

Biokurasix Handa

Biogas Generation Facility

The Challenge

In the years following the Fukushima nuclear accident, Japan began taking steps to expand its renewable energy generation capacity, allowing the country to reduce its dependency on fossil fuels. As a result, the Biomass Industrial City Initiative was created to encourage communities to use biomass energy, a development that not only provides a renewable power source, but its application also reduces long-term costs, lowers emissions, and supports a strong local economy.

In 2016, as part of the Industrial City Initiative, Biokurasix Handa partnered with Capstone Green Energy's exclusive Japan distributor, Kanamoto, to implement a highly efficient biogas power generation facility in the city of Handa in Aichi Prefecture.

The Solution

Commissioned in February 2023, the Combined Heat & Power (CHP) trigeneration system is based around Capstone's 800 kilowatt (kW) C800 Signature Series. The system is fueled by biogas produced at the Biokurasix Handa facility, where a digester processes locally produced agricultural and food waste biomass. The resulting methane gas is channeled to the C800 microturbines, which turn the renewable fuel into prime power and heat for the facility.



We are still in the early stages of the trigeneration system's implementation, but we are convinced that it will have great benefits. This system allows us to use heat and CO₂ interchangeably, which is also useful for tomato production. We have high hopes for the future."

— Yukiteru Ikai, Executive Officer
Biokurasix Handa Ltd.

Power Profile

Customer

Biokurasix Handa

Location

Handa, Japan

Commissioned

2023

Fuel

Biogas

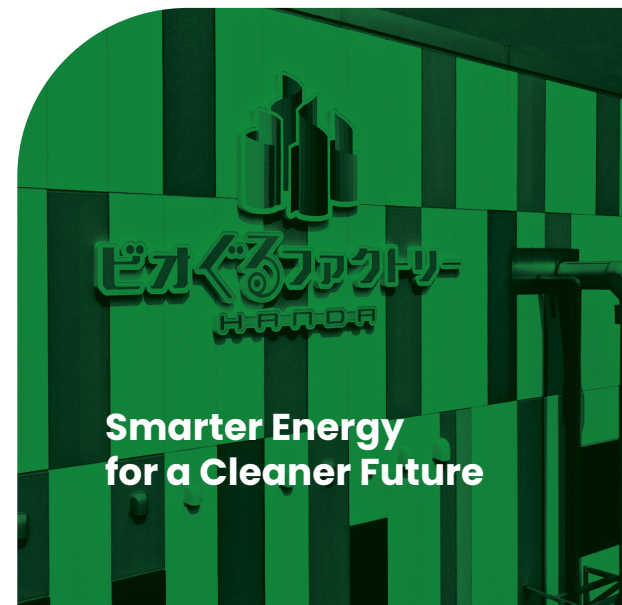
Technologies

- C800S
- Gas Compressors
- Chillers
- Waste Heat Steam Boilers
- Control Panels

Capstone Green Energy

Partner

Kanamoto





The C800S Signature Series microturbine at Biokurasix Handa converts agricultural waste into clean power, heat, and CO₂ for sustainable farming, showcasing a high-efficiency biogas energy model in Japan.

Because the system operates in a grid-connect mode, the facility can operate with the utility in a load-sharing capacity, providing some power to the facilities, while most of the generated power is sold to power companies, in support of their Renewable Energy Feed-in Tariff program.

In addition, once the biomass has been processed into biogas, the residue (digestive liquid) is redistributed to local farms for fertilizer. The neighboring Biofarm Handa also uses heat and CO₂ from the system to produce carbon-free cherry tomatoes. The cultivation facilities are equipped with environmental control devices and smart agricultural equipment. Additionally, whereas traditional gas engine generators produce nitrogen oxide (NOx) emissions that inhibit plant growth, the microturbines have dramatically lower emissions, even without treatment. All these benefits lead to improved agricultural productivity and a stable supply of products.

In this way, the system truly is a sustainable loop solution whereby biomass waste is converted to fuel, used to produce energy, and then returned to the farms for agriculture use, and the cycle continues. It's all in the service of the Biomass Industrial City's vision of strengthening local economies while delivering positive environmental benefits.

In terms of reliability, Biokurasix Handa has entrusted the system's performance and reliability to a 20-year Factory Protection Plan, which provides scheduled maintenance, system monitoring, and any repair.

The Results

From an economic standpoint, as of 2025, even at just 50% capacity, Biokurasix Handa has been able to sell roughly \$45,000 per month in electricity back to the grid. The facility has plans to double that in the coming years, thereby offering a long-term return on the investment.

Japan has one of the largest biogas markets globally, and the government aims to double generation by 2030. The first of its kind in the country and industry, the Biokurasix Handa system serves as a valuable model for other agricultural communities, not just in Japan, but around the world.

Capstone C800S Microturbine



A C800S Microturbine provides 800 kW of reliable electrical power in one small, ultra-low emission, and highly efficient package.