We're doing our part for resource recycling
through our home appliance recycling business.

KRSC
KANSAI RECYCLING SYSTEMS CO.,LTD.

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# As an advanced recycling plant that contributes to a recycling-oriented society, we aim to become “a valuable highly recycling company for people and the earth”.

### Contributions to a recycling-oriented society

Promote closed-loop material recycling of home appliances and circulate high quality recycled materials to society.

### Promotion of environmental management

Increase added value of recovered materials, thoroughly reduce waste and improve recycling rate.

### Contributions to DfE (Design for Environment) of new products

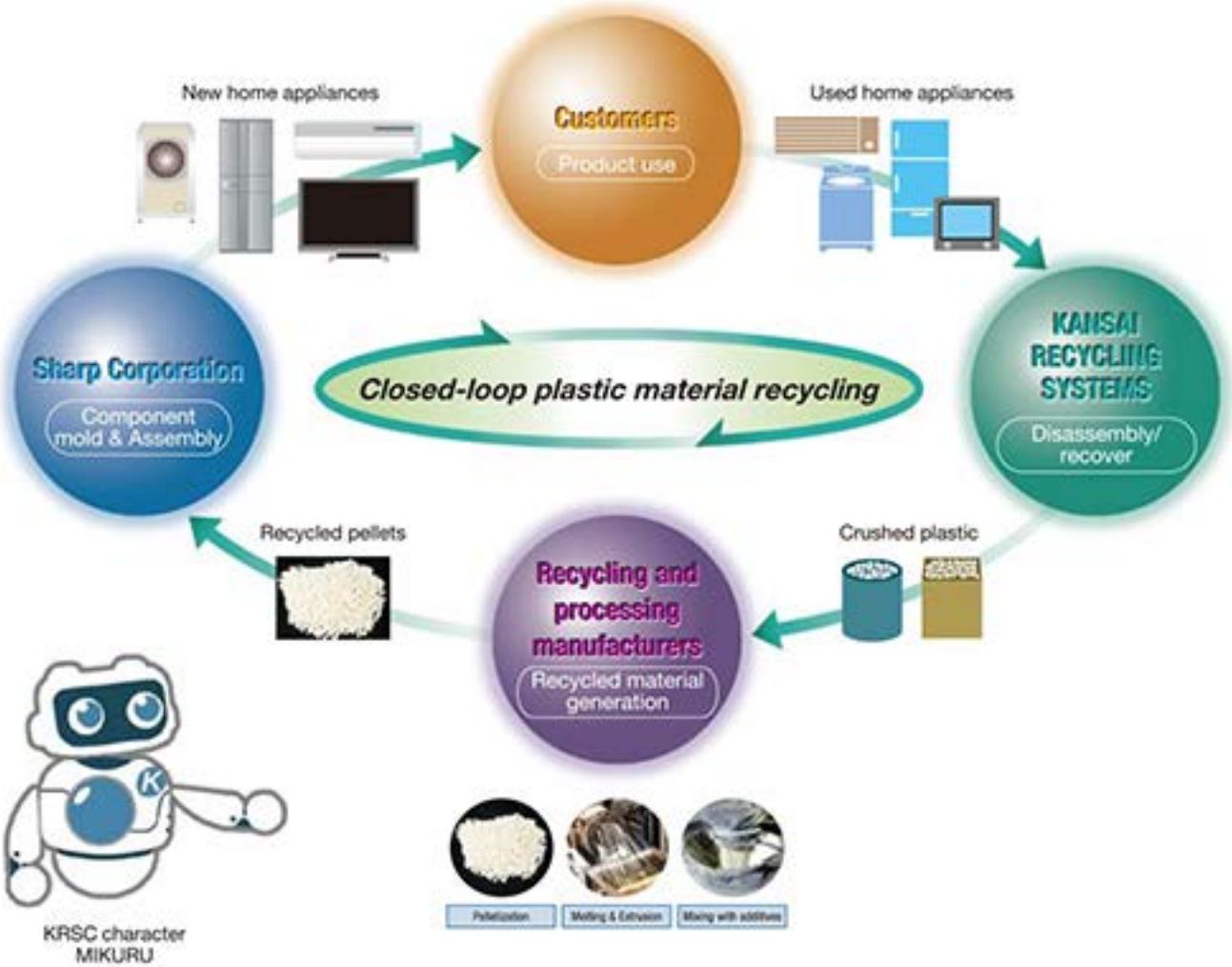
Feedback the information and know-how obtained at the recycling plant to the design and development department to improve the recyclability of new products.

### Contributing to society through environmental education

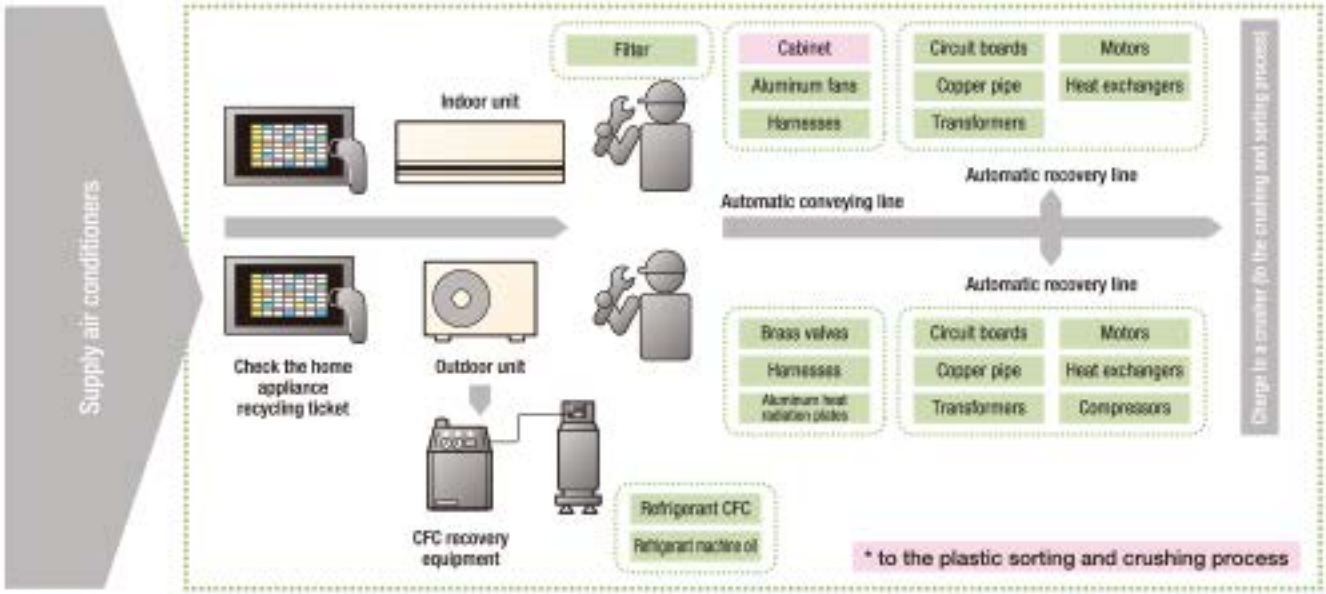
We actively engage in social contribution activities, including “environmental education” focusing on a factory tour.

## Closed-loop plastic material recycling (CMR)

With the closed-loop plastic material recycling (CMR) technology developed with Sharp Corporation, we promote repeated usage of recovered plastic from used home appliances to Sharp’ s new home appliances.



## Air conditioner processing flow




### Outdoor-unit assembly-line disassembly work

Disassembly of outdoor units on a conveyor improves processing speed by repeating the same operation with the same tools.

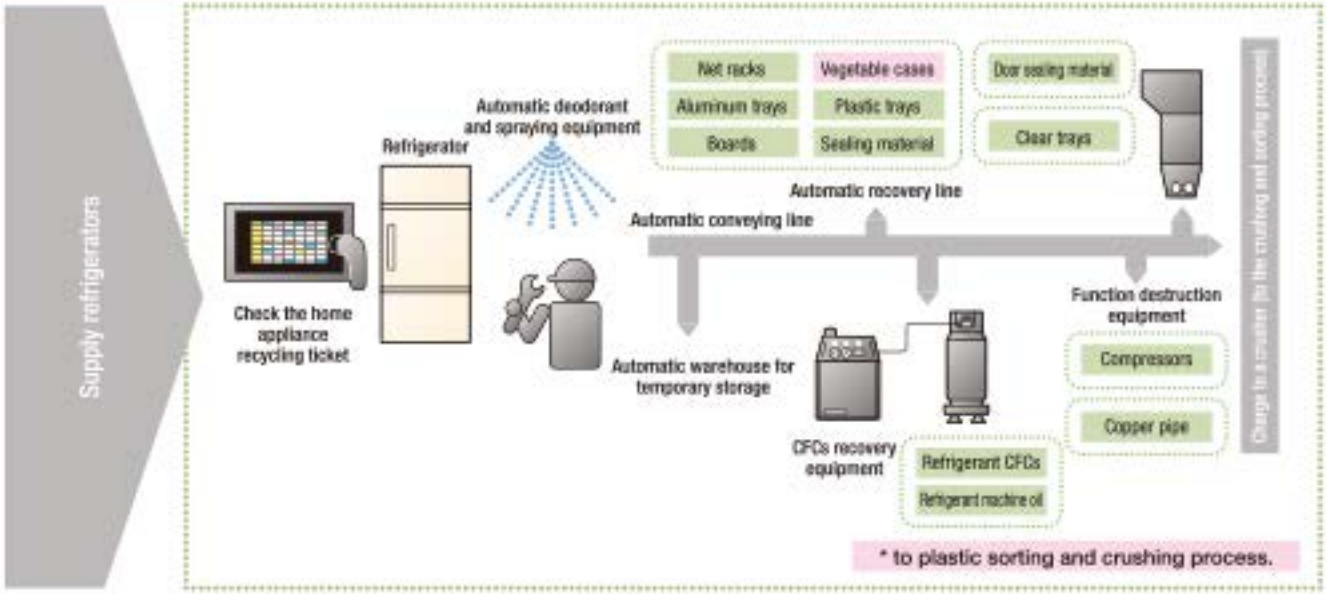
### Outdoor-unit dust-removal equipment

Outdoor units have a lot of dust on them, and this equipment is removed dust from outdoor by the air shower method.

Indoor unit disassembling line

Automatic recovery line

## Refrigerator processing flow




### Door sealing material crushing equipment

Door sealing material is crushed, and the vinyl chloride on the surface and the soft magnet used as a core are separated and recovered.

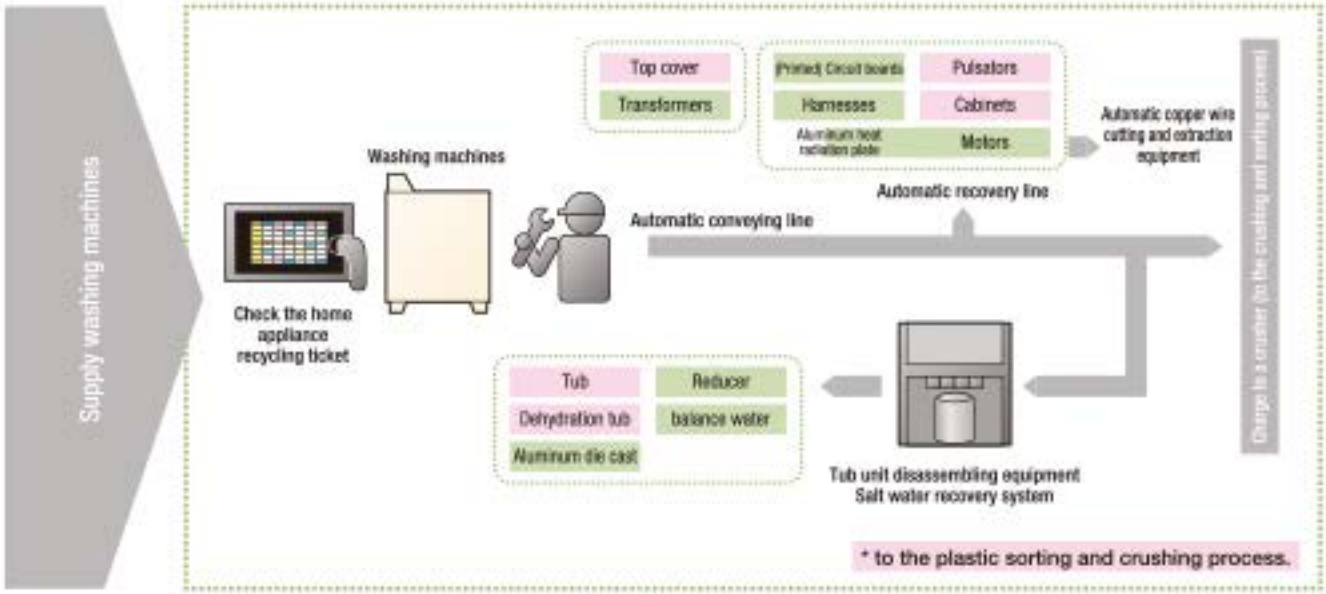
### Clear trays crushing equipment

Clear trays recovered from refrigerator chambers are charged directly to a dedicated crusher.

Clear trays crushing equipment

Door sealing material crushing equipment

## Washing machine processing flow




### Tub unit separation equipment

This equipment separates metal parts and plastic from the washing machine tub unit (which is difficult to disassemble manually).

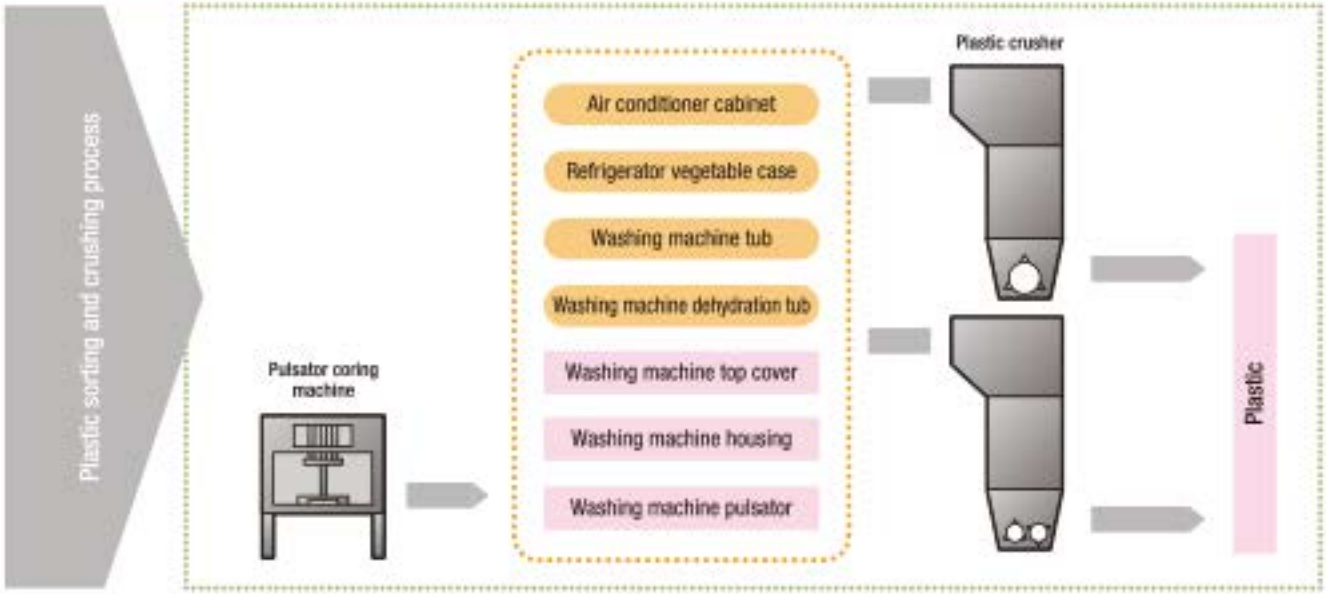
### Drum-type washing machine disassembling line

Due to the increase in drum-type washing machines, a dedicated conveying line processes the tub units produced after disassembly using automatic conveyance and a pressing machine.

Tub unit separation equipment

Drum-type washing machine disassembling line

## Plastic sorting and crushing process




### Subgrade line

This process removes metal from plastic parts to recover polypropylene (PP).

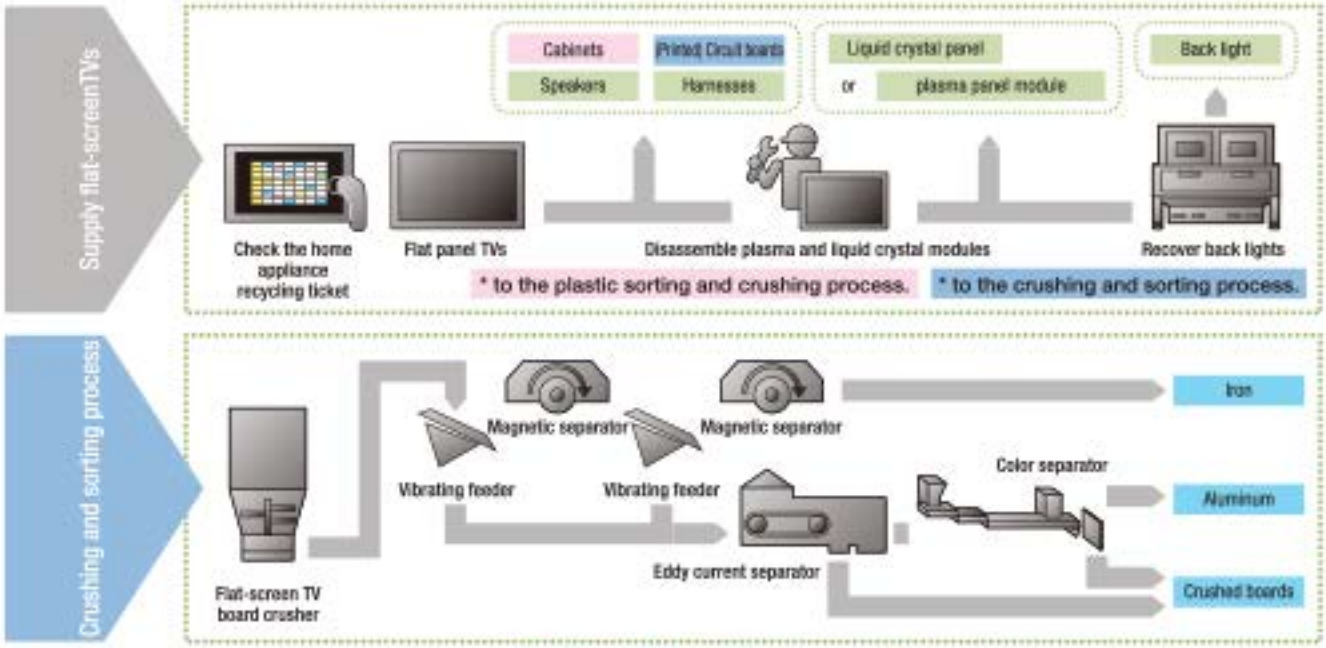
### Pulsator coring equipment

This equipment separates plastic and metal from pulsators, which is a washing machine agitator.

Subgrade line

Pulsator coring equipment

## CRT TV and flat-screen TV processing flow




### Back light recovery workbench

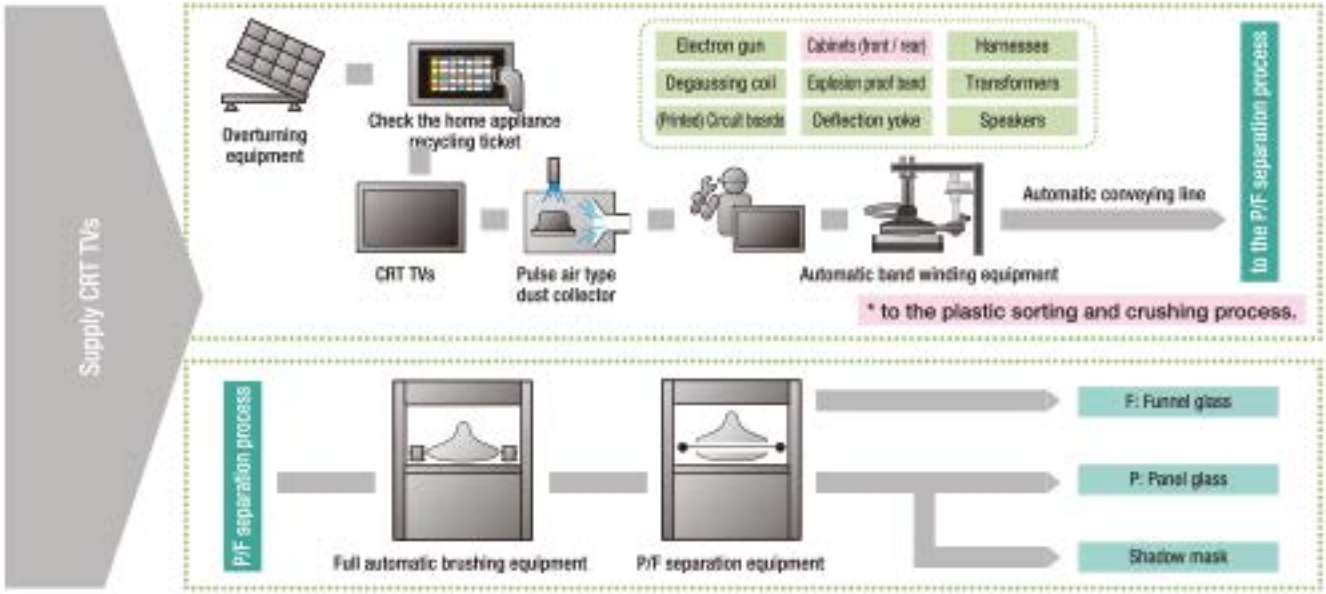
A workbench with concentrated ventilation is provided to prevent operators and the environment from being affected in case of a breakage when recovering LCD panel TC fluorescent tubes.

### Hydraulic cutter for flat-panel

Due to increased big flat-panel TV s , this machine cuts LCD panel of 50 inches or more to reduce burden and improve safety for workers, as well as increase disassembly efficiency. This makes it possible for cutting to be a one-person job.

Back light recovery workbench

Hydraulic cutter for flat-screen TVs

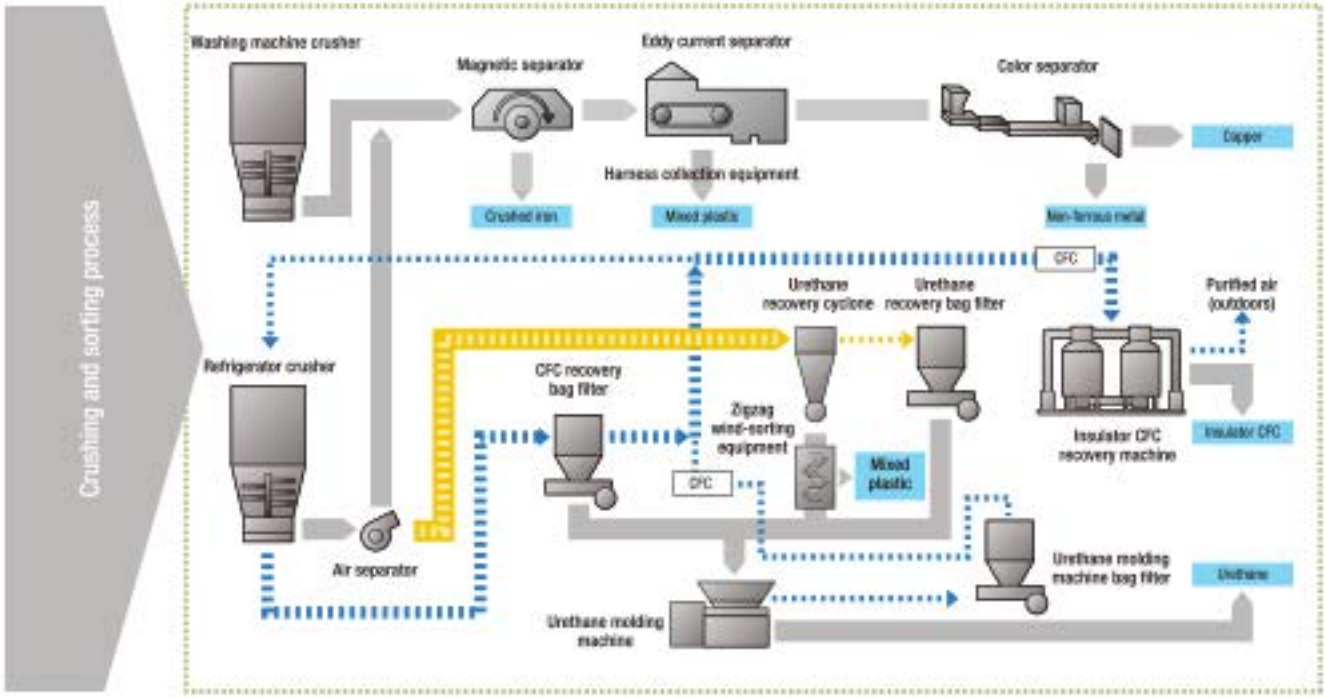



### P/F separation equipment

This equipment separates panel glass (P) from funnel glass (F), by applying a heater wire to Braun tubes.

P/F separation equipment

## Crushing and sorting process




### Insulator CFC recovery machine

This machine recovers CFC contained in the insulator used in refrigerators.

Insulator CFC recovery machine

### Color separator machine

This machine detects red copper color in non-ferrous metal mixtures using a CCD camera, and then automatically sorts and recovers it by blowing high-pressure air.

Color separator machine

### Zigzag wind-sorting equipment

This equipment separates plastic from crushed refrigerator urethane (thermal insulation). The crushed material passes through a zigzag path to separate and collect plastic and urethane more efficiently, leading to an improvement in the recycling rate of the plastic.

Zigzag wind-sorting equipment

Crushed iron

Crushed and sorted copper

Mixed plastic

# History

| | |
|---|---|
| FY 1999 | - Established. |
| FY 2001 | - Started operation as a home appliance recycling plant.<br>- Acquired ISO 14001 certification. |
| FY 2002 | - Implemented operational CFC management system. |
| FY 2003 | - Installed tub unit separation equipment. |
| FY 2004 | - Installed salt water recovery equipment. |
| FY 2005 | - Installed water spraying equipment to the sorting process. |
| FY 2006 | - Installed waste compressor conveying equipment.<br>- Installed infrared radiation thermometers to the crushers. Implemented a monitoring system to the equipment in the crushing and sorting process.<br>- Installed pulsator coring equipment.<br>- Started operation of Plant 2. (Plant for TVs only. Shimagahara, Mie Prefecture) |
| FY 2007 | - Installed air conditioner recovery and automatic conveying equipment.<br>- Installed an indoor equipment disassembling line.<br>- Installed a plastic sorting line.<br>- Installed a non-ferrous separator and a color separator.<br>- Installed a pulse air type stem dust collector in Plant 2. (* ①) |
| FY 2008 | - Acquired OHSAS18001 certification.<br>- Installed a CFC monitor. (* ②)<br>- Installed a large-sized dust collector.<br>- Installed automatic air conditioner outdoor supply equipment<br>- Installed LED lighting equipment (3F process)<br>- Installed back cabinet stamping equipment, explosion proof band removal equipment, front cabinet conveying equipment, a 2-axis crusher, and a panel crusher in Plant 2. |
| FY 2009 | - Automated recovery and conveying in the washing machine line.<br>- Installed a recovered material conveying line, a circuit board compacting machine, and a large-sized dust collector in Plant 2. |
| FY 2010 | - Installed temporary refrigerator storage equipment.<br>- Installed a back cabinet conveying system in Plant 2. |
| FY 2011 | - Received a total of 20,000 visitors.<br>- Automated conveying in the refrigerator pre-disassembling line. |
| FY 2012 | - Installed a refrigerator pre-disassembling yard. Installed an HC refrigerant recovery machine.<br>- Installed urethane suction equipment and harness collection equipment. |
| FY 2013 | - Installed a urethane particle separator.<br>- Installed mixed plastic shipping equipment. |
| FY 2014 | - Installed air conditioner unloading equipment. (* ③)<br>- Installed refrigerator compressor function destruction equipment.<br>- Started human-resource exchange training with other companies. |
| FY 2015 | - Installed automatic motor core cutting and extraction equipment.<br>- Installed automatic sorting-line crushed-material conveying equipment. (* ④)<br>- Introduced safety sensory equipment. |
| FY 2016 | - Installed a flat-panel display circuit board crushing and sorting system in Plant 2.<br>- Installed automatic transformer disassembling equipment.<br>- Renewed the refrigerator line. |
| FY 2017 | - Renewed automatic washing machine salt water recovery equipment.<br>- Implemented refrigerator sealing material crushing and sorting equipment. |
| FY 2018 | - Completed a warehouse building.<br>- Won the Iwatani Naoji Memorial Prize.<br>(for industrial contribution through remaining life evaluation technology of home appliance waste polypropylene recycled material using the deterioration induction period method / high quality material supply)<br>- Renewed the washing machine line.<br>- Installed a refrigerator clear tray crusher.<br>- Installed a color separator machine in Plant 2. (* ⑤) |
| FY 2019 | - Installed refrigerator compressor storage and Automating transport equipment. (* ⑥)<br>- Installed VR safety simulation system. (* ⑦) |
| FY 2020 | • Expanded the drum-type washing machine disassembling line.<br>• Installed outdoor-air-conditioning-unit-compressor transport equipment. (* ⑧)<br>• Switched from OHSAS18001 to ISO45001. |
| FY 2021 | • Installed zigzag wind-sorting equipment.<br>• Installed air-conditioner-filter crushing equipment.<br>• Renewed the outdoor-air-conditioning-unit dust-removal equipment. |

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# Company Outline

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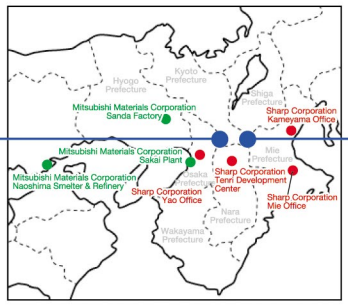
|---|---|
| Company Name | Kansai Recycling Systems Co., Ltd. |
| Established | December, 1999 |
| Business Activities | Recycling of used home appliances |
| Capital Stock | 300 million |
| Investing Company (Investment ratio) | Sharp Corporation (43.3%), Mitsubishi Materials Corporation (40.0%), Sony Corporation (3.3%), Hitachi Appliances, Inc. (3.3%), Fujitsu General Limited (3.3%), Mitsubishi Electric Corporation (3.3%), Kansai Recycling Systems Co., Ltd. (3.3%) |
| Representative Directors | President & CEO: Hideyuki Tanba<br>Managing Factory Director: Motohiro Sakaibara |

**Factories**

**Main Factory & Head Office**




**Second Factory**

| | Main Factory & Head Office | Second Factory |
|---|---|---|
| Handled Product Lines | Used home appliances: Air conditioners, Refrigerators/Freezers, Washing machines/Clothes dryers | Used home appliances: Televisions (CRT, Liquid crystal and Plasma flat panel displays) |
| Locations | 2-28-1 Kasugakitamachi, Hirakata City, Osaka | 8787 Shimagahara, Iga City, Mie |
| Start of Operation | April, 2001 | December, 2006 |

**Access**

**●Main Factory & Head Office**

**[By train]**

Get off at "Hirakata-shi" station on the Keihan line. 15 minutes by taxi or 20 minutes by bus (Bus stop 1 by the south exit. Get off at "Yotsutsuji" bus stop), then a 10 minute walk.
Get off at "Tsuda" station on the JR Gakkentoshi line. 5 minutes by taxi or 10 minutes by bus (Bound for Hirakata-shi station. Get off at "Yotsutsuji" bus stop), then a 10 minute walk.

**[By car]**

Go north along Route 1 from the "Moriguchi" I.C. on the Hanshin Expressway. Turn right at the "Hoshigaoka 2" intersection.
Go west along Route 307 from the "Hirakata Gakken" I.C. or "Hirakata Higashi" I.C. on the Daini Keihan Road.
Turn left on the Ikenomiya 4 East crossing.


**●Second Factory**

**[By train]**

Get off at "Iga Ueno" station on the JR Kansai Main Line. 20 minutes by taxi.
Get off at "Ueno-shi" station on the Iga Railway. 20 minutes by taxi.
(There is no taxi service at JR Kansai Main Line "Shimagahara" station)

**[By car]**

Go 10 minutes towards SHIMAGAHARA CC (golf course) from Shimagahara bypass on Route 163.
Go 10 minutes towards KOMA CC (golf course) from Route 25 (Meihan Expressway).



## KANSAI RECYCLING SYSTEMS CO., LTD.

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