

Energy-saving Activities at Factories and Offices

Energy conservation represents a key means for reducing CO₂ emissions associated with global warming. Anritsu is pursuing ongoing efforts to save electric power, which accounts for about 95% of its energy consumption (in crude oil equivalent). We have been conserving energy by upgrading equipment, such as ice thermal storage units, inverters for air conditioning and lighting equipment, and low-loss transformers, while replacing older models with energy-saving equipment.

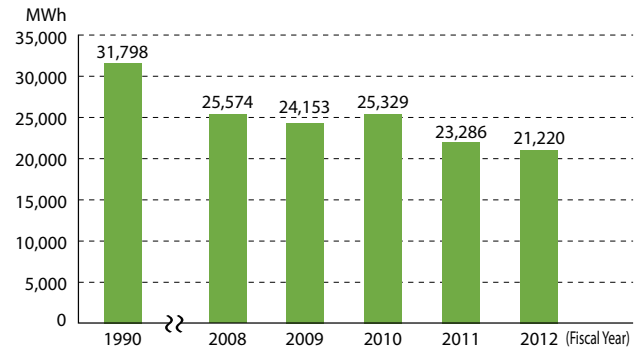
In fiscal 2012, we insulated walls and windows, upgraded to inverter lighting equipment at the Atsugi site, and upgraded to high efficiency air conditioners and introduced inverter lighting equipment at the Tohoku site. Despite factors that are raising electric power consumption, such as increased production at the Tohoku site, our electric power consumption decreased by 8.9% from fiscal 2011. We will continue to work on energy conservation as a top priority of our environmental management.

Reference

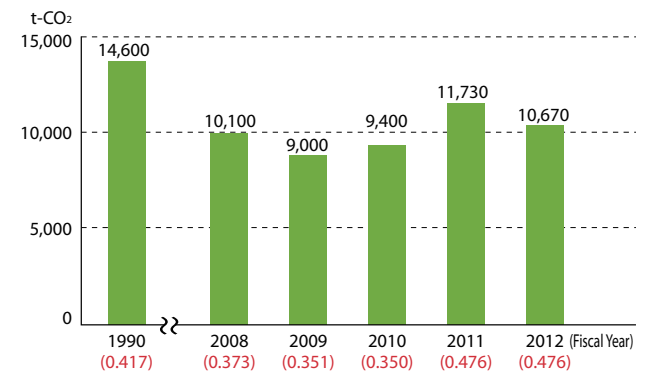
We calculated CO₂ emissions resulting from the use of all energy sources at Anritsu Group companies in Japan using the emission factor provided by the Federation of Electric Power Companies of Japan for electricity, and the emission factor adopted by the Law Concerning the Promotion of the Measures to Cope with Global Warming (revised March 29, 2006) for energy sources other than electricity (the actual figure for fiscal 2011 was temporarily used as the emission factor for fiscal 2012).

CO₂ emissions associated with electric power vary each fiscal year according to the supply situation of each electric power company. Therefore, some fiscal years show an increase in CO₂ emissions, despite reductions in electric energy consumption.

Change in electric energy use (Antirsu Group companies in Japan)



Reference CO₂ emissions from total energy use (Antirsu Group companies in Japan)



Emission coefficient by the Federation of Electric Power Companies of Japan (provisional value for fiscal 2012)

Efforts Related to Cool Biz and Warm Biz

The Anritsu Group in Japan has been involved in Cool Biz and Warm Biz since fiscal 2005. In fiscal 2012, we widened our Cool Biz period to May 7 until October 31 (from May 23 to September 30 in fiscal 2011) and to November 1 until March 31 for Warm Biz (from December 1 to March 31 in fiscal 2011). As a result, we were able to reduce electricity use compared with the previous fiscal year by 5.7% during the Cool Biz period and by 13.5% during the Warm Biz period. Major activities are listed below.

Major Activities	
Switching off unnecessary lighting	Strict management of air conditioning
Installing blinds for heat pumps	Green curtains
Cultivating awareness through a company magazine and promotional banners	Visualizing electricity use (status of real-time demand disclosed on the Intranet)

Environmental Measures Taken at Our New Factory

One grand concept behind our Koriyama Second Office was to build a safe, secure factory that also preserves the environment. The photograph shows the new factory's solar power generating facility, which has a maximum output of 200 kilowatts.

Apart from solar power generation, the new factory features insulated outer walls and windows, control of air conditioning by zone, LED lighting for all buildings, use of natural daylight, facilities for conserving energy and water, use of recycled wood, and green areas with indigenous plant species. It ranks among the world's premier examples of environmentally conscious factories.



Solar Power Generating facility of Koriyama Second Office

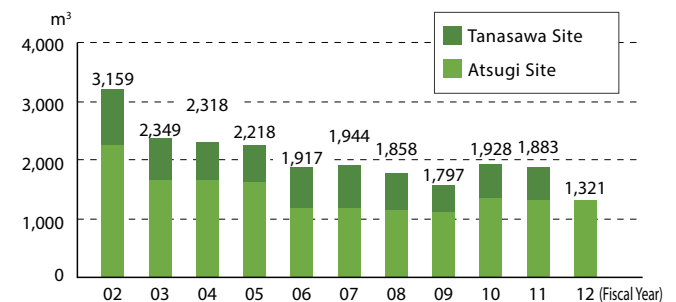
Compliance Status

We strive to ensure compliance by adopting voluntary management standards that are more demanding than statutory regulations. In fiscal 2012, compliance levels at the Atsugi, Tanasawa and Tohoku sites remained lower than required, with no violations in water quality, air quality or noise. We received a complaint about noise during demolition of the buildings at the Atsugi site and responded by immediately temporarily suspending the work and implementing a noise reduction effort. Looking ahead, we will further reduce our environmental impact through ongoing maintenance while maintaining full compliance.

Wastewater discharge from operations

In the past we used large volumes of water in industrial processes such as manufacturing printed wiring boards as well as coating and plating at the Atsugi site. In 2002, we have completely discontinued all these processes and dramatically reduced industrial effluent containing harmful substances. Although we use alkaline cleaning solutions for the degreasing equipment at the Hiratsuka site, all the water is disposed as industrial waste, leaving no wastewater discharge from operations. In addition, water used for rinsing equipment is circulated between filters and ion-exchange resin equipment so it can be reused as rinse water as part of our efforts to reduce water use and waste. No facility at the Tohoku site currently uses harmful substances.

■ Wastewater discharge from operations



Atsugi Site : Atsugi City regarding discharge into public sewage systems

Item ^{*1}	Emission standard [mg/l]		Measured value [mg/l]		
	Regulation value	Voluntary control value	Average	Min.	Max.
pH	5.0-9.0	5.7-8.7	7.5	7.0	8.0
SS	600	300	8.0	< 2.0	35.0
BOD	600	300	4.8	1.1	21.0
Normal hexane extracts Mineral oil	5	3	< 1.0	< 1.0	1.0
Normal hexane extracts Organic oil	30	18	< 1.0	< 1.0	1.0
Iodine consumption	220	90	1.8	< 1.0	2.5
Fluorine	8	4.8	0.9	0.2	1.7
Total cyanide	1	0.4	< 0.01	< 0.01	< 0.01
Nitrogen	380	125	0.8	< 0.2	4.3
Boron	-	-	-	-	-
Chromium	-	-	-	-	-
Dissolved iron	10	4	0.15	< 0.05	0.60
Copper	3	1.2	< 0.05	< 0.05	< 0.05
Zinc	2	1.2	0.10	< 0.05	0.20
Dissolved manganese	-	-	-	-	-
Nickel	1	0.6	< 0.05	< 0.05	< 0.05
Lead	0.1	0.06	0.01	< 0.01	0.03

Tohoku Site : regulations by Fukushima Prefecture

Item ^{*1}	Emission standard [mg/l]		Measured value [mg/l]		
	Regulation value	Voluntary control value	Average	Min.	Max.
pH	5.8-8.6	6.0-8.4	7.3	7.1	7.5
SS	70	30	3.6	1.1	4.5
BOD	40	20	6	1	10
Dissolved iron	10	4	Below the detection limit (0.05mg/l)	(-)	(-)
Copper	2	0.8	0.01	(-)	(-)
Zinc	2	1.2	0.1	(-)	(-)
Nickel	2	0.8	Below the detection limit (0.01mg/l)	(-)	(-)
Lead	0.1	0.08	Below the detection limit (0.05mg/l)	(-)	(-)
Number of colon bacillus (piece/m ³)	3000	2400	0	0	0

*1 Items subject to the laws and regulations but excluded from this list were not used as raw materials and therefore not measured.


*2 There is no max. or min. records as survey is conducted only once a year.

Prevention of Air Pollution

Having eliminated the coating process in 2000, no facility at the Atsugi site generates air pollution subject to legal regulations. The Tohoku site operates heavy oil boilers subject to the Air Pollution Control Law. The boilers are operated on a voluntary management standard to control air quality. No facility at the Hiratsuka site generates air pollution subject to legal regulations.

Tohoku Site : Air Pollution Control law

Item	Emission standard		Measured value
	Regulation value	Voluntary control value	
Smuts [g/m ³ N]	0.3	0.18	below the detection limit (0.005mg/l)
Sulfur oxide [m ³ N/h]	4.37	2.63	0.05
Nitrogen oxide [ppm]	180	170	93

 Environmental Data of Each Site

Noise

We are implementing a variety of efforts to detect abnormalities at an early stage, including a system of prior examination before introducing equipment, equipment inspections at the beginning of every operation and regular patrols on the premises.

We also regularly monitor noise levels at borders every year. Results show that measured noise levels not only meet legal standards but fall below our own voluntary standards as well.

Prior to the start of operations at the Hiratsuka site, there was a noise risk in part of an area used for plate processing. We addressed the issue by moving particularly noisy equipment to a soundproofed room. We also found that the noise level of an exhaust vent was near the upper limit of our voluntary standards and promptly took action, which included the use of a noise reducing cover.



Exhaust vent with a noise reduction cover

Soundproofed room

Atsugi Site : regulations by Kanagawa Prefecture


Measured point	Regulation value [dB] [daytime]	Voluntary control value [dB] [daytime]	Measured value [dB] [daytime]
At the eastern border line	70	68	60
At the western border line	70	68	55
At the southern border line	70	68	52
At the northern border line	70	68	60

Touhoku Site : regulations by Fukushima Prefecture

Measured point	Regulation value [dB] [daytime]	Voluntary control value [dB] [daytime]	Measured value [dB] [daytime]
At the eastern border line	75	73	47
At the western border line	75	73	50
At the southern border line 1	75	73	60
At the southern border line 2	75	73	51

Hiratsuka Site : regulations by Kanagawa Prefecture

Measured point	Regulation value [dB] [daytime]	Voluntary control value [dB] [daytime]	Measured value [dB] [daytime]
At the eastern border line	65	64	60
At the western border line	65	64	48
At the southern border line	75	73	63
At the northern border line	75	73	50

 Environmental Data of Each Site

Groundwater Management

With regard to organochlorine substances, we completely eliminated the use of trichloroethylene in 1970 and 1,1,1-trichloroethane in 1993. The Atsugi site draws groundwater from its own well and therefore continues to monitor water quality, including regularly testing for the presence of six organochlorine substances.


In fiscal 2012, levels of tetrachloroethylene were higher than permitted under environmental standards. Anritsu, however, has never used this substance, and soil analysis has confirmed that we were not the cause of the contamination. We will nevertheless continue to monitor the site.

Atsugi Site

Item	Environmental standard level [mg/l]	Measured value [mg/l]
Trichloroethylene	0.03	0.004
Tetrachloroethylene ^{*1}	0.01	0.081
1,1,1-trichloroethane	1	< 0.0005
1,1-dichloroethylene	0.1	< 0.002
Dichloromethane	0.02	(⁻²)
Cis-1,2-dichloroethylene	0.04	0.016

*1 Tetrachloroethylene surpassed acceptable level, but Atsugi site has never used it.

*2 Results for fiscal 2008 were below the detection limit (0.002 mg/l) and therefore not measured.

 Environmental Data of Each Site

Risk Countermeasures

The Atsugi site operates an inorganic wastewater treatment facility to detoxify wastewater from inorganic wastewater release section and other corporate sources. In 2001, we converted the facility to a double-tank system to address the risk of soil contamination from the leakage of untreated water that could result from the destruction of a buried tank during an earthquake. In 2002, we constructed a breakwater around a clarifier tank (a part of the facility for removing the heavy-metal containing sediment generated in the preceding process through gravitational sedimentation) to modify the structure so that any liquids leaking from the tank, as a result, for example, of damage from an earthquake, would flow into a reserve tank rather than leaking outside. At the Tohoku site, water could be discharged from boilers in the event of an earthquake, for example, at pH levels that exceed regulatory standards; we therefore implemented countermeasures by installing a pH monitor and an emergency cutoff valve to stop water discharge. In addition, each site has developed response procedures to address the potential leakage of chemical substances due to human error or natural disaster.

Regular equipment inspections and training are also conducted in preparation for unexpected events.

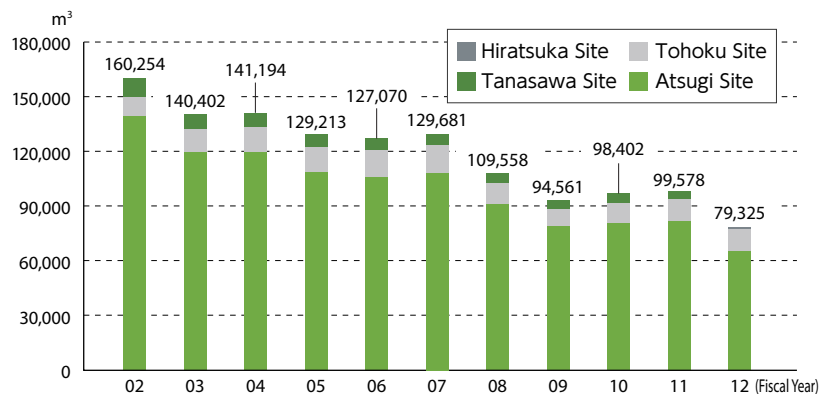


Clarifier

Water Resources

We have been reducing water use at the Atsugi site over the years through efforts such as monthly leakage inspections, upgrading to water saving toilets and using circulated water in facilities. We will continue to use water effectively.

■ Water consumption (Anritsu Group in Japan)



Chemical Substances Management

Utilization of chemical substances by the Anritsu Group companies in Japan is determined through a prior assessment system.

Substances banned from use or limited are selected in consideration of legal regulations and hazardousness, and we regulate the substances that cause ozone layer depletion and global warming. Each department inputs into a computer database the amounts of chemical substances purchased, used and disposed within a three-month period in order to compile statistics of the entire company for each law regarding chemical substances, including those covered by the Pollutant Release and Transfer Register (PRTR) Law.

The number of substances subject to the PRTR (Pollutant Release and Transfer Register) Law and handled at our sites changed significantly due to a revision of the law that excluded from the list liquid bisphenol A epoxy resin, an ingredient used at the Atsugi site, while adding new ingredients, including methylnaphthalene, which is an additive agent, to heavy oil used as fuel at the Tohoku site. More than one ton of methylnaphthalene was handled at the Tohoku site in fiscal 2012 and reported accordingly. Because it is burned in a boiler, very little methylnaphthalene is externally released; nevertheless, we will reduce the amount we handle by reducing our use of heavy oil.

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PCB Management

At the Atsugi site, we tightly control condensers of electric devices, fluorescent ballasts and pressure sensitive copying paper that contain polychlorinated biphenyl (PCB) within the storage standards for specially controlled industrial waste. Storage status is reported annually to the prefecture under the Law concerning Special Measures for Promotion of Proper Treatment of PCB Waste. In 2006, analysis conducted while upgrading an extra high-voltage transformation installation identified a small amount of PCB in two large transformers. In the course of replacing transformers in 2010, we identified a small amount of PCB in the insulation oil of decrepit equipment and issued an additional notification in June 2011. In 2005, we filed an early request for the treatment of PCBs with the Japan Environmental Safety Corporation.

Waste Reduction

We have carried out education to achieve zero emissions* so that each employee promotes the 3Rs as a company-wide activity, and practice thorough separation of waste collected in our offices and product lines.

As a result, the Anritsu Group in Japan achieved zero emissions in 2004.

The amount of waste has been reduced almost to the minimum, and we are currently working on maintaining this level as an annual goal.

*Zero emissions: Recycling all waste. Anritsu defines this as achieving a final landfill disposal rate of less than 0.5%.

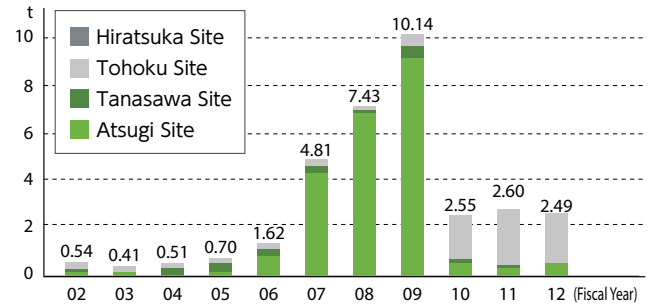
Examples of separate collection of waste

By thorough classification collection, we are working to reduce waste.

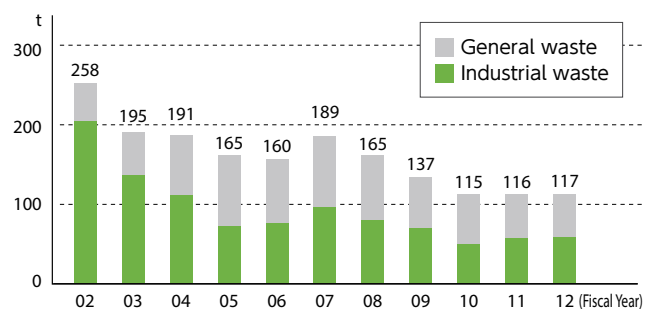


Use Regulates Chemical Substances of Anritsu Group	
Banned substances	Class of 7 substances: CFC (Chlorofluorocarbons), halon, arbon tetrachloride, 1,1,1-trichloroethane, HBFC (Hydrobromofluorocarbons), bromochloroethane, methyl bromide
Limited-use substances	Class of 7 substances: HCFC (Hydrochlorofluorocarbons), trichloroethylene, tetrachloroethylene, dichloromethane, HFC (Hydrofluorocarbons), PFC (Perfluorocarbons), SF6(sulfur hexafluoride)

Chemical Substances Management under PRTR Law



The amount of waste by type (Anritsu Group companies in Japan)



Waste reduction through the introduction of earthworm farm

We have promoted the reduction of waste by introducing an earthworm farm that decomposes leaves and weeds.

By earthworm farm introduction, we have reduced approximately 5 tons of waste a year since fiscal 2009. In addition, humus broken down by an earthworm farm becomes a fertilizer which is rich in nutritive value. We have been utilizing it effectively at the company to grow a green curtain of bitter gourds and sunflowers.

Eco-Logistics

Overview of Eco-Logistics

- **Delivery** : The carrier takes out the product from a returnable box and delivers it to the place customer has designated. After delivery, the returnable box is brought back by the carrier.
- **Pick up** : The carrier picks up the product after they wrapped with the packaging materials they brought by themselves.
- **Response to carrier** : We maintain transport quality by conducting in-depth discussions between carrier and Anritsu to build a safety system on transport.

Comparison of conventional cardboard packaging with Eco-Logistics

	Conventional cardboard packaging	Eco-Logistics
At delivery	Customer needs to dispose a lot of packaging materials. : A large amount of waste. : Cost of waste disposal will be expensive.	Customer needs to dispose only a few packaging materials. : Small amount of waste. : Enable to reduce the cost of waste disposal.
At pick up	Customers package by themselves with the packaging materials sent by Anritsu. : Customer's product packaging operation occurs. : New packaging materials are required. = Waste occurs.	Carrier picks up the product after wrapping it with their packaging materials. : Customer's product packaging operation becomes unnecessary. : New packaging materials are unnecessary. = Waste reduction.

An example of delivery

The product is first covered with polyethylene bag to prevent from scratches and dust, and then packaged in returnable box. The product and attached equipment box are packaged as in the left picture.



Carrier removes the product from the returnable box.



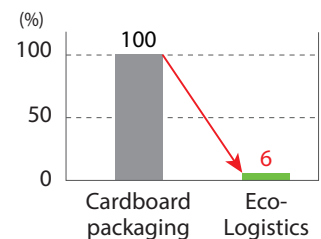
The product and attached equipment box are delivered to customer, covered with polyethylene bag for protection. Invoice is attached to the product. After delivery, carrier brings back the returnable box and packaging materials.



Reduction of packaging material waste.

For returnable box, customer only needs to dispose the polyethylene bag that covers the product.

Comparing the traditional cardboard packaging with returnable containers, waste emissions by packaging materials for customer will be greatly improved, which is about 94% reduction by weight. (Assuming that returnable box is used 20 times)



Recycling Center

Anritsu led the measuring instrument industry in establishing the Recycling Center at Anritsu Kousan Co., Ltd., in 2000. Anritsu Kousan obtained a license to engage in the industrial waste disposal business in September 2002 and started operating in fiscal 2003.

The Recycling Center has been rigorously separating waste since fiscal 2005. Once completely sorted, all waste emitted from the Recycle Center is recycled.

The Recycling Center also promotes the reuse and refurbishment of used products.

Refurbished measuring instruments are products used for demonstration. Although these products are recycled, they are highly reliable after being reconditioned and calibrated by Anritsu, the original manufacturer, and are provided with a one-year guarantee. Anritsu Kousan, acting as a sales agent, sells the products to universities and other educational institutions in Japan, thus extending the lives of the products.

Recycling System

