

JAPAN FOOD ECOLOGY CENTER, INC.

Creating value from food losses

The Food Recycling Loop



SUSTAINABLE DEVELOPMENT GOALS

Winning Chief's Award (by Prime Minister) of the 2nd Japan SDGs Award

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2023.4.1

Issues in Waste Management

- ① High volume of food waste
- ② Excessive spending of taxpayer funds
- ③ Fossil fuel exhaust and greenhouse gases emissions
- ④ Lack of final disposal sites

Food waste in Japan is at an all-time high with more than 5.22 million tons of food material disposed of in FY2020 alone. Food waste purportedly accounts for roughly 40%-50% of the total waste volume processed through municipal incinerators. Given that it costs approximately 45,000 yen to burn just one ton of waste, it is estimated that 800 billion to 1 trillion yen is spent annually on food waste incineration.

The final disposal sites used to deposit ash and other byproducts of the incineration process are expected to reach capacity within the next two decades. Additionally, the emissions of fossil fuel exhaust and other greenhouse gasses associated with this process exert a harmful impact on the average global temperature and thus hinder the achievement of the UN Sustainable Development Goals.

Issues in Livestock Management

- ① Dependence on foreign feed supplies
- ② Soaring grain prices
- ③ Livestock disease outbreaks
- ④ Demand for safe and nutritious meat products

Japan depends on imports for approximately 75% of its livestock feed and as such, is greatly influenced by foreign markets, making domestic self-sufficiency a challenge. In addition, feed costs account for roughly 63% of pork-farming expenses and thus rising grain prices pose a serious problem for livestock businesses.



Conversion of food waste and surplus into fermented liquid feed



We have adopted the "liquid fermentation feed conversion" method, which does not involve dehydration of the feed, making it possible to produce feed that is not only safe and nutritious, but allows us to accept a wide variety of ingredients and results in production costs much lower than those of imported grain based feed.

In addition to reducing the burden on the environment and reducing wasteful spending of taxpayer funds, the project contributes to solving each of these issues by contributing to higher quality pork production, encouraging pork farmers to produce more. We contribute to society by promoting "sustainable production and consumption" through the establishment of a food recycling loop.

Facility Overview

© We accept food waste and food surplus from factories, supermarkets, and other food-related businesses for processing into liquid swine feed. The transformation from food waste to high quality livestock feed entails liquification, heat sterilization, and fermentation, which all take place at our facilities.

【Location】

Sagamihara City, Kanagawa Prefecture, Japan

【Processing capacity】

Max. 49t/day (industrial waste ,non-industrial waste)

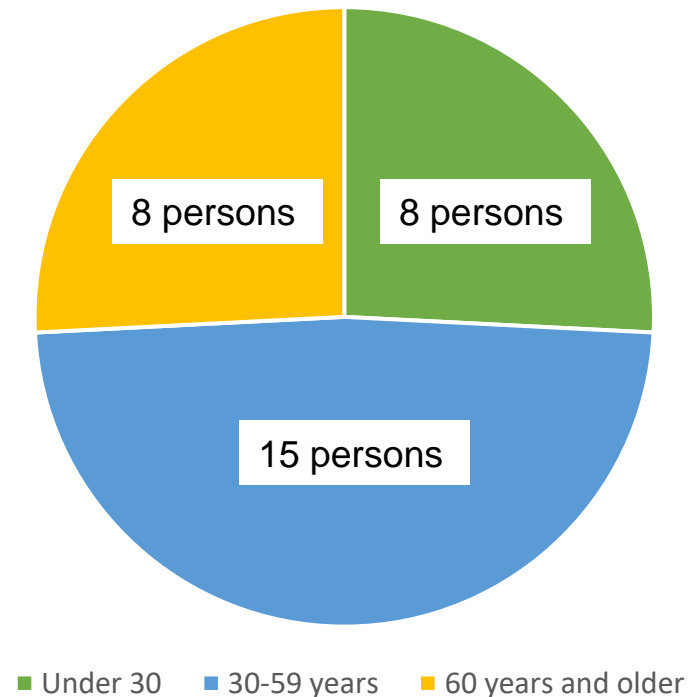
【Operation Hours】

8:30 a.m. – 5:30 p.m. (open 365 days a year)

【Number of Employees】

31 persons (29 men, 2 women)

* work in shifts



① Delivery of surplus and discarded food products

Licensed transporters collect the raw materials from food producers and bring them to our factory in refrigerated truck beds.



refrigerated truck



forklift

② Weighing

Food is collected in special containers and their contents are classified with barcodes designating place of origin, date, time, type, and weight of the food.



scale



Container with barcode

Opening and sorting work by people with disabilities



packaged bread, rice balls, etc.

③ Putting

The container is inverted by lift and cleaned with a high-pressure washer.



Input port for raw food materials

④ Sorting

Remove nonconforming materials by hand using a metal detector and other tools.



Remove foreign substances by hand.



metal detector

⑤ Liquification

Crush the raw material to a liquid state with a moisture content of about 80%.



crusher



After liquification

⑥ Sterilization

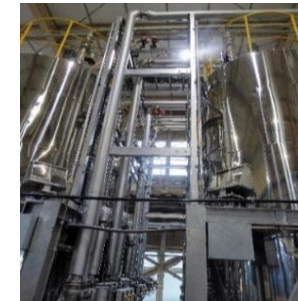
Contents are heated and stirred for a designated period of time at 90°C or higher to sterilize E. coli, salmonella, and other bacteria.



steam boiler



heat exchanger



Heating tank

Heat Sterilization Control System



⑦ Cooling and fermentation

After cooling, lactic acid fermentation is performed to achieve a pH below 4 and improve shelf life.



Cooling and Storage Tanks

⑧ Transportation

Loaded on tanker trucks and shipped to pig farmers.

On the return trip, the same trucks are used to collect milk and used as raw materials for feed.



Liquid raw material tank



7 tanker trucks

Pork Farm



We disinfect vehicles and boots when entering and exiting the pig farm, and wash the vehicles at the end of transportation to keep them clean and to thoroughly prevent infectious diseases.

Advantages of Liquid Fermented Feed

① Inexpensive due to reduced energy consumption

By using the water content of the food as it is, energy costs are reduced and the product can be offered at about half the price of ordinary compound feed.

② Suppresses manure odors

The amount of ammonia emitted by livestock in feces and urine is reduced due to increased digestive efficiency, eliminating excess nitrogenous materials.

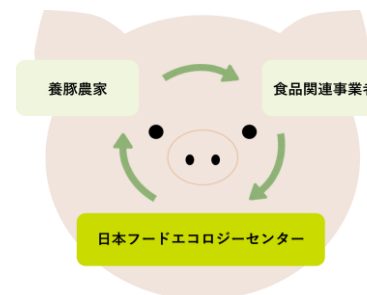
③ Providing safe and healthy pork to consumers

Pigs fed liquid fermented feed have lower disease rates, thus reducing the need for antibiotic use. As a result, safe and healthy pork can be provided to consumers.

Other comments we have received include, "It is good for the human working environment because it does not generate dust," and "It is expected to improve the intestinal environment through fermentation."



We conduct nutritional analyses in cooperation with universities, research institutes, and government agencies.



What is ecofeed?

It is livestock feed produced from food waste such as food manufacturing by-products, surplus food, cooking scraps, farm scraps, etc.

The eco-feed certification stipulates that swine enterprises must actively use eco-feed and rice feed to contribute to feed self-sufficiency and food self-sufficiency.



Eco-Feed Certificate (Two types)

Sustainable Development Goals

持続可能な開発目標(SDGs)の概要



「Sustainable Development Goals (持続可能な開発目標)」

Consisting of 17 goals which contain 169 targets to realize a sustainable world, the SDGs represent a pledge to "leave no one behind".

Koichi Takahashi, the president of J.FEC, has given lectures in many countries about our company's efforts from the perspective of the SDGs.



2017.07.18

"High-Level Political Forum"
at UN Headquarters in
New York



2017.06.20

The "G7 Workshop" in Berlin



2018.12.21

Awarded the Chief's Award by Japan's Prime
Minister as part of the 2nd SDGs award ceremony

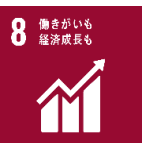
Goals to which J.FEC contributes



We work towards goal #12 *Responsible Production and Consumption* by both reducing food waste, and by using waste as a resource.



We contribute to goal #2 *No Hunger* through the improvement of food cycle self-sufficiency with food recycling technology.



We are actively working to provide employment for the elderly and people with disabilities in support of goal #8 *Decent Work and Economic Growth*.



We support goal #3 *Good Health and Wellbeing* by producing highly nutritious meat and reducing the need for agricultural antibiotics.



By recycling food waste, we reduce the volume of incinerated food waste and subsequent emissions of greenhouse gasses which supports goal #13 *Climate Action*



By reducing our use of fossil fuels and generating renewable energy such as biogas, we contribute to goal #7 *Affordable and Clean Energy*.



We actively accept factory tours, give lectures, and partner with educational institutions to foster opportunities for mutual learning and community development, as an effort in pursuit of goal #17 *Partnership for the Goals*.

Target 12.3

By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

Food Recycling Loop



pig farmers

Using liquid feed
(Currently 12 farms)

Pigs fed on liquid feed
produce delicious pork.



Markets and
Restaurants



It is sold as branded pork
in restaurants and
department stores.

Separation and storage of surplus
and waste food generated by
business activities

Contracts with more
than 180 businesses

Delivery of high quality liquid feed to
contracted pig farmers



Biogas Power Generation
Raw materials: approx. 50 t/day



Collection and transportation by licensed
companies (more than 30 companies)



JAPAN FOOD ECOLOGY CENTER, INC.

Accepts an average of 35 tons of surplus and waste food
and produces an average of 42 tons of liquid fermented
feed per day



Working with pig farmers to produce high quality pork, which is then sold at markets and restaurants.

Foods used for feed production



Vegetables, Fruits



bread



cooked rice



noodles



potato peel



side dish and miscellaneous vegetables



Flour and other dough



Cakes, and sponge dough, etc.



By-products of Whiskey Production



Milk, yogurt, and other dairy products



whey



Jellies, syrups, etc.

What pigs can't eat

食品リサイクル容器に入れてはいけないもの！

Things you should not put in food containers!

不应该放入食品回收容器的东西！

식품 재활용 용기에 넣고 말라 것!

สิ่งที่คุณไม่ควรใส่ในภาชนะรีไซเคิลอาหาร!

Những thứ bạn không nên cho vào hộp tái chế thực phẩm! etc.



① Foreign matter mixed with food



Bottles



Vinyl and plastic products



Cigarette butts



Detergent



Disposable chopsticks and toothpicks



Paper napkin



② Organic matter not suitable for feed production



Waste oil



Fish bone



Egg shell and seashell



Hard fiber



Highly spoiled food



Seed



We explain sorting methods to employees at factories and stores.

We ask that you treat food waste as a raw material for animal feed, not as garbage.

Please put raw materials in dedicated containers and clean them regularly. (Simple cleaning is conducted at the plant.)

In order to produce and provide pork that consumers really want, we ask that you please be thorough in your separation of garbage.

Branded pork “Yu-ton”

What is "Yu-Ton"?

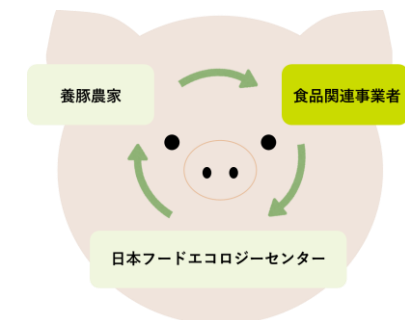
It is a branded pork raised by our liquid fermented feed and trademark managed by the Japan Food Ecology Center from October 2023.

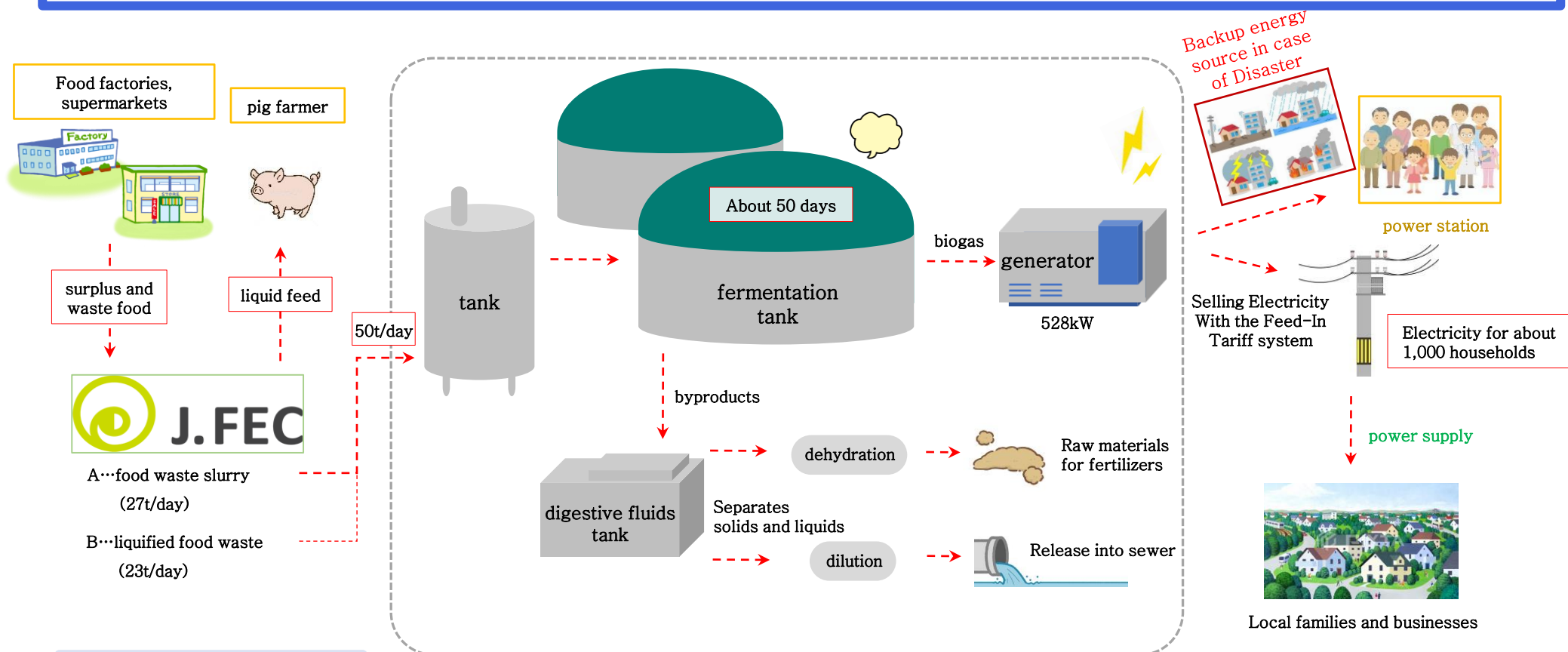
It can be bought at Odakyu OX, Odakyu Department Store, and our factory tours!



What sets "Yu-Ton" apart?

- ◎ **Health benefits!** Low in cholesterol
- ◎ **Flavorful !** High in oleic and linolenic acids, rich in flavor
- ◎ **Tender !** The meat fiber is finely textured and tender
- ◎ **Safe !** The feed is easily digested by livestock and improves digestive health which reduces the need for agricultural antibiotics.





Newly acceptable foods



coffee grounds



Fried food scraps



water from rinsing rice



Tea leaves after brewing

Surplus or waste food that is suitable for animal feed is converted at the Japan Food Ecology Center, and that which is not suitable for animal feed is used for biogas power generation. Waste material from the biogas process is used to produce agricultural fertilizer.