TSUCHIYA

Technical Innovation Center

TECHNICAL INNOVATION CENTER

a hub for driving technological solutions to a variety of social issues

Technical Innovation Center is TSUCHIYA CORPORATION's core research facility for new technology development, launched to explore AI-driven remote monitoring, automated machinery operation, and Structural Design Support Tools.

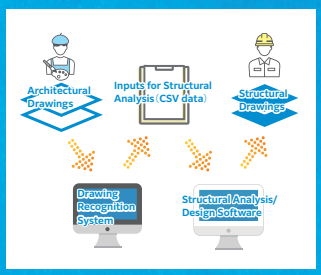
Remote Site Monitoring System

We are developing a centralized system to monitor construction sites through camera footage, aiming to enhance both safety and quality. The system will link patrol records to KY Activities, or Hazard Prediction Activities, and use AI image analysis to detect potential hazards.

Automated Machinery Operation

We are developing core remote-control technologies and using AI to enable automated heavy machinery operation that adapts to changing site conditions.

Structural Design Support Tools



We are building a system that uses AI to automatically input data into Structural Analysis/Design Software from drawings, reducing workload and improving our ability to handle design and construction projects.

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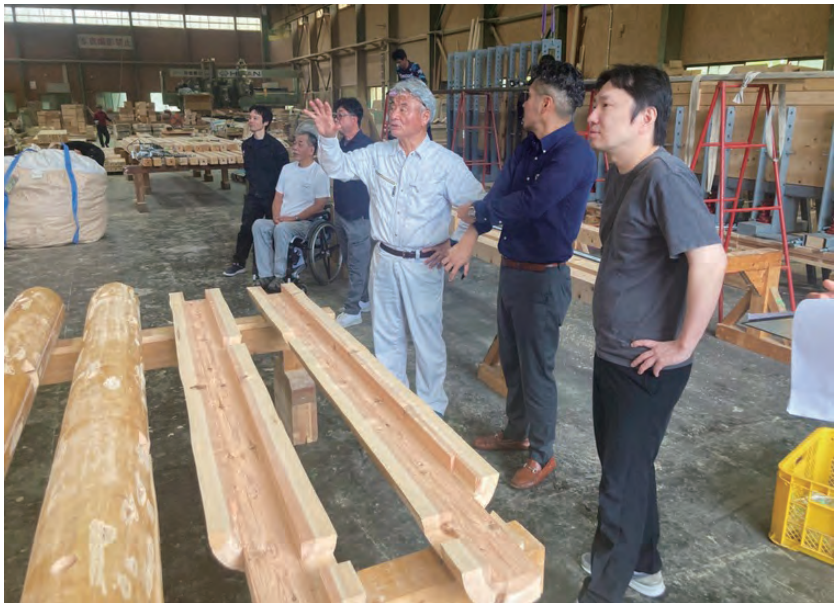
Blending the Warmth of Wood with Cutting-edge Technology

The workspace is surrounded by laminated timber beams and CLT floors, with sunlight filtering through log facades, creating a soft, forest-like atmosphere.

The log facades use cedar from Gifu, and the CLT floors are made from wood sourced in the Chugoku region and processed in Mie. The logs are treated for moisture resistance to ensure easy maintenance.

The Technical Innovation Center blends the warmth of natural wood with cutting-edge technology.



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Ensuring Seismic Resistance and Fire Safety

Hybrid Structure

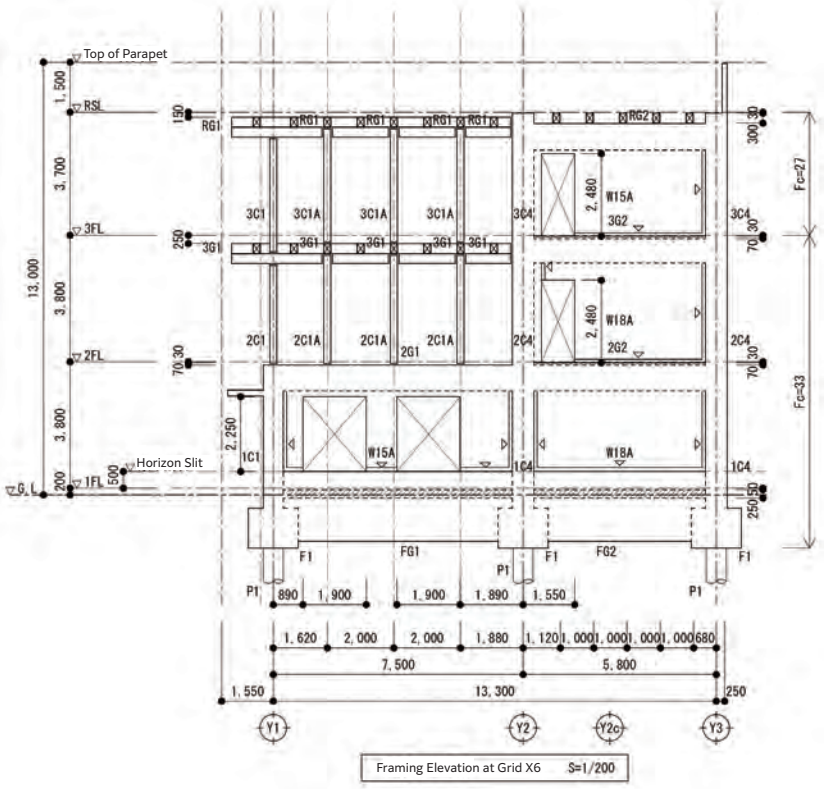
This building ensures seismic resistance and fire safety by using reinforced concrete (RC) for the core structure. Additionally, wood is incorporated on the 2nd and 3rd floors to create a lightweight space that embraces the warmth of natural wood.

The floors are made with CLT, providing high rigidity and ease of construction while staying comfortable and sustainable.

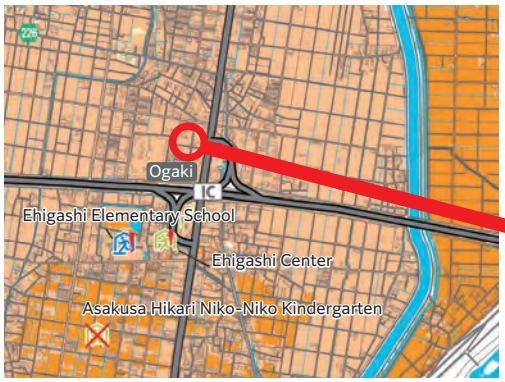
By combining reinforced concrete and wood where most effective, the building achieves both strength and comfort.

Technical Innovation Center is built to seismic Level 3 “1.5 times stronger than the building code requirement” matching the strength of police and fire stations.

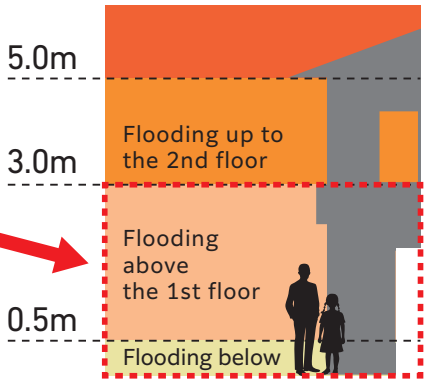
Wind and seismic forces, including loads from the wooden and steel structures, are supported by the RC sections. Forces acting on the wooden structure are transferred to the RC frame through the CLT floor panels.



Ensuring Safety During Disasters



Ogaki Hazard Map



Point!

The first floor, prone to flooding, is built with RC, while water tanks, pumps, electrical equipment, and generators are installed on the second floor and above.

Due to the expected flood depth of 0.5 to 3.0 meters, The first floor is made of RC in a hybrid structure.

The local hazard map predicts 0.5 to 3.0 meters of flooding in the area during heavy rainfall that may occur once every 50 to 100 years. This building is equipped with backup power, well water, and emergency supplies, and it can serve as a local evacuation center.

Official recognition as a designated public evacuation center

As a regional disaster prevention base, we are in discussions with the Crisis Management Office of Ogaki City to obtain recognition as a designated general evacuation center.

Our Strengths

1. **The CX effects** are expected as part of BCP solutions
2. Officially recognized by Ogaki City. We are planning a **signing ceremony** with Ogaki City.

Designation Requirements

1. No landslide risk
2. Power and toilets required

※**No floor space requirements**
※**Equipment for power outages and water cut-off is not necessary**

Ogaki City's Strengths

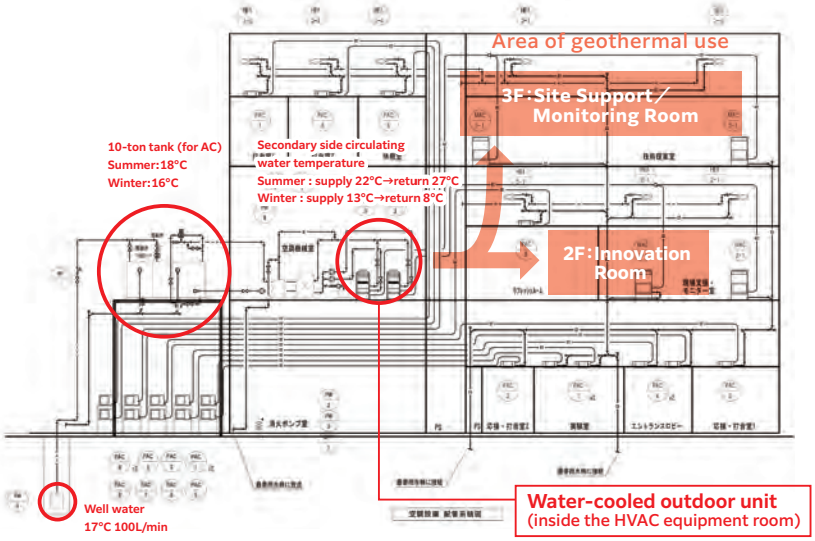
1. Secure as many evacuation centers as possible
2. **Many evacuees prefer smaller spaces like ours** because schools lack privacy

Eco-friendly Building

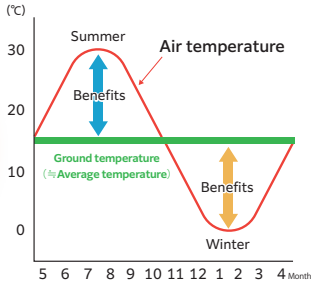
Since 2018, TSUCHIYA CORPORATION has been registered as a “ZEB Planner” under the Environmental Innovation Initiative, participating in the FY2017 Ministry of Economy, Trade and Industry and Agency for Natural Resources and Energy subsidy program to promote energy-saving investments in residential and commercial buildings as part of the Net Zero Energy Building (ZEB) demonstration project.

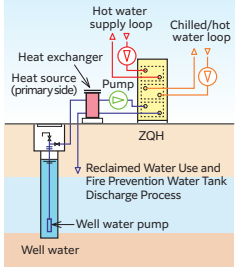
By utilizing solar power, geothermal energy, a double-skin facade, and seasonally adjustable ventilation to reduce thermal load, we achieved full ZEB certification under the FY2024 CO_2 Emission Reduction Subsidy Program.

Geothermal Heat Pump



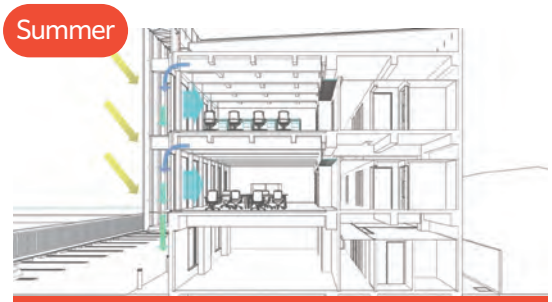
Use Ogaki’s abundant groundwater effectively





Double-skin Ventilation System
(our proprietary)

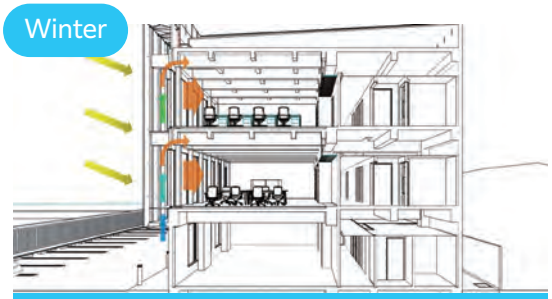
Summer



Using air-conditioned exhaust air to keep the space cool

Automatic switching

Winter



Bringing in warmed outside air to keep the space warm

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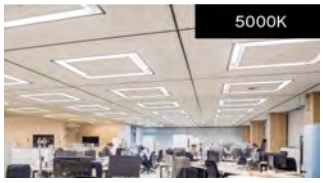
A Space Designed for Human Comfort and Well-being

Automatic Lighting Control System based on circadian rhythms

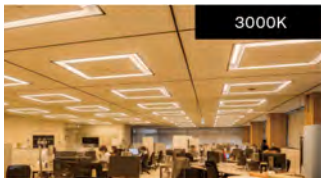
The circadian rhythm is a biological cycle that repeats approximately every 24 hours. Humans have an internal "body clock" that controls the timing of sleep and wakefulness, hormone secretion, body temperature, metabolism, and other physiological functions.

Sensors are installed throughout the building to adjust brightness and color temperature based on light levels, motion detection, and timers, creating lighting conditions close to natural daylight.

Light and color shift naturally throughout the day for comfort.



White light in the morning promotes alertness and freshness



Warm light in the evening creates a relaxed mood

Energy-saving through dimming, with added automation based on people and UV detection.

Lights activated by motion

Lights dim according to daylight

Sound Design Elements

Background music is automatically provided throughout the building for comfort.

My Playlist
Create custom playlists from individual tracks.

Program Function
Set up automated schedules for BGM and in-store announcements based on time.

Remote control via PC/phone
Freely customize and control BGM playback from outside the store.

The building features an automatic lighting control system based on circadian rhythms, sound design elements, and sanitary devices with health monitoring.
It is designed to maximize human comfort and well-being.

Toilet: The Wellness Gateway.

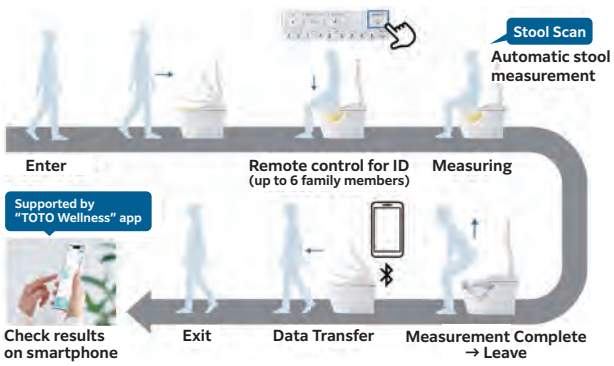
The stool scan sensor automatically scans stool during discharge, measuring its shape (firmness), color, and volume. The connected app visualizes daily bowel conditions, monitors changes over time, and provides personalized health recommendations.

Measures stool condition and offers advice via app.
Healthy habits start just by using the toilet.

Use it. Notice it. Change yourself. A positive day starts from the restroom.

All you need is a smartphone. Use the toilet as usual, keep track of your daily condition and changes, becoming healthier day by day. This is your new health habit.

A function that uses a stool scanning sensor to automatically measure stool shape, firmness, color, and volume during discharge.



Measuring Method

1. Shine LED light on falling stool.※1
2. Receive the reflected light.
3. Repeat ① and ② to collect data.

Note 1: The color of the LED light may appear different depending on environmental conditions, but this does not affect its performance.

Measurement Items

Firmness of Stool:

The Bristol Stool Form Scale is a diagnostic tool used to classify stool into seven categories based on firmness and consistency.

Type1	Type2	Type3	Type4	Type5	Type6	Type7
Severe constipation	←		Normal		→	Severe Diarrhea

※This is a classification method independently developed by TOTO, referring to the Bristol Stool Form Scale.

Volume of Stool:

Based on information such as the length and width of the stool and the time it takes to fall, the system classifies the stool into three categories.

Color of Stool:

Based on the brightness of the stool, the system classifies it into three categories.

Yellow | Brown | Blackish Browm

Note: For stool shape (firmness) and color, the representative value is determined based on the most frequently detected data within a single measurement. For stool volume, the total amount detected during one measurement is used for evaluation.

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