Limiting Amounts of Waste Generated

Our Approach

The Fujitsu Group sees waste as a valuable resource and continuously works to recover resources from our waste, or to use that waste as an energy source. In Japan, we have been reducing our final disposal amounts every year. However, given the difficulty of building new disposal sites, and the limited lifespans of existing sites, the environment surrounding our waste disposal is as challenging as ever.

By proactively installing equipment and reusing waste, we are working to follow the stipulations in Japan's Fundamental Law for Establishing a Sound Material-Cycle Society to 1) reduce waste generated, 2) reuse waste, 3) recycle waste, and 4) recover heat from waste. We do this in order to reduce the amounts of waste acid, waste alkali, and sludge generated in our production of semiconductors and printed circuit boards.

Summary of FY 2014 Achievements

Targets under the Fujitsu Group Environmental Action Plan (Stage VII) (toward FY 2015)

Reduce the amount of waste to less than the average level of FY 2007–2011

(amount of waste: **31,134 tons**)

Keep Zero Emission in factories in Japan.

FY 2014 Key Performance

Waste generated: **22,258 tons**

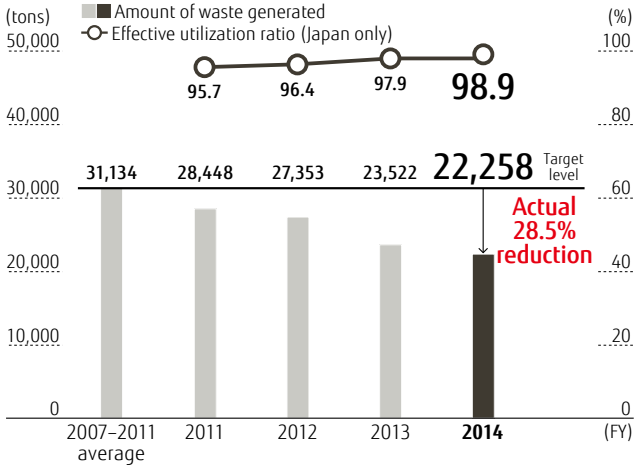
Achieved **Zero Emissions** at Japan's business sites.

FY 2014 Performance and Results

Installed Equipment, Treated Waste In-House, and Converted Waste to Value-Added Material

We implemented measures including improving in-house treatment of alkalic used water at Shinko Electric Industries Co., Ltd. to reduce the amount generated (by 160 tons), switching to fixed-hour operation of cleaning equipment at Aizu Fujitsu Semiconductor Manufacturing Limited to reduce (by 100 tons) the amount of waste acid generated, using vacuum dehydration dryers at our Nagano Plant to reduce (by 77 tons) the amount of organically rich used water generated, and converting waste toner into value-added material (90 tons) at FDK Corporation. We were able to meet our target by holding waste generation to 22,258 tons (generation rate per unit of sales: 0.47 tons/100 mill. yen). Additionally, we were able to maintain zero emissions at all of our Japan's business sites.

Trends in Amount of Waste Generated and Effective Utilization Ratio



Breakdown of Waste Generated, Effective Utilization, and Final Disposal

(tons)

Waste Type	Waste Generated	Effective Utilization	Final Disposal
Sludge	4,578	4,490	88
Waste oil	1,176	1,071	105
Waste acid	3,234	3,224	10
Waste alkali	3,257	3,255	2
Waste plastic	3,601	3,536	65
Waste wood	1,276	1,276	0
Waste metal	641	640	1
Glass/ceramic waste	415	415	0
Other*	4,079	2,941	1,138
Total	22,258	20,849	1,409

* Other includes general waste, paper waste, septic tank sludge, residue, rubble, textile waste, animal and plant residue, and infectious waste.

FY 2015 Targets and Plans

Continue to Limit Waste Generation

We will strive to "Reduce the amount of waste to less than 31,134 tons," and "Keep Zero Emissions in factories in Japan" as we work to limit waste generation by continuously installing equipment and reusing resources.

Limiting Amounts of Waste Generated

Main Activities in FY 2014

Reducing Amounts of Recovered Waste Acid by Switching to Fixed-Hour-Operation of Cleaning Equipment

At Aizu Fujitsu Semiconductor Manufacturing Limited, we have been able to greatly reduce waste products generated by our cleaning equipment.

In the early steps of semiconductor manufacturing, there is a cleaning treatment that uses liquid chemicals. Due to the chemical substance content of this liquid, we have recovered the liquid and any used cleaning water, and have a contractor dispose of them as industrial waste. Consequently, we looked at an approach to reduce the amount of used cleaning water collected after the cleaning process in order to cut down on industrial waste.

First, we ran a simulation to ascertain whether, if we reduced the amount of used cleaning water collected, we could still achieve a concentration of chemical substances in the wastewater that was at or below a level that would allow processing using our own used water treatment equipment. Next, we varied the amount of used cleaning water collected and analyzed the concentration of chemical substances in the water at each point. Results showed that, even if we reduced the amount of used cleaning water collected, we could guarantee a level of concentration that our own used water treatment equipment could handle.

These findings showed that it was possible to take the used cleaning water that we had been hiring a contractor to dispose of as industrial waste and instead process it in-house, thereby reducing our amount of industrial waste and lowering our contracting expenses.

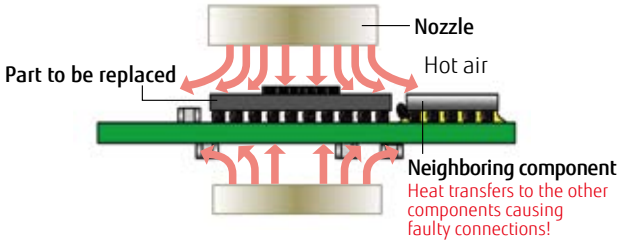
Reducing Circuit Board Waste by Applying Component Reworking Technology to Replace Components

When we wanted to change faulty components on the circuit boards, etc. of our ICT devices, the typical approach was to apply heat, remove only the faulty component, and attach a new part. Recently, however, devices are becoming more compact and more functional, and have components attached with extreme precision. Heat during the repair process spreads to other components. There had been no option other than disposing of the entire circuit board without replacing its parts.

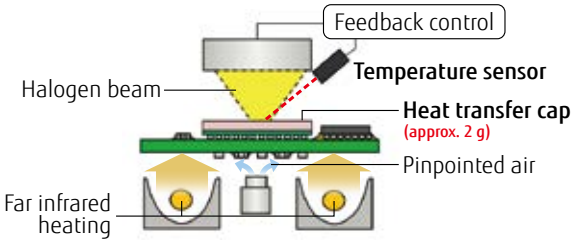
Fujitsu Advanced Technologies Limited (FATEC) set to work addressing this issue by developing new technology for component reworking technology. We were the first in the industry to succeed at building heating technology that pinpoints conduction, radiation, and convection (the three prerequisites for heating). The technology allows replacement of components installed with highly precise parameters of 0.2-mm gaps (compared to 1-mm spacing previously). This allowed us to avoid disposing of 291,000 circuit boards for mobile phones and smartphones, and contributed to cost savings of 2.4 billion yen.

In addition, FATEC has employed this component reworking technology and has started installation designs that make further precision possible. Analysis has also been used to add local cooling (air cooling) functions to the component reworking technology and make it possible to shrink component spacing (from 10 mm to 1.8 mm) for memory components situated around a CPU.

Conventional component replacement technology



Newly developed component reworking technology



Zero Emission Efforts

As one of the targets of its Environmental Action Plan (Stage VII), the Fujitsu Group is implementing zero emission efforts at its business sites in Japan. Though some sites previously had not been able to meet the target, they switched to efficiently using (through thermal recycling and material recycling) waste products that they had not been able to recycle, and all business sites achieved zero emissions, which we maintained in FY 2014.

Going forward, we will continue our zero emission efforts and strive to reduce our final disposal amounts.