

4 Reduction of Environmental Impact of Outputs

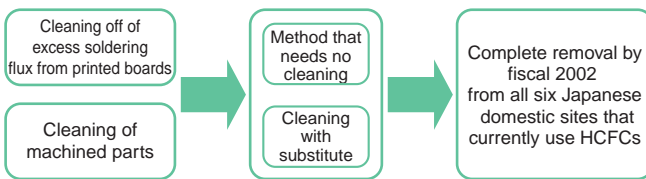
The Yokogawa Group's extensive activities to reduce environmental impact span from reducing emissions in each manufacturing process, to building a waste recycling system. Environmental burden is reduced by eliminating waste wherever possible in manufacturing, and promoting the efficient use of energy and resources.

1. Reduction of Emissions to Atmosphere

(1) Measures for Phasing Out HCFCs

The Montreal Protocol on Substances That Deplete the Ozone Layer stipulates that HCFCs, which have been labeled "second-generation freon," must be phased out by 2020 since they also deplete the ozone layer. The Yokogawa Group has been using HCFCs to clean off excess soldering flux from printed boards and clean machined parts; however, in fiscal 2000, the Group successfully slashed the consumption of HCFCs by designing a processing method that needs no cleaning. In addition, it is planned to establish a substitute cleaning system and completely remove the old systems by fiscal 2002 from all six Japanese domestic sites that currently use HCFCs.

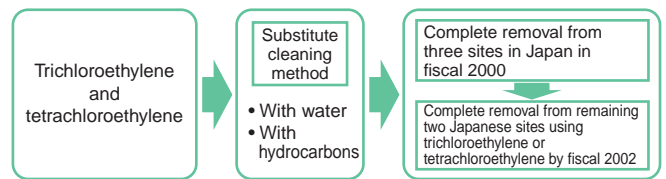
Flow of Phasing Out HCFCs



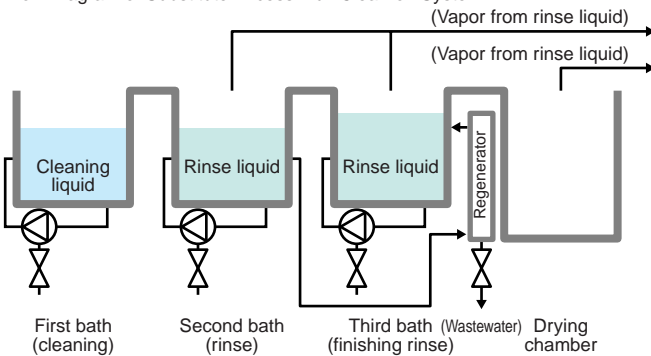
(2) Measures for Phasing Out Trichloroethylene and Tetrachloroethylene

New cleaning machines that we developed based on quality requirements are now being installed in manufacturing lines. Thus, trichloroethylene and tetrachloroethylene were completely eliminated from Headquarters, Kofu plant, and Yokogawa Fine Technology Corporation in fiscal 2000, and will be phased out at the remaining two sites in Japan.

Flow of Phasing Out Trichloroethylene and Tetrachloroethylene



Flow Diagram of Substitute Excess Flux Clean-off System



Trichloroethylene/Tetrachloroethylene-free Cleaning Machine (in Headquarters)



2. Reduction of Emissions to Bodies of Water

(1) Wastewater Treatment Facility

In the Yokogawa Group, wastewater from four sites that operate metal-plating processes is rendered totally harmless. In addition, the large amount of water required for those processes is recycled through an ion exchange unit and reused.

Benefits:

- The contaminants in the wastewater discharged as sewage have been decreased to one-half to one-tenth of the respective emission limits.
- More than 90% of the water is recycled and reused.
- The amount of chemicals used has been decreased to approximately one third.
- The amount of sludge generated has been decreased to approximately one third.

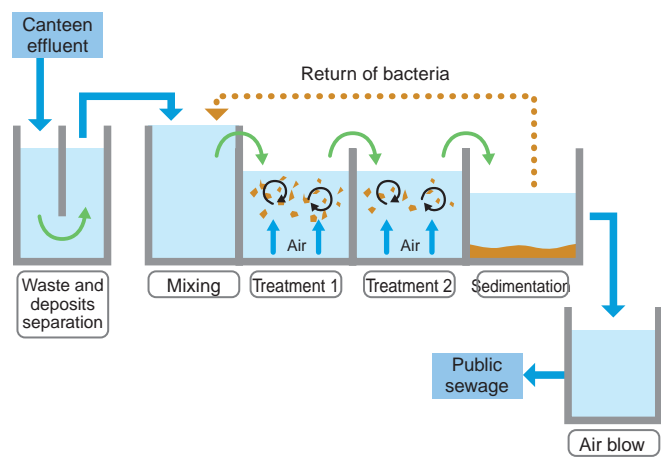
(2) Oil-circulation Spray Booth

Yokogawa Fine Technology Corporation recycles splashed paint in its oil-circulation coating booth. While the old water-flowing coating booth used eight tons of water every month and required periodic chemical treatment for rendering the effluent harmless, the oil circulation booth needs no water or chemicals, and thus the environmental impact is minimal.

(3) Bio-treatment of Canteen Effluent

Normal-hexane extracts contained in the effluent from the canteen in Headquarters used by nearly 3,000 people are bio-treated to reduce the impact on the sewage system.

Flow of Canteen Effluent Bio-treatment



Wastewater Treatment Facility (at Headquarters)



Bio-treatment Facility (at Headquarters)



Oil-circulation Coating Booth (at Yokogawa Fine Technology Corporation)



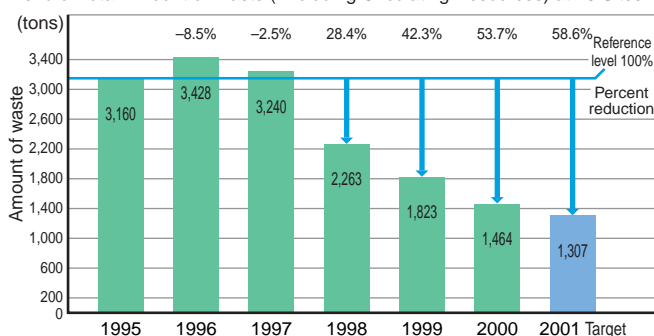
Canteen Effluent Quality Monitoring Panel (at Headquarters)

3. Reduction of Waste, and Resource Recycling Activities

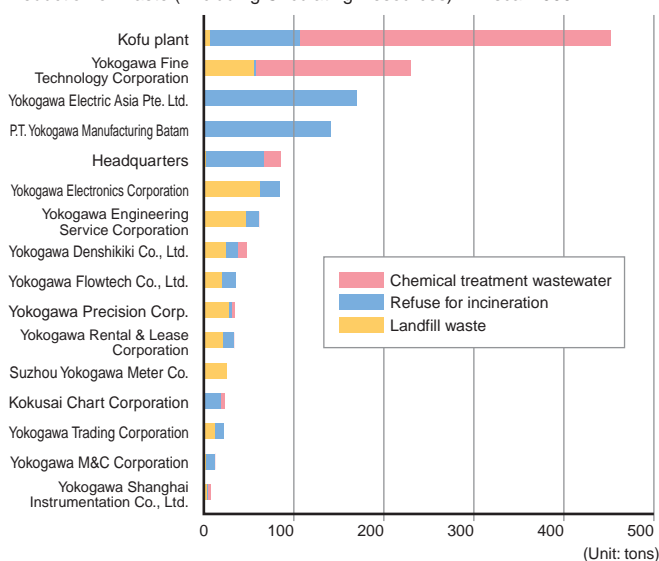
The Yokogawa Group strictly separates all its wastes and strives to recycle resources where possible. At Headquarters, "zero landfill waste" status was attained in fiscal 2000 by thorough segregated disposal, installation of a recycling center, and complete recycling of all metal-containing debris with a gasification melting furnace. We will now extend such measures to all Group sites in Japan, and endeavor to achieve zero refuse for incineration and reduction of chemical treatment wastewater.

Also, the Kofu plant developed its own unique energy-efficient waste alkali concentrator using waste heat from the plant and boiler, and thus reduced the amount of waste alkali to approximately 30% of its previous peak level.

Trend of Total Amount of Waste (Excluding Circulating Resources) at 16 Sites



Reduction of Waste (Excluding Circulating Resources) in Fiscal 2000

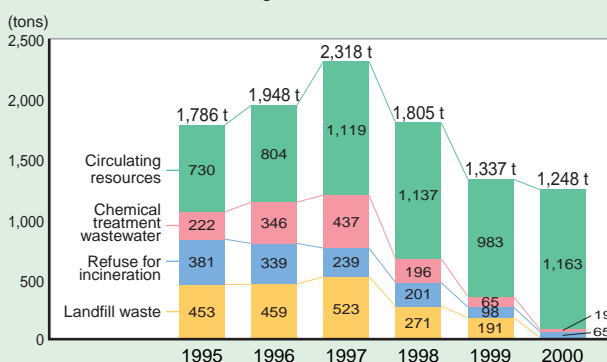


Examples at Headquarters

Major Measures Taken in Each Fiscal Year

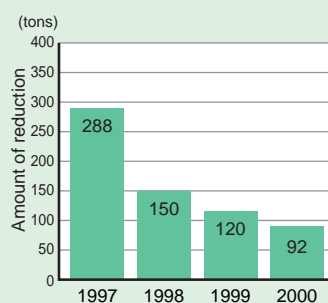
Fiscal Year	Measures
1995	<ul style="list-style-type: none"> Thorough paper recycling Reuse of IC casings
1996	<ul style="list-style-type: none"> Recovery of metals from cans, battery cells, printed boards
1997	<ul style="list-style-type: none"> Recovery of metals from sludge Recycling of wood chips Recycling of food waste into compost Recycling of polyethylene terephthalate (PET) bottles
1998	<ul style="list-style-type: none"> Recycling of glass Recycling of wood chips into compost
1999	<ul style="list-style-type: none"> Recycling of plastic into solid fuel
2000	<ul style="list-style-type: none"> Thorough implementation of segregated disposal Installation of recycling center Complete recycling of metal-containing debris with a gasification melting furnace

Trend in Amounts of Circulating Resources and Waste



Examples at Kofu Plant

Reduction of Waste Alkali



Energy-efficient Waste Alkali Concentrator



4. “Green” Production

The Yokogawa Group has been implementing “Quality, Delivery, Cost, Environment” activities (QDC+E) to make the best use of energy and resources, and thus help protect the environment.

To minimize and eventually eliminate the environmental impact of constructing a manufacturing line, the manufacturing process is designed at the same time as the product itself, from the outset of the product planning phase, by a team including the developer of the product. Based on this idea, the Yokogawa Group revised the production

process engineering standard to include environmental considerations. This standard is linked to Yokogawa's production system, NYPS*, and extends to all Group companies worldwide to achieve environmentally friendly production throughout the Yokogawa Group. Some examples of our “green” production are shown below.

* An acronym of New Yokogawa Production System, which performs total manufacturing from material purchase and processing to assembly and delivery in response to each user's needs, and helps greatly eliminate waste in each process through product-by-product manufacturing control.

(1) Production of Many Products in Small Lots

Control System Manufacturing Line
(at Yokogawa Electric Asia Pte. Ltd.)



(3) Production of Few Products in Large Lots

Power Supply Unit Manufacturing Line
(at P.T. Yokogawa Manufacturing Batam)



(2) Mixed Production of Many Products

Recorder Manufacturing Line (at Kofu Plant)



(4) Production of Few Products in Medium Lots

Meter Manufacturing Line (at Suzhou Yokogawa Meter Co.)

