



Feature: Striving to Coexist with Local Communities

DBO projects ① Kurume High Trust Co., Ltd.

Working with local residents to create a place that will be loved by the community

Kurume High Trust Co., Ltd. is a special-purpose company (SPC) that was established through joint investments by Takuma Co., Ltd.; Takuma Technos Co., Ltd.; and ShinMaywa Industries, Ltd. to play the lead role in operating, maintaining, and managing Miyanojin Clean Center. <http://www.kurume-ht.com/>

Overview of Miyanojin Clean Center

The Kurume Northern Municipal Solid Waste Treatment Plant Development and Operation Project is being implemented as a DBO-style program that integrates facility design, construction, and operation in order to facilitate the proper processing of municipal solid waste from the Kurume City. Under the project, Takuma Co., Ltd. was responsible for designing and constructing the plant building, and Kurume High Trust Co., Ltd. took over operation of the plant following its completion in June 2016.

The company's goals in operating the facility include giving top priority to safe and stable operation, working to reduce its environmental impact, ensuring that area residents feel secure living close to the plant, and utilizing it as a place where people can gather to learn about the environment and related topics.

The facility has also been designed to help form a low-carbon society and realize a recycling-oriented society. The incineration facility is designed to utilize energy effectively by using surplus heat from incinerated waste to generate electricity and selling surplus power remaining after plant operation to power companies. Metals in the crushing and sorting facility's output stream are sold and recycled, while incineration ash is used effectively as a raw material in the production of cement.



Customer		Kurume City
Location		2225 Hacchojima, Miyanojin-machi, Kurume-shi, Fukuoka Prefecture
Site area		About 74,000 m ²
Plant: Building size		6 aboveground floors, 1 belowground floor
Plant: Operating period		June 2016 to June 2036 (20 years)
Plant: Incineration facility	Processing method	Stoker furnace (with conversion of ash into cement)
	Processing capacity	163 tons per day (81.5 tons per 24 hours × 2 units)
Plant: Crushing and sorting facility	Processing method	Crushing and sorting
	Processing capacity	Unburnable waste and unburnable bulky garbage, 28 tons per 5 hours; burnable bulky garbage, 24 tons per 5 hours
Power output		3,560 kW



Stakeholder message



Mr. Tomohisa Iida
Kurume-shi Government Office

The Kurume City built Miyanojin Clean Center, its second municipal solid waste intermediate treatment facility, so that it could promote the development of a recycling-based society and carry out safe, stable waste processing over the long term.

With an incineration facility, crushing and sorting facility, and recycling facility as well as the Environment Interchange Plaza, which is designed to serve as a place for environmental awareness-raising and learning, Miyanojin Clean Center will not only process and recycle waste, but also facilitate learning about the environmental field in general while revitalizing the local community and creating a sense of excitement and activity in the surrounding area by fostering social interaction through citizens' activities.

To achieve these goals, I believe that it will be important for the facility to earn the trust of city residents so that it becomes a familiar presence to them and to contribute to the community. We expect Kurume High Trust to pursue an active program of community initiatives, for example by creating a sense of excitement by hosting environmental awareness-raising events and exhibits that take advantage of the facility and cooperating with events conceived to revitalize the local community even as it gives top priority to reducing environmental impact and operating the facility in a safe and stable manner.



The Miyanojin "Manabino" Biotope was completed in April 2016 at Miyanojin Clean Center in Kurume. We created the facility's basic design with the goal of having it become a new symbol of Kurume and serve as a place where people could learn about the environment and spread what they learn while coexisting with the area's scenic natural landscape and as a place where people could learn about the plant and animal life that inhabits the community. We built a space with water, plant life, and soil to foster a variety of plant and animal species that live and reproduce in the basin's rivers, waterways, and surrounding areas. Going forward, we will work with Kurume High Trust to ensure that the facility will serve as a place where people can learn about the natural environment so that Kurume's exceptional environment can be passed down to the next generation by using the biotope to host classes and events.

We held an experience-based learning event entitled "Mission: Find Aquatic Life" in August as the first environmental learning activity we proposed in FY2016. During that event, we caught fish living in rivers in the Chikugo River water system, released them into the biotope, explained the ecology of the captured fish, and considered the implications together with participants. The second activity took the form of a parent-child class entitled "Learning How Fireflies Live" in March, where we explained that thinking about how fireflies live means thinking about the local environment. Going forward, we will help author the *Miyanojin Biotope Newspaper*, which is published by Kurume High Trust each season, by proposing new lifestyles to help ensure Kurume will have a rich future while communicating information about plant and animal life as well as seasons from the Miyanojin "Manabino" Biotope.



(Environmental learning partner)
Mr. Yuji Yasueda
Ecoplan Corporation



Feature: Striving to Coexist with Local Communities

DBO projects ② Hokutan High Trust Co., Ltd.

Providing a facility that will be trusted by local residents and safeguarding the area's beautiful natural setting

Hokutan High Trust Co., Ltd. is a special-purpose company (SPC) that was established through joint investments by Takuma Co., Ltd. and Takuma Technos Co., Ltd. to play the lead role in operating, maintaining, and managing Clean Park Hokutan. <http://www.hokutan-ht.com/>

Overview of Clean Park Hokutan (Hokutan Administrative Association)

Clean Park Hokutan was built as a DBO project under the provisions of the Act on Promotion of Private Finance Initiatives with the goal of protecting the living environment in the Hokutan region, improving public health, and moving away from a social paradigm founded on mass production, mass consumption, and mass disposal to advance the 5Rs of waste (refuse, reduce, reuse, repair, and recycle) in a comprehensive manner by facilitating the proper processing waste generated day in and day out by the city of Toyooka and the towns of Kami and Shin'onsen. Designed and built by the Takuma-Kabumoto-Kawami-Nishiyama Designated Construction Joint Venture, the facility was completed and began operation in July 2016.

In addition to ensuring safety and inspiring peace of mind in the future on the part of area residents by reducing the community's environmental impact, the facility is dedicated to serving as a designated evacuation center in the event of a disaster and to functioning effectively as an area center of environmental learning and awareness-raising.

The facility also combats global warming through effective use of energy by using surplus heat produced when the incineration facility burns waste to generate electricity and then selling the surplus power that remains after facility use to a power company (Takuma Energy Co., Ltd.) under Japan's renewable energy feed-in-tariff program. In addition, generated power is supplied to public facilities such as elementary and middle schools in Clean Park Hokutan's member towns and city in the spirit of "local production for local consumption." The crushing and sorting facility also helps advance the 5Rs by recycling processed materials.

Customer		Hokutan Administrative Association
Location		943 Booka, Takeno-cho, Toyooka-shi, Hyogo Prefecture
Site area		About 2.6 ha
Building size		Administrative building: 2 stories; Clean Center: 6 aboveground floors; Recycling Center: 2 aboveground floors
Operating period		August 2016 to July 2036 (20 years)
Incineration facility	Processing method	Fully continuous combustion stoker
	Processing capacity	142 tons per 24 hours (71 tons per 24 hours × 2 units)
Crushing and sorting facility	Processing method	Crushing and sorting
	Processing capacity	19 tons per 5 hours
Power output		About 2,850 kW



Stakeholder message



Mr. Toshiaki Tani
Hokutan Administrative Association

The process leading to this project's successful completion in July 2016 involved many twists and turns over more than 18 years since the Hokutan Regional Waste Processing Plan was formulated in December 1998. This success despite numerous challenges—for example, changes in the height of the foundation during the earthwork phase and a reassessment of the project design—due to the project's reliance on a financing plan that utilized a jointly issued bond and deadlines that were extremely demanding was made possible by the tireless efforts of the partners in the Takuma Group Joint Venture, for which I am deeply grateful. When our association formulated the basic policies that would guide the construction of the facility, we asked that it protect and revitalize the surrounding environment, that it foster coexistence and mutual prosperity with nature, and that it serve as a dynamic and exciting place where people can learn about the importance of resources and the environment through waste and enjoy interaction with their fellow residents. We are pleased that the joint venture was able to construct a facility that conforms to the construction policies that were put in place by our association.

One year has passed since Clean Park Hokutan began processing waste as part of its trial operation phase in April 2016. Maintaining equipment reliability and operational stability is an extremely important part of continuing to operate the facility in a safe and stable manner going forward, and despite various issues, Hokutan High Trust is working hard to do just that. We trust that it will continue to work hard to resolve the remaining issues. The facility began hosting tours and environmental learning events in September 2016, and by March 2017 it had hosted 1,373 visitors at a total of 51 tours and events. Hokutan High Trust has provided assistance with planning events and explaining the facility to visitors, and the feedback that our association has received through surveys and other means indicates that visitors are pleased with the polite and accommodating reception they received. Going forward, we fully expect Hokutan High Trust to operate the facility in a safe, secure, and reliable manner over the 20-year period ending in July 2036.



In the area around Clean Park Hokutan, there were a series of *satoyama* sites (including terraced fields, rice paddies, bamboo groves, and forests) that had not been maintained over a long period of time. In order to protect and restore these areas while utilizing them as places for learning about coexistence with nature, studying the importance of resources and the environment, and gathering to foster rich sensibility, we took advantage of the opening of Clean Park Hokutan to develop a plan for restoring these *satoyama* spaces, and we have offered assistance to environmental learning projects that utilize them after the facility began operation.

Starting with information about *satoyama* spaces that we provided during the facility's opening event in August 2016, we have planned and orchestrated a variety of events at which a large number of area residents have participated and enjoyed themselves, including an acorn craft session at which people made tops and traditional balancing toys with acorns that had been gathered in the *satoyama*; a parent-child soba-making and rice cake-making party where people could experience those traditional techniques, which have been passed down in the community; and a spring plant gathering where participants viewed and tasted flowers and mountain vegetables that can be found in *satoyama* spaces in spring. Going forward, we will continue to offer operational assistance to ensure that Clean Park Hokutan can revitalize nature in this new era and encourage regional interaction while fostering these *satoyama* spaces together with local residents, for example by maintaining bamboo groves and forests and managing cultivation fields.



(Environmental learning partner)
Ms. Yuri Nakagawa
Chubu Branch Office
PREC Institute Inc.

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DBO projects ③ Suwako High Trust Co., Ltd.

Supporting comfortable local lifestyles in order to create a sustainable future for a recycling-based society

Suwako High Trust Co., Ltd. is a special-purpose company (SPC) that was established through joint investments by Takuma Co., Ltd.; Takuma Technos Co., Ltd.; and Okayagumi Co., Ltd.; to play the lead role in operating, maintaining, and managing Suwako Koshu Clean Center. <http://www.suwako-ht.jp/>

Overview of Suwako Koshu Clean Center (Neighborhood of the Lake Administrative Affairs Association)

Suwako Koshu Clean Center was constructed as a DBO project with the goal of facilitating the smooth implementation of measures related to waste processing and the development of a recycling-based society through the joint, regional processing of waste by the cities of Okaya and Suwa and the town of Shimosuwa, all of which lie in the lakeside district. The Takuma-Okayagumi Designated Construction Joint Venture designed and constructed the facility, which began operation in December 2016.

To operate the facility in a way that achieves the goals of safeguarding nature, educating residents, and connecting communities, Suwako High Trust is dedicated both to operating the facility in a safe and environmentally friendly manner so as to inspire peace of mind among residents and to coexisting with local communities over the long term as a facility of environmental creativity where large numbers of people gather.

In addition, the facility is helping to form a recycling-based society as part of the Takuma Group by recovering as much heat from waste as possible and converting it efficiently into electricity and then selling surplus power remaining after facility use to Takuma Energy Co., Ltd. under Japan's renewable energy feed-in-tariff program.



Customer		Neighborhood of the Lake Administrative Affairs Association
Location		4769-14 Uchiyama, Okaya-shi, Nagano Prefecture
Site area		About 19,620 m ²
Plant: Building size		6 aboveground floors, 1 belowground floor
Plant: Operating period		December 2016 to November 2036 (20 years)
Plant: Incineration facility	Processing method	Stoker furnace
	Processing capacity	110 tons per day (55 tons per 24 hours × 2 units)
Power output		2,050 kW

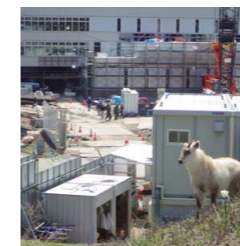


Stakeholder message



Mr. Hiroтоми Ito
Neighborhood of the Lake Administrative Affairs Association

The Suwako Koshu Clean Center was successfully completed in December 2016 following a series of twists and turns as the embodiment of the Lakeside District Waste Processing Basic Plan that was formulated in 2005. The project's goal is to jointly process waste from the lakeside district that includes the cities of Okaya and Suwa and the town of Shimosuwa on the shores of Suwa Lake, which is located in roughly the center of Nagano Prefecture. Thanks to the tireless work and constant effort of Takuma, we were able to overcome the many challenges and unexpected problems that continued to arise until the project was completed. I'd like to express our deep gratitude to all of your workers, along with my respect for their enthusiasm and commitment. The completed facility provides functionality worthy of being called state-of-the-art, and it is also equipped to disseminate information as a symbol of environmental protection. In particular, the center will help form a recycling-based society by reducing CO₂ emissions through the generation of electricity from heat, which it accomplishes at an efficiency of close to 20%, highlighting its performance. Once the electricity has been used locally, surplus power is sold. Concerning the concentration of exhaust gases, an area of high interest to local residents, we required the facility to generate emissions that do not exceed legal levels, but your company submitted guaranteed levels that are even lower than those levels as part of its focus in operation and management of reducing the facility's impact on the environment of the surrounding area. Your employees have served as volunteers at a marathon held near the facility, and they've cooperated with cleanup and other activities. You've also earned trust by treating customers who bring waste directly to the facility in a meticulous and considerate manner. Going forward, we fully expect you to continue to operate the facility with an even greater focus on safety, peace of mind, and reliability over the next 20 years.



On December 1, 2016, Suwako High Trust Co., Ltd. began operating, maintaining, and managing Suwa Lakeside Clean Center, nicknamed eco-Poppo, with a robust series of structures for a term of 20 years with the guidance and cooperation of the Neighborhood of the Lake Administrative Affairs Association and its member cities and town.

I believe that the most important aspect of these operations over the long term is coexistence with the local communities, which is also a priority of the Association and its member cities and town.

Although intermediate processing facilities have not enjoyed a particularly favorable image to date, we look forward to striving daily to operate, maintain, and manage the facility in a way that will endear it to everyone in the local communities. In doing so, our goal will be to involve everyone in the process of "raising" eco-Poppo while visualizing the status of facility operations and disseminating information in an accessible manner (via digital displays, the facility's website, etc.), disclosing information about those operations to local communities by holding participatory events for residents (including operational briefings and facility tours), and actively fostering the exchange of information among the Association, local residents, and Suwako High Trust Co., Ltd.



Mr. Katsunari Endo
Suwako High Trust Co., Ltd.