
From Room Air Conditioning to Home Air Conditioning General Laboratories Builds Demonstration Homes at its Kawasaki Headquarters to Test Air Conditioning Systems for High-Performance Homes

General Laboratories Inc. (hereinafter "General Laboratories"), an R&D arm within the General Group, has constructed two demonstration homes on the premises of its Kawasaki headquarters to test air-conditioning and energy technologies for high-performance homes in real-world conditions. These two homes have an identical floor plan*1, each with high thermal insulation performance, and energy-saving and solar power generation equipment. The aim is to enable comparison and evaluation of air-conditioning and hot water supply technologies under identical conditions.

In recent years, efforts to enhance the performance of homes have gained momentum. These include improved home insulation, the promotion of the GX-ZEH standards*2, and the mandatory compliance with energy-saving standards. This has resulted in a growing demand for air-conditioning and energy solutions that improve the overall energy efficiency of homes*3. General Laboratories intends to use these demonstration homes to study methods for efficiently heating and cooling an entire home in a real-life environment. The tests will include having employees stay at these homes overnight.

Three Demonstration Themes for High-Performance Homes

1. Testing new air-conditioning technologies by using the entire home for experiment

We will visualize and analyze temperature distribution, airflow, and electricity consumption under various air-conditioning/operation conditions to evaluate the impact of air conditioner operation on the entire home. We aim to develop new systems with our nocria room air conditioners by redefining the air conditioner not as a standalone appliance but as equipment integrated with the entire home.



Two demonstration homes built on the premises of General Kawasaki headquarters

2. Saving energy throughout the home with renewable energy

We will test technologies that reduce energy consumption throughout the home by combining renewable energy sources such as solar power and geothermal energy with storage batteries. They will be used to power air-conditioning and hot water supply systems. By taking into account the power generation levels and the operating status of the air-conditioning and hot water supply systems, we help optimize energy management.

3. Creating new value through co-creation with external partners and integration with Paloma's technology

We will utilize this space as a platform for co-creation, testing insights and ideas from homebuilders, universities, and research institutions in real-world living environments. We also plan to install products from our group company, Paloma Co., Ltd., such as hybrid hot water units, gas stoves, and floor heating panels. By integrating external insights and the Group's expertise with General's air-conditioning technology, we aim to create new concepts and value. Such ideas include the combined use of heat pumps and gas.

General Laboratories will utilize these demonstration homes to advance R&D in the fields of air conditioning and energy suited for high-performance homes. By extending General's air-conditioning technology cultivated over many years to the entire home environment, we are committed to creating homes of the future that strike a balance between healthy, comfortable living and excellent energy-saving performance.

- *1 The two demonstration homes are two-story wooden structures, each with a 4LDK layout and a total floor area of approximately 114 square meters. They are designed to meet the grade 6 requirements of the Japanese thermal insulation performance standards.
- *2 GX-ZEH is a new concept defined by the Ministry of Economy, Trade and Industry. It aims to achieve higher energy-saving performance than the conventional ZEH standards, in light of the increased self-consumption of renewable energy generated at homes.
- *3 The Ministry of Land, Infrastructure, Transport and Tourism has announced plans to make compliance with energy-saving standards mandatory for homes and buildings. The ministry also intends to put in place stricter energy-saving standards in the future.
Ministry of Land, Infrastructure, Transport and Tourism website: "Stricter Energy-saving Standards and Enhanced Decarbonization Efforts."
<https://www.mlit.go.jp/shoene-jutaku/index.html>

About General Laboratories

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Description of business : R&D and consulting services for air-conditioning and refrigeration, systems, and power electronics technologies

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