Management Policy

1. **Put Safety First**, develop highly transparent corporate activities that **Meet regulatory compliance**, and **Build trust with customers and local communities**.

2. **Committed to the recycling business utilizing the latest technology**, and play a key role in improving the social position of the waste treatment and recycling industry.

3. **Contribute to the realization of a Sustainable Society** by expanding conversion of waste to energy and resource such as recycling of waste plastic and food waste.

4. **Become a global leader in the industry** with accumulated expertise in Japan, by expanding the business to overseas such as Southeast Asia where waste disposal become social serious issue along with the economic growth.

Environmental Policy

The J&T Recycling Group contributes to the creation of a better global environment through its environmental and recycling business using the latest technologies.
Aiming to Be a Leading Company in the Waste Treatment and Recycling Industry

April 2019

Launch of J&T Recycling Corporation!

Both JFE Kankyo (a subsidiary company of JFE Engineering Corporation) and Tokyo Waterfront Recycling Power (a subsidiary company of Tokyo Electric Power Company) have been running waste disposal and recycling businesses from their primary bases in Tokyo’s bay area. Could these two companies produce a major synergistic effect by combining their strengths? Based on this idea, a working group was launched in FY2017 to search for a path to collaboration. From April, these two companies have finally been merged to form J&T Recycling corporation, Tokyo metropolitan area’s largest waste processing and recycling company.

J&T Recycling will strive to contribute to a sustainable society through a diverse range of recycling activities including food recycling, biogas power generation, various types of plastic recycling, including plastic bottles, and thermal recycling through incineration and power generation enhanced by the centralized management of four bases: Tokyo, Kawasaki, Yokohama, and Chiba. Our aim is to be a leading company in the waste treatment and recycling industry. We will work to expand our business under this new system.

MESSAGE
The new company will combine the technology and expertise of JFE Kankyo and Tokyo Waterfront Recycling Power to become a top industry runner as an integrated environment solutions provider. In addition to growing our existing businesses, we will proactively tackle the challenges of solving social problems such as marine plastic pollution, which is currently regarded as a global issue.

Tetsuo Tsuyuguchi [left] President
Toshiro Sasaki [right] Vice President

Main Bases

Sapporo Area
Sapporo Bio Food Recycle
Food recycling (methane fermentation)
Throughput: 68 t per day
Power output: 250kW

Sendai Area
Business: Pallet production, RPF* production, industrial waste plastic recycling, industrial waste treatment, etc.

Tokyo Area
Business: Waste-to-energy power generation
Tokyo Waterfront Eco Clean
Waste-to-energy power generation (gasifying and melting furnace)
Throughput: 600 t per day
Power output: 23,000kW

Kawasaki Area
Business: Waste-to-energy power generation, recycling of pet bottles and home appliances, etc.
Kawasaki Eco Clean
Waste-to-energy power generation (atoker furnace)
Throughput: 220 t per day
Power output: 1,500kW

Chiba Area
Business: Waste treatment, food recycling
Chiba Recycling Center
Waste treatment and gas production (gasifying and melting furnace)
Throughput: 300 t per day

Yokohama Area
Business: Waste-to-energy power generation, food recycling, fluorescent lights, dry batteries, battery recycling, etc.
Yokohama Eco Clean
Waste-to-energy power generation (aerotherm furnace)
Throughput: 220 t per day
Power output: 1,869kW

J-Bio Food Recycle
Food recycling (methane fermentation)
Throughput: 800 t per day
Power output: 1,800kW
J&T Recycling Corporation is an environmental solutions expert devoted to the realization of a sustainable society with help from its rich experience and collective strengths.

Collective environmental solutions

J&T Recycling provides "one-stop service" with collective strengths in fields from environmental consulting to waste collection, transportation, intermediate processing and recycling by using the technical abilities of the JFE Group.

Solutions Business
Collective recycling management for wastes

Incorporating with companies in JFE group network, J&T Recycling Corporation offers you total management, and various kinds of treatment and recycling for industrial wastes.

Advantages

1. Reduced cost
2. Complete recycling of resources
3. Security for compliance

Environmental Consulting

Presenting optimum solutions using environmental surveys and analysis based on legislation
Incinerators, Melting Furnace and Power Generation

■ Treatment flow

Waste
- Waste plastics
- Waste paper, waste wood, sludge
- Low-concentration PCB waste oil

Power generation
- Recycling of burnt residue, etc.

Treatment facilities in the metropolitan area

- Tokyo Waterfront Eco Clean
- Kawasaki Eco Clean
- Chiba Recycling Center
- Yokohama Eco Clean

Incineration/power generation
(Example of power supply service)

Rinko Park

Pacifico Yokohama
Waste discharged from all Pacifico Yokohama facilities

Yokohama 440 t/d
Kawasaki 650 t/d
Tokyo 300 t/d
Total 1,390 t/d

Power supply

J&T Recycling collects waste discharged from the facilities and park managed by Pacific Convention Center Yokohama (hereinafter, Pacifico Yokohama), and treats wastes and generates electric power at its own plant. Power is supplied to Rinko Park*, which is managed by Pacifico Yokohama, through Urban Energy Corporation, a PPS (Power Producer and Supplier) business company in the JFE Group.

Urban Energy Corp. offers a power rate discount service called "Sodenwari®" corresponding to the amount of waste discharged by the customer. By using this service, Pacifico Yokohama can reduce the cost of electric power consumed in its Rinko Park.

* Rinko Park
Rinko Park is the largest green space in the Minato Mirai area, with a great view of the Port of Yokohama. With a number of sightseeing spots, such as the spacious Lawn Space, Shiori-no-ike Pond and South Entrance Plaza, the park is loved by many people.

(Excerpted from the Pacifico Yokohama website)
Incinerators, Melting Furnace and Power Generation

**Yokohama Clean Center**
(Kiln/stoker type furnace)
Incorporation/power generation facility with high operation rate
Low-concentration PCB waste treatment facility.

- **Treatment capacity**: 219.9 t/d
- **Generating capacity**: 1,889 kW
- **Target**: Sludge, waste acid, waste alkali, waste plastics, broken glass, broken ceramics and concrete, waste rubber, waste paper, waste wood, waste textiles, burnt residue, soot and dust, metal scrap, low-concentration PCB waste oil/contaminants/treatment products

**Tokyo Waterfront Eco Clean**
(Fluidized bed gasification & melting furnace/vertical furnace)
J&T Recycling's largest generating capacity
Also possible to treat infectious medical waste

- **Treatment capacity**: Industrial waste 550 t/d
- **Infectious medical waste**: 100 t/d
- **Generating capacity**: 23,000 kW
- **Target**: Incineration/melting treatment, burnt residue, sludge, waste acid, waste alkali, waste plastics, waste paper, waste wood, waste textiles, waste rubber, metal scrap, broken glass and concrete, broken ceramics, slag, soot and dust

**Kawasaki Eco Clean**
(Kiln/stoker type furnace)
Also possible to treat medical wastes

- **Treatment capacity**: 219.9 t/d
- **Generating capacity**: 1,500 kW
- **Target**: Sludge, waste oil, waste acid, waste alkali, waste plastics, broken glass, waste rubber, waste paper, waste wood, waste textiles, metal scrap, infectious industrial and medical waste

**Chiba Recycling Center**
(Thermoselect-type gasification & melting furnace)
Possible to treat diverse types of waste
Recovery of generated fuel gas, slag, and metal as resources

- **Treatment capacity**: 300 t/d (150 t/d x 2 units)
- **Target**: Burnt residue, sludge, waste oil, waste acid, waste alkali, waste plastics, waste paper, waste wood, waste textiles, animal and plant residue, waste rubber, metal scrap, broken glass/concrete/ceramics, slag, rubble, soot and dust, raw garbage and kitchen garbage
Treatment of Waste Liquids and Sludge

Chemical Works

- Discharger
  - Waste plating liquids from surface treatment processes, etc.

Yokohama city sewer system

Biological treatment equipment [Activated sludge treatment]

- Waste liquid treatment building [Inorganic treatment]

Fluorescent Lamp Recycling

- Recovery of fluorescent lamps
  - Straight tubes
  - Circular tubes
  - Compact tubes

- Recovery of mercury, glass, metal, etc.

- Sold to other companies

- Treatment consigned to other companies

Recycled products

- Glass wool
- Fluorescent tube
- Glass
- Aluminum and plastic products

[Yokohama Area]

Yokohama Fluorescent Lamp Recycling Plant

- Treatment capacity: 20,000 t/y
- NH3 adsorption tower
- Filter press

Treatment capacity: 168,000 t/y
- Waste acid, waste alkali, sludge, strong acids, strong alkalis, mercury, cadmium, lead, arsenic, selenium, hexavalent chromium

Beverage waste crushing equipment
(for beverage containers with liquid content)

[Sendai Area]

Sendai Fluorescent Lamp Recycling Facility

- Treatment capacity: 1,400 t/y
- Recycling fluorescent lamps and mercury lamps using cutting-edge recycling technologies
Dry Cell and Storage Battery Recycling

**Treatment flow**

- Sorting
- Crushing and sieving
- Magnetic sorting
- Zinc and manganese oxides
- Nonferrous metals
- Steel and tin
- Melting and refining treatment
- Slag recycling
- Recycling as raw materials for steel making

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**Yokohama Area**

**Dry Cell Battery Recycling Facility**

Steel is recovered as a raw material for steel making, and zinc is recovered as a resource by zinc smelters.

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**Treatment flow**

- Receiving
  - Acid/alkali
  - Container
- Neutralization
- Dehydration and solidification
- Removal of battery fluid
- Cutting/dismantling
- Lead/stainless steel
- Waste plastics

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**Yokohama Area**

**Storage Battery Recycling Facility**

Performs waste treatment, recovery of metal and recycling of containers.

**Dismantling and treatment facility**

- Treatment capacity: 20,000 t/yr

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Solid Waste Recycling

**Treatment flow**

- Waste plastics
- Waste wood
- Waste metal
- RPF
- Wood chips
- Metals

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**Yokohama Area**

**Kanazawa Recycling Plant**

Intermediate treatment from advanced sorting to recycling

- **Treatment capacity**: 3,200 t/d
- **Target**: Target waste: Waste plastic, waste wood, scrap metal, waste glass, waste ceramics, debris, waste paper

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Disposal of Confidential Media

**Treatment flow**

- CD/DVD
- Incineration
- Confidential documents
- Shredding
- Baling
- Paper Material

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**Tokyo Waterfront Clean Center**

Incorporating confidential media and documents containing personal information and other confidential information in a vertical furnace

**Sendai Area**

**Confidential Document Disposal Facility**

Batch disposal of confidential documents and other important documents in cardboard box lots by using crushers

Footproof security system (24-hour/day monitoring)
Container and Packaging Plastic Recycling

Baling (Business Entrusted by Municipalities)

Baling of general waste plastics (baling business under consignment from municipalities)

Treatment flow

- Plastic garbage (general waste) → Baled product

Baling business (consigned by municipalities):
Container and packaging plastic recovered by separate collection is sorted, compacted and baled, and is transported to the recycling plant.

[Yokohama Area]
Yokohama Plastics Recycling Plant

- Processing capacity: 136.8 t/d
- Target: Plastic containers and packaging (excluding PET bottles)

[Sendai Area]
Sendai Plastics Baling Plant

- Processing capacity: 70 t/d
- Target: Plastic containers and packaging (excluding PET bottles)

Recycling of Plastic Materials

Production of 100% recycled plastic pallets

Treatment flow

- Used flexible containers (industrial waste) → Pellets

- Pelletizing product

- Processing capacity: 330,000 pallets/y

- Processing capacity: 360,000 pallets/y

- Entrusted by The Japan Containers and Packaging Recycling Association

Production of Plastic Raw and Fuel Materials

Film type plastics

- Crushing
- Compacting and pelleting
- Raw material for steel making

[Keihin Area]
Ohgishima RPF Production Facility

- Processing capacity: 52,000 t/y
- Producing raw material for steel making by crushing/pelletizing

[Sendai Area]
Fukuyama RPF Production Facility

- Processing capacity: 21,000 t/y
- Recycling as solid fuel by producing RPF

[Sendai Area]
RPF Production Facility

- Processing capacity: 18,000 t/y
- Recycling as solid fuel by producing RPF
**PET Bottle Recycling**

Recycling waste plastic as a resource, contributing to CO2 reduction and avoiding landfill disposal.

**Treatment flow**

Recycling of used PET bottles as new PET bottles

**Range of J&T Recycling’s business**

- **Bale**
- **Crushing**
- **Washing**
- **Dehydration and drying**
- **Flake product**

**Destination partner company**

- **Bottles**
- **Bottle molding**

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**Food Wastes Recycling**

**Treatment flow**

- **Food wastes (General waste, industrial waste)**
- **Methane fermentation biogas**
- **Power generation**

**Food Waste Recycling and Biogas Power Generation Business**

- **J Bio Food Recycle Co., Ltd. Yokohama Plant**
  - Processing capacity: 80 t/d
  - Power generation capacity: 1,800kW
  - Target: Food waste (general waste), animal and plant residue (industrial waste), sludge (industrial waste)

**Chiba Biogas Center**

- Supplies biogas recovered by “Bigan Biogas Process” to steel works as fuel gas.

**Sapporo Bio Food Recycle Corporation**

- Processing capacity: 68 t/d

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**Kawasaki PET Bottle Recycling Plant**

Material recycling: PET bottles are recycled as raw material for recycled bottles or others.
Home Appliance Recycling

Home Appliance Recycling Plant / JFE Urban Recycle Corporation

**Treatment flow**

- **Waste home appliances**
  - TVs
  - Air conditioners
  - Refrigerators
  - Washing machines

1. **Crushing**
   - Unethane
   - Steel
   - Fluorocarbons in insulation materials
   - Copper, aluminum, etc.
   - Mixed plastics

2. **Sorting**

[Keihin Area]

Recycling of TVs, air conditioners, refrigerators and washing machines based on Japan’s Home Appliances Recycling Law

*Treatment capacity: 79.2 t/d*

Home Appliance Processing Plant / J&T Recycling Corporation

**Treatment flow**

- **Waste home appliances**
  - Heat exchangers
  - Mixed metals
  - Motors
  - Transformers
  - Aluminum balancers and other aluminum parts

1. **Crushing**
   - Steel
   - Aluminum
   - Copper
   - Plastics

[Keihin Area]

Effective recycling of metals from disposed home appliances

*Treatment capacity: 3,000 t/y*

One-Stop Solution for PCB

Various kinds of support for complicated PCB disposal, including investigation, notification, dismantling, carry-out (transportation) and disposal.

- **PCB in custody of discharging business**
  - Analysis
  - Storage notification
  - Registration of visual aspect
  - Photograph (for face plates, etc.)
  - Application for subsidy

- **Housing, waste oil, pollutants**

- **Preparation of safety management and work procedure documents, transportation and disposal**
  - Low-concentration PCB waste (0.05 to 5,000 mg/kg)
  - Oil removal, dismantling and carry-out
  - Collection and transportation
  - Disposal (J&T Recycling and cooperating company)

  - High-concentration PCB waste (more than 5,000 mg/kg)
  - Carry-out
  - Collection and transportation

Transportation of wastes

- Safe, efficient transportation by the optimum vehicle for each type of waste.
- Integrated operation control system for all vehicles nationwide, from pick-up to destination.
- Safe, environment-friendly driving responding to client’s diversified needs.

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Tractor</th>
<th>4 ton wing truck</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Semi trailer</td>
<td>4 ton flat bed truck</td>
</tr>
<tr>
<td>10 ton wing truck</td>
<td>4 ton arm roll truck</td>
<td></td>
</tr>
<tr>
<td>10 ton flat bed truck</td>
<td>4 ton UNIC truck</td>
<td></td>
</tr>
<tr>
<td>10 ton arm roll truck</td>
<td>2 ton EV packer truck</td>
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<tr>
<td>10 ton dump truck</td>
<td>2 ton flat bed truck</td>
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<tr>
<td>10 ton UNIC truck</td>
<td>2 ton arm roll truck</td>
<td></td>
</tr>
<tr>
<td>8 ton flat bed truck</td>
<td>10 ton tank roll truck</td>
<td></td>
</tr>
<tr>
<td>7 ton UNIC truck</td>
<td>8 ton waste solution suction truck</td>
<td></td>
</tr>
</tbody>
</table>
Group Network

Providing total solutions utilizing J&T Recycling’s own equipment and technology and the JFE Group network

JFE URBAN RECYCLE CORPORATION

6-1 Mizue-cho, Kawasaki-ku, Kawasaki City, Kanagawa Prefecture
Recycling of Home Appliances and OA Equipment
- Capacity: 79 tons/day
- Type of waste: used home appliances, PCs, OA equipment

Domestic appliance recycling plant

J Bio Food Recycle Corporation

Head Office: 3-1 Benten-cho, Tsurumi-ku, Yokohama
Plant: 2-1-5 Sukeno-cho, Tsurumi-ku, Yokohama
Food waste recycling
- Generating capacity: 11,000 MWh (approx.)
- Receiving capacity: 80 t/d
- Target wastes: Raw garbage (general), Animal/vegetable residue (industrial), Sludge (industrial)

Yokohama Plant

Sapporo Bio Food Recycle Corporation

Sapporo Recycling Complex
4-5-3 Nakamura-cho, Higashi-ku, Sapporo
Food waste recycling
- Generating capacity: 1 GWh/yr (approx.)
- Receiving capacity: 68 t/d
- Target waste: Raw garbage (General/Business)

Sapporo Plant

JFE Plastic Resource Corporation

5-1 Mizue-cho, Kawasaki-ku, Kawasaki City, Kanagawa Prefecture
Materialization of plastics for blast furnace
- Processing capacity: 185 tons/day
- Target: Containers and Packaging Recycling Law (Plastics)

Mizue material recycling plant for blast furnace

JFE Bars & Shapes Corporation

1-14-5 Kawasaki Doi, Mizushima, Kurashiki City, Okayama Prefecture
Recycling with Electric Furnace
- Capacity: 1,500 tons/day x 2 units
- Type of waste: metal scrap, glass and waste ceramic, ash and dust, cinders

DC arc furnace

JFE Environmental Service Corporation

1-14 Kawasaki Doi, Mizushima, Kurashiki City, Okayama Prefecture
Recycling Waste Wood by Carbonization
- Capacity: 65 tons/day (19,500 tons/year)

Kurashiki office

Mizushima Eco-Works Co., Ltd.

1-14-5, Kasasakidori, Mizushima, Kurashiki-shi, Okayama
JFE, Thermoselect gasification & melting furnace
- Capacity: 555 t/d
- Target: Burnt residue, sludge, waste plastics, animal and plant residue, etc.

Mizushima Eco-Works Co., Ltd.

GUUN Co., Ltd.

17-3 Torihama-cho, Kanazawa-ku, Yokohama City, Kanagawa Prefecture
Waste Wood and RDF Recycling
- Capacity: Chip manufacturing facility 384 tons/day
- RDF manufacturing facility 55.2 tons/day
- Type of wastes: waste plastics, waste wood, waste paper, waste textiles, rubber waste, etc.