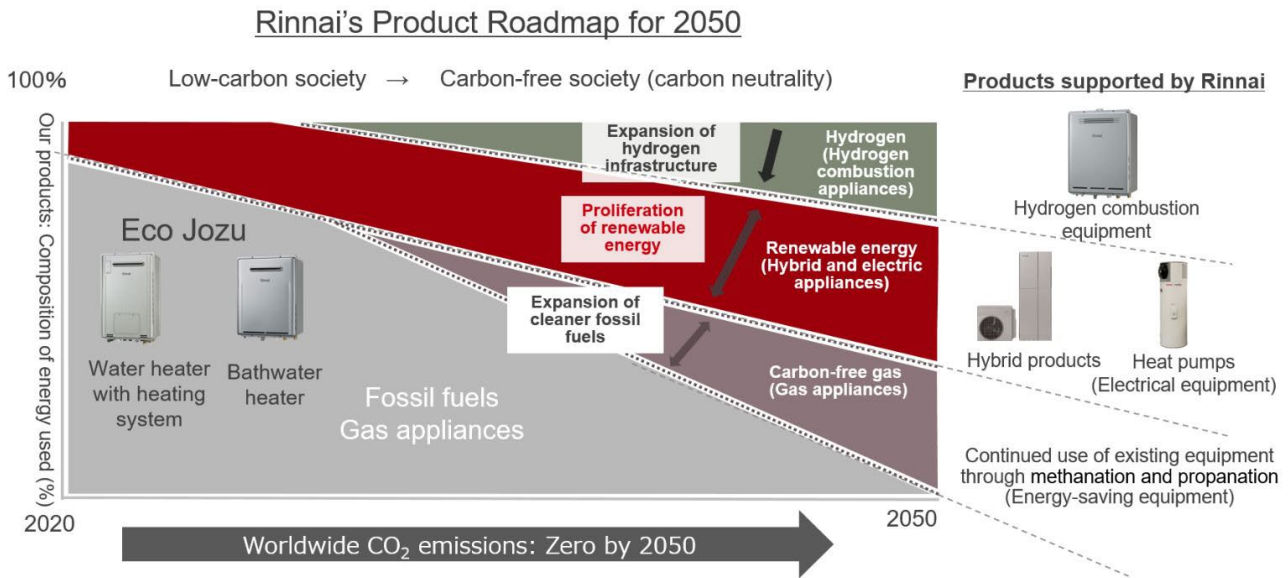
Inquiries

Corporate Communications Division, Corporate Planning Headquarters
Tel. +81-52-361-8211

Note: The information contained herein is valid as of the date of release. Please be aware that certain details may change or be made irrelevant by circumstances that emerge at a later date.

Background and process of our 100% hydrogen combustion technology development

In November 2021, we announced our Rinnai Innovation Manifesto 2050 (RIM 2050), which describes our commitment to carbon neutrality. Recognizing a growing sense of crisis over global warming around the world, all industries are accelerating efforts to realize a decarbonized society. As a company that handles household appliances mainly powered by fossil fuels, we feel we have a responsibility to join these efforts.



Product roadmap announced under RIM 2050

Among its efforts to reduce CO₂ emissions, Rinnai places high emphasis on emissions from product usage after sale, which account for an overwhelmingly 95% of total CO₂ emissions. Beyond developing energy-saving products, such as high-efficiency water heaters that are still in widespread use today, our major goal is to develop products that emit zero CO₂. For this reason, we have been developing water heaters that burn hydrogen to boil water.



If we can develop a 100% hydrogen combustion technology that emits no CO₂ at all, we can help achieve carbon neutrality. However, there are many issues to be solved to ensure the reliable combustion of hydrogen, including “explosion risk” and “combustion stability.”

Rinnai celebrated its 100th year operation in 2020. Since our founding, we have conducted research into combustion technology and technologies to control gases, such as air and fuel, and gained experience in practical applications that led to the development of a 100% hydrogen water heater. This represents the world's first successful development of 100% hydrogen combustion technology for residential applications, where stricter usage conditions apply. It will contribute significantly to realizing carbon neutrality in residential water heaters, which account for a large proportion of CO₂ emitted by household appliances.

Currently, gas and electricity are the mainstay fuels used in residential water heaters in Japan and the rest of the world. For hydrogen-burning water heaters, the spread of hydrogen infrastructure is a prerequisite for achieving carbon neutrality. Major countries are aiming for zero CO₂ emissions by 2050 and taking measures to promote renewable energy and the use of hydrogen as an energy source. In Australia, for example, initial steps are being taken with a view to using 100% hydrogen as a residential energy source, and Rinnai plans to start demonstration tests there in October 2022 to make this a reality. From there, we will further enhance the technology and improve the reliability of hydrogen water heaters for mass production in line with the spread of hydrogen infrastructure around the world.

We will continue promoting RIM 2050 with the aim of achieving carbon neutrality.