

Low-Carbon Transition Case 3: Kawakita General Hospital



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1. Facility Overview and Funding / Subsidies

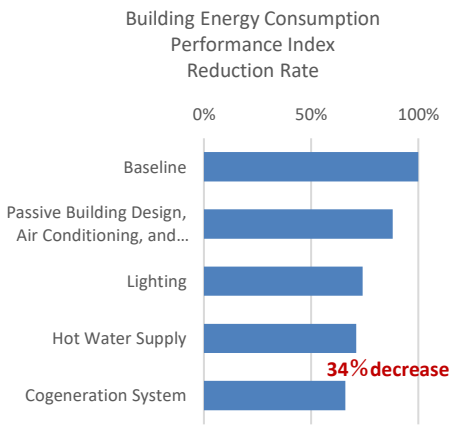
Location: 1-6 Asagayakita, Suginami-ku, Tokyo (3 minutes on foot from JR Asagaya Station)
Operated by: Kawakita Medical Foundation
Facility Certifications / Designations: Core Clinical Training Hospital, Regional Medical Support Hospital, Priority Referral Hospital (among others)

In 1928, Kawakita Hospital was established in Suginami Ward with 30 beds, initially focusing on providing internal medicine and pediatric care to meet the needs of the local community. Through four phases of construction during the mid-Showa period, the hospital facilities expanded to over 300 beds. Following subsequent renovation and upgrade projects, in 2004, the Kawakita General Hospital Branch (76 beds) was opened, bringing the total number of beds to 407. In 2010, the organization changed its legal status to a "Social Medical Corporation – Kawakita Medical Foundation." Since then, it has developed into a general hospital responsible for advanced acute and emergency care in the region, fulfilling its role as a core hospital for the community for many years.

	Previous Hospital	New Hospital
Completion Date	Main Building: 1974 Annex: 2004	July 2025
Number of Beds	331 (Main Building) + 76 (Annex) = 407 beds	353 beds
Site Area	6970.53 (Main Building) + 1688.69 (Annex) = 8,659.22㎡	11,163.21㎡
Building Area	5333.93㎡	4,846.45㎡ (93.16㎡ of which is parking space)
Total Floor Area	18,236.96 (Main Building) + 3,978.33 (Annex) = 22,215.29㎡	32,844.43㎡ (1,290.52㎡ of which is parking space)
Structure	Earthquake-resistant, reinforced concrete; 5 stories above ground with 1 basement level (partially 3 stories above ground, 4 stories above ground)	Seismic isolation, RCST (Reinforced Concrete Steel Tube) with partial steel frame; 9 stories above ground with 1 rooftop
Floor Area per Bed	54.58㎡	89.39㎡

2. Green Systems

Category	Technology	Details
Passive (Energy-Saving) Building Design (Enhanced Building Envelope Performance/Impact Reduction)	Envelope Insulation and Solar Shading	Low-E insulated glass units were adopted. Existing trees on the site, including preserved zelkova trees, were retained as much as possible and utilized for solar radiation shading.
	Building Layout and Openings	The ward buildings were arranged along an east-west axis, taking advantage of the site configuration. Openings on the east and west façades were minimized to reduce solar heat gain.
Active Technology (Air Conditioning and Heating)	Mixed Heat Sources	Both electric and gas heat sources were adopted. A high-temperature-difference water supply system was introduced in the central system to reduce pumping energy.
	CGS (Cogeneration System)	A micro gas cogeneration system (Genelight 35kW × 3 units) was introduced, utilizing waste heat for hot water supply and heating.
	High-Efficiency Heating Equipment	Natural chillers (1,125 kW × 2 units) and high-efficiency heat pump water heaters were introduced.
Active Technology (Ventilation)	Ventilation Volume Control	Based on patient activity levels, metabolic rates, and reduced odor generation during nighttime hours, an eco-ventilation mode was implemented in patient rooms, reducing airflow to 50% of normal levels at night.
Active Technology (Lighting)	High-Efficiency and Control	LED lighting was adopted throughout. Occupancy (motion) sensor controls and time-schedule controls were tailored according to room function.



Projected annual reductions of 1,260 tons of CO₂ and approximately JPY 37 million in running costs

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3. Implementation Plan and Overview

- Since 1986, the organization has upheld the philosophy of “Pursuing Better Healthcare in Harmony with the Global Environment,” engaging in environmental initiatives and education across the entire institution. These efforts have been recognized through achievements such as becoming the first medical institution in Japan to obtain ISO 14001 certification and receiving the Minister of the Environment Award at the 2015 “Environmental Human Resource Development Awards,” organized by the Ministry of the Environment.
- Meanwhile, existing hospital buildings had been in use for a long time, undergoing repeated expansions and renovations. The oldest building was over 70 years old. While energy-saving measures, such as converting lighting to LED and introducing cogeneration systems, were implemented with careful evaluation of their effectiveness, the buildings reached their limits due to structural and equipment deterioration. Meeting the functional demands of modern medical standards and needs also became increasingly difficult.

2012 Launch of the Grand Design Project for the Construction of the New Hospital

“Why rebuild?” : The discussion went beyond addressing only structural aging, but on realizing “a space where staff can work with pride” and establishing “a next-generation healthcare model for the community.” It was ultimately decided that relocation and new construction were essential to realizing these goals.

November 2018 Agreement on Promoting Urban Development in the Northeast Area of Asagaya Station Between the Ward and Landowners

- Execution of agreement between the three parties

In addition to the aging hospital, the aging and cramped neighborhood elementary school, and disaster prevention challenges resulting from the area’s designation as an earthquake-preparedness zone, there were also issues in ensuring safe access routes for emergency vehicles and preserving the remaining local woods (*yashikiran*). These complex issues were addressed comprehensively through a land readjustment project, aiming to create a safe and sustainable community.

August 2019 Commencement of Land Readjustment

“A Hospital in a Forest”: Preserving as much as possible the natural environment of the *yashikiran* (residential woods) that has long been cherished by the community, striving towards harmony with nature, and aiming to create a hospital that is environmentally responsible and gentle to nature, patients, and staff alike.

September 2022 Decision on Design and Construction

To realize the concept, the project:

1. Preserved as much of the on-site protected woodland as possible, utilizing the characteristics of deciduous trees (providing shade in summer, while allowing sunlight in winter)
2. Used locally sourced Tama timber for the entrance and lobby interiors
3. Introduced a hospital corridor (a bright, open corridor space used by patients and visitors) designed with full-height glass walls, creating a space where the changing seasons can be felt
4. Additionally proposed achieving **ZEB Oriented** standards

Challenge: Increase in Electricity Demand to Ensure Reliability and Comfort

Adoption of individual air-conditioning units: To avoid the risk of system-wide malfunction (e.g. multiple patient rooms being affected by the failure of a single outdoor unit), **individual air conditioning was installed in all patient rooms**. ⇒ As a result, contracted power (electrical) capacity increased significantly.

Abandonment of extra-high-voltage power supply: Although an extra-high-voltage power supply was initially desired to strengthen disaster resilience, it was ultimately abandoned due to infrastructure development costs.

Total Construction Cost: approximately JPY 20 billion; Equipment Cost: approximately JPY 5 billion
Selected for the FY2022 ZEB Demonstration Program (JPY 460 million), covering roughly half of the additional costs for achieving ZEB status
Also utilized subsidies for timber use and for postgraduate clinical training infrastructure development

Solution: Integration of High-Efficiency Equipment and Gas-Based ZEB
Deployment of ultra-high-efficiency equipment: High-cost but **top-runner-standard**, ultra-high-efficiency equipment—including absorption chillers and other major systems—was installed to minimize electricity consumption to the greatest extent possible.

Introduction of Gas ZEB: To offset the constraints imposed by increased electrical capacity, a gas-utilizing ecosystem (Gas ZEB) was implemented.

February 2023 Construction Begins

May 2025 Construction Completed

July 2025 New Hospital Opens Demolition of Former Hospital

Perceived Effect: Improved Comfort

Complaints from patients and staff regarding air conditioning have virtually disappeared.

Areas such as the ECG examination room—where temperature control had previously been difficult due to adjacency to rooms like the ultrasound suite—can now maintain individually optimized settings, enabling a more comfortable working environment.

Key Concerns

As a result of enhancing advanced medical equipment such as linear accelerators and improving services through IT integration (e.g., medical monitors, call systems), power consumption has increased beyond initial estimates.

Operational Innovations and Countermeasures

A hybrid management system combining data analysis through the Building Energy Management System (BEMS) with on-site inspections and fine-tuning by facility managers.

Given that the new hospital differs significantly from the former facility, operational improvements will initially focus on data collection and analysis.

Lessons Learned and Key Messages

By fully leveraging elements of the surrounding environment, the hospital redevelopment was positioned not as an isolated project, but as core infrastructure aligned with the local government’s district plan to address broader challenges in the area, and thus establishing a sustainable operational foundation. Furthermore, beyond simply introducing environmentally responsible equipment, it is essential to continuously monitor operational performance and implement improvement cycles. Synergistic effects are expected through alignment with the environmental culture that has already been cultivated within the organization.