

Case studies of Advanced Construction and Demolition waste(CDW) Recycling initiatives and technologies In JAPAN

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Title	Improvement of recycling by high precision sorting of construction mixed waste
Theme classification	<input type="checkbox"/> Prevention
	<input type="checkbox"/> Re-use
	<input type="radio"/> Recycle
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	<input type="checkbox"/> Legacy
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Specific content	<p>- System flow of "High precision sorted recycling system"</p> <p>- High-precision screening with the mixed construction wastes treatment line</p> <p>- Development of the technology for screening by color, which is to recover high-quality recycled crusher-run from mixed construction wastes</p>
Appeal point	<p>-New technology was developed to identify glasses, bricks, rigid plastics, etc. by referring to minute color difference among them. For this purpose, the color screener appropriate for screening construction wastes, which have been developed in coordination with the dedicated color screener manufacturer, was combined with the non-ferrous metal screener.</p>

Efficiency Improvement of Recycling through High-precision Screening of Mixed Construction Wastes

1. Outline of the Tokyo Waterfront Area Eco-Plant Facility



Location: Jonanjima 3-2-15, Ota-ku, Tokyo

Structural scale: Intermediate treatment facilities Steel construction • Height 26m

Office building: Reinforced concrete construction, six storied • Height 22.6m

Installation area: 8,997.38m² (Reclaimed land, Tokyo)

Building area: 2,988.38m² Total floor area: 7,330.28m²

Line of business: (Industrial wastes) plastic wastes, waste paper, wooden waste, fibers waste, rubber wastes, scraps, wastes of glass, concrete, and ceramics, slag, rubble (including industrial wastes containing mercury)
(General wastes) Wooden wastes, lunch wastes, wastes occurring during change of abode

2. Recycling System Flow

A “High-precision Screening Recycling System” was established, which consists of about 270 units of equipment. This system incorporates the technology of screening mixed construction wastes mechanically and automatically (achieving enhanced screening capacity) and the technology to facilitate easy recycling of screen wastes (achieving increased quality accuracy).

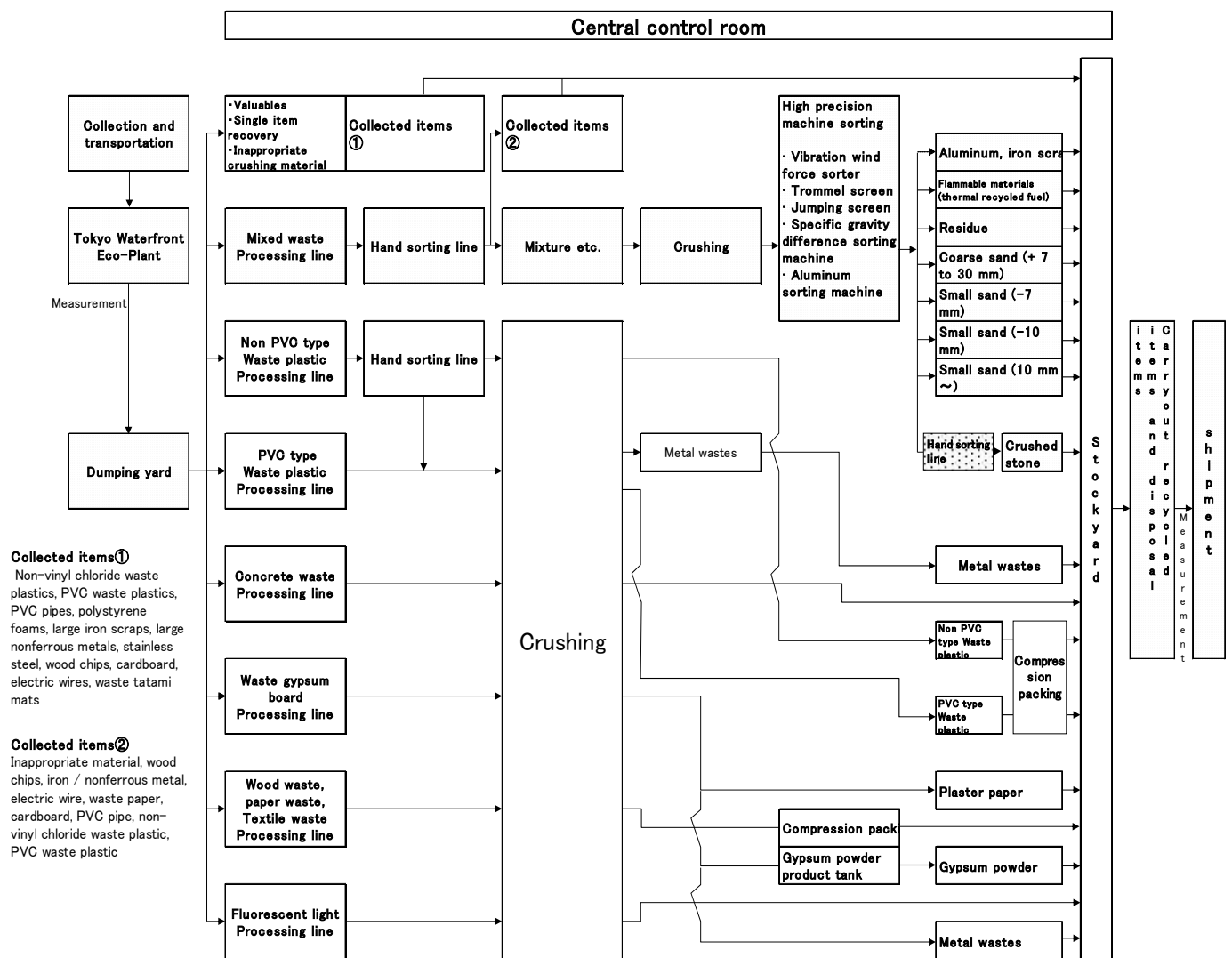


Figure 1 System flow of "High precision sorted recycling system"

3. High-precision screening with the mixed construction wastes treatment line

The throughput of the mixed wastes treatment line shown in Fig. 1 is 1,470t/day. (The throughput of the facility as a whole is 2,784t/day.)

This line is featured in that fine wastes (called “minus sieve residue”) left after primary treatment are screened. This is not normally done in other intermediate treatment facilities. High-precision recycling is enabled by screening such minus sieve residue in several stages using various machines including the non-combustibles cleaner, nonferrous screener, color screener, near-infrared material screener, screener by difference in specific gravity, jumping screen

4. Recycled products after high-precision screening

High-precision screening of mixed wastes treatment line screens out recycled crusher-run, recycled sand, combustibles (mixture of plastics wastes, wastepaper, and waste woods), iron, aluminum, and non-ferrous metals. Recovered dusts and fine dusts are pelletized by a kneading machine and used currently as cement raw materials.

Recycled crusher-run and recycled sand are used as materials for temporary construction in the construction site while combustibles are used as raw materials for cement raw fuels, solid fuels, and raw fuels for thermal recycle facilities.

From this line, there is almost no wastes to be disposed of by landfill.



Photo 2 Recycled products from mixed waste s

5. Development of the technology for screening by color, which is to recover high-quality recycled crusher-run from mixed construction wastes

After mechanical screening, recycled crusher-run contains about 10 – 15% of glass, bricks, rigid plastics, non-ferrous metals, etc. that are similar in specific gravity. New technology was developed to identify glasses, bricks, rigid plastics, etc. by referring to minute color difference among them. For this purpose, the color screener appropriate for screening construction wastes, which have been developed in coordination with the dedicated color screener manufacturer, was combined with the non-ferrous metal screener.