




Yodogawa Plant Certified as Green Heart Factory

In December 2009, the Yodogawa Plant was certified as a Green Heart Factory. This was the result of all employees making that all important extra effort and working together to systematically reduce environmental impact while strengthening relations with society.

Green Heart Factory: The system was introduced in fiscal 2006 to certify factories with outstanding environmental performance as Green Heart Factories. Plants that score at least 85 points out of 100 on seven criteria including reduction of environmental impact and relations with the local community are designated as Green Heart Factories.



Address	1-1, Nishi-Hitotsuya, Settsu, Osaka 566-8585, Japan
Site area	Approx. 413,000m ²
Completed	1941
Employees	1,677
Main products	Fluorochemical products, Air conditioning/refrigeration equipment, oil hydraulic products, precision defense equipment, other
ISO 14001 certified	1997
Latest ISO 14001 update	March 24, 2010
Bird's-eye view of Yodogawa Plant	

Products Manufactured at Yodogawa Plant

Chemicals Business

■ Fluorocarbon



■ Fluororesin



■ Fluorinated grease



Oil Hydraulics Business

■ EcoRich inverter-driven hydraulic pump system



■ High-pressure Super Unit



Defense Systems Business

■ Oxygen compressor



Large Air Conditioner Business

■ High-efficiency 2-stage compressor turbo refrigerator



■ High-efficiency air-cooling chiller (Hexagon module chiller)



Curbing Global Warming

■ Recovering Fluorocarbons

In 1998, the Yodogawa Plant installed equipment for the destruction of recovered fluorocarbons so that it could carry out this activity on site.

Besides conducting thorough recovery and destruction of fluorocarbons generated during Daikin manufacturing, the Yodogawa Plant properly destroys the fluorocarbons that the Service Department recovers from customers and other outside entities.



Destruction facilities for recovered fluorocarbon

After the fluorocarbons have been completely broken down at a combustion destruction temperature of 1,250°C, they are rendered harmless.

Energy Saving

■ Cogeneration Systems



The Yodogawa Plant has introduced cogeneration systems, which make use of the waste heat generated during power generation. The result has been a 20% reduction in CO₂ emissions.

■ Solar Power Generation Systems



The plant has installed a waterproof, all-in-one flexible solar power generation system on the roof on a trial basis. The system uses Daikin ETFE fluoropolymer film to improve the solar panels' resistance to weathering and dirt. The system can generate up to 6 kW (enough to power two homes).

■ High-Efficiency Lighting



Lighting in regularly used rooms like offices and conference rooms was converted to inverter-type fluorescent fixtures, resulting in a decrease in electricity for lighting of about 30%. The plant is also gradually switching outdoor lighting to LED.

■ Environmental Patrols



The plant's environmental activities include patrols to ensure the facility is operating in accordance with the energy saving management guideline. For example, patrol members check things like temperature settings for space heating and cooling, the energy saving modes of PCs, and the turning off of unnecessary lights. These patrols also make all employees aware of their role in saving energy.

Preventing Air and Water Pollution

Recovering VOC Solvents



The plant works to reduce the amount of VOCs, such as the solvents used in the fluoropolymer manufacturing process, released into the atmosphere by recovering at least 70% of them using activated charcoal.

Water Treatment Facilities



The plant carries out thorough control of the quality of the wastewater discharged by using activated charcoal and other methods to remove at least 99% of the emulsifiers and other substances used in the fluoropolymer manufacturing process.

Managing In-House Standards for Wastewater Treatment



Daikin has stipulated an in-house standard value that is 25% stricter than legal limits for plant wastewater. The plant works daily to ensure measurements for items such as fluorine and pH do not exceed in-house standard values.

Reducing Waste

Achieved Zero Waste Emissions

In September 2004, the Yodogawa Plant achieved zero emissions (recycling ratio of at least 99.5%).

Thorough Separation of Waste



Unnecessary items from offices and production processes are separated for recycling. The recycling bins are see-through to ensure materials go in their proper place.

Illustrated Waste Separation Poster



Posters with photos of waste items to be separated are placed at separation stations to ensure materials get recycled properly.

How Materials are Recycled



Unnecessary items are separated and recycled as, for example, solid fuel, boards, and cement.

Preparing for Emergencies

■ Joined the Special Firefighting Team of Settsu City



Thirteen employees from the Yodogawa Plant joined the special firefighting team of Settsu City, which is the first of its kind in Japan. These employees have a registered pump truck and make up the Daikin team. Since January 2010, the Daikin team responds to requests for assistance in case of a fire nearby and at the site offers assistance under the guidance of the Settsu City Fire Department.

■ Stockpiling Emergency Materials and Equipment



In preparation for a range of disasters, such as flooding and fires from a major earthquake and tsunami, or chemical leaks, emergency materials and equipment are stored at 22 locations at the Yodogawa Plant. In case of a major disaster, there are stockpiles of water, food, and toiletries so that employees can monitor the chemical plant and ensure safety at the site around the clock.

■ Disaster Training



The plant holds comprehensive disaster training three times a year with participation from the fire department and police department. The plant also takes part in disaster training sponsored by Osaka Prefecture and Settsu City.

■ Safety Confirmation System Established



A system was established that can confirm the safety of all people on the site including visitors approximately 20 minutes after a disaster occurs, thus ensuring that each and every person is accounted for.

Exchange with Local Communities

■ Bon Dance Festival



Every August, local residents are invited to a Bon dance festival held on the grounds of the Yodogawa Plant. At the 39th edition of this festival in 2010, approximately 22,000 attended.

■ Kendo Training Hall for Children



Daikin employees teach local children kendo in the Yushinkan kendo training hall at the Yodogawa Plant. The training hall celebrated its 35th anniversary in 2010.

■ Factory Tours for Elementary School Students



Grade 3 students from two nearby elementary schools were given factory tours in 2010. The children listened and watched with intense curiosity and many later wrote thank-you letters to Daikin.

■ Cleanups of Local Streets



Division and section managers lead cleanups of local streets twice a month. Participants are often encouraged by words of gratitude from passers-by.

■ Cleanups of Local Waterways



Residents of Daikin's bachelors' dormitory join local residents in cleaning up waterways, part of the Yodogawa Plant's efforts to join in preserving the local environment.

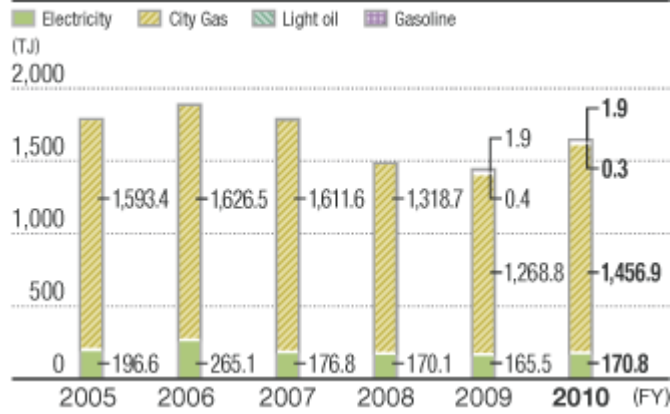
■ Emergency Supply Shed for Local Residents



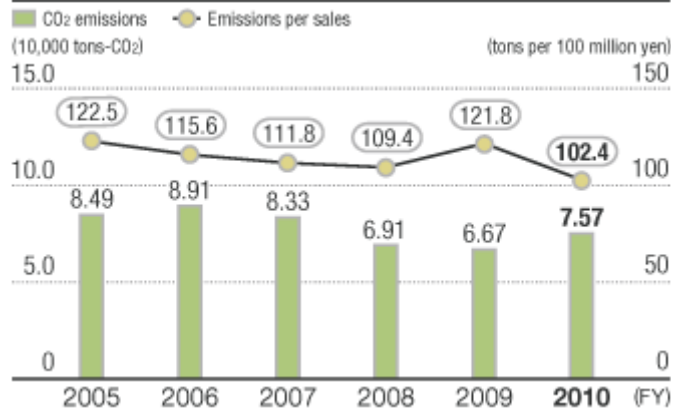
Besides the emergency materials and equipment previously mentioned, the Yodogawa Plant has two sheds on-site containing emergency supplies for local residents to use during a disaster. At annual plant tours for the neighborhood association, Daikin shows how to use these supplies.

Environmental Performance Data

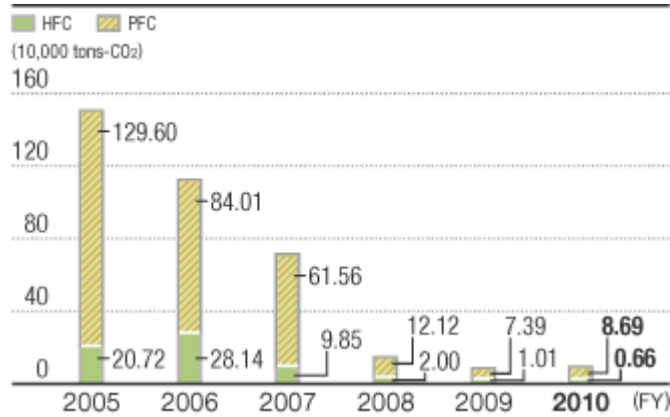
Energy Consumption



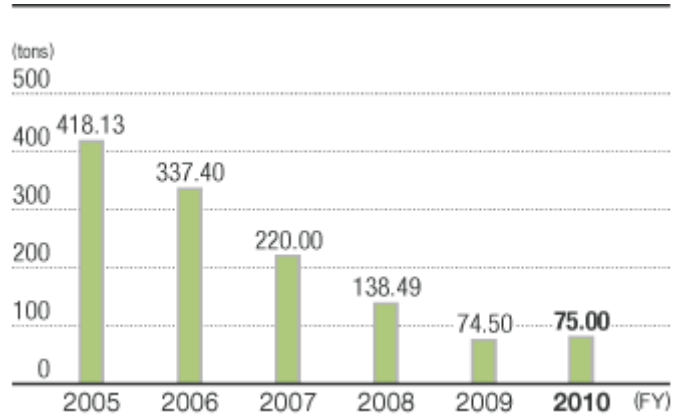
Energy-Induced CO₂ Emissions



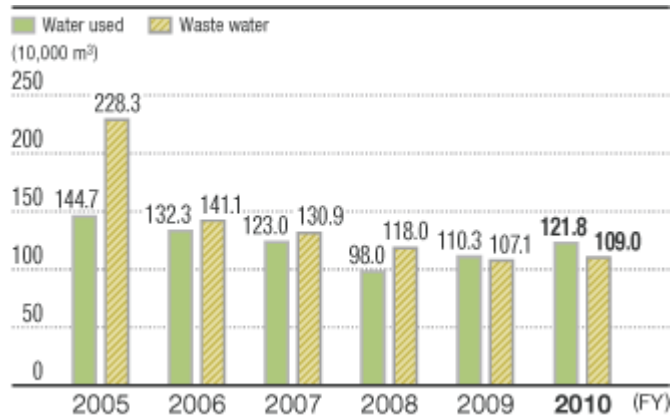
Greenhouse Gas Emissions Other than CO₂



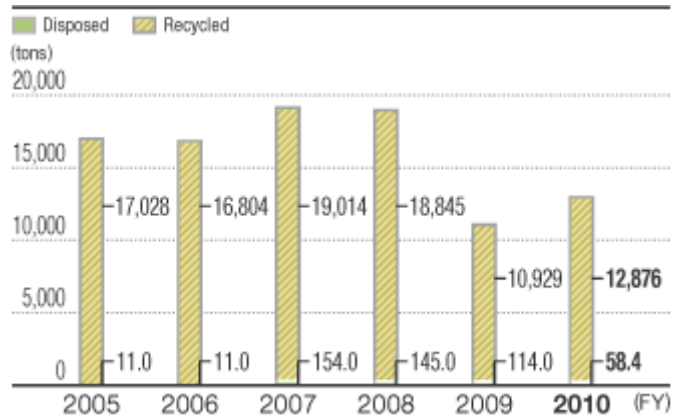
Release of Substances Designated by PRTR Law



Water Used/ Waste Water



Amount Disposed of and Amount Recycled



■ Release and Transfer of Chemical Substances (PRTR)

Unit: kg

Substance name	Amount emitted			Amount transported	
	Air	Public waterways	Soil	Waste	Sewage
Dichloromethane (also called methylene chloride)	31,000	0	0	10	0
Chlorodifluoromethane (also called HCFC-22)	27,000	0	0	0	0
1-chloro-1,1-difluoroethane (also called HCFC-142b)	12,000	0	0	0	0
Normal hexane	2,700	0	0	1,300	0
2-Chloro-1,1,1,2-tetrafluoroethane (also called HCFC-124)	1,400	0	0	0	0
Toluene	510	0	0	40	0
Xylene	370	0	0	73	0
Chloroform	14	0	0	25	0
Acetonitrile	6	0	0	920	25
N,N-dimethylformamide	4	0	0	3,300	0
Polyoxyethylene alkyl ether (those whose alkyl group carbon number is between 12 and 15, or compounds of these)	0	0	0	120,000	500
Hydrogen fluoride and other water-soluble salts	0	0	0	110,000	0
Acrylic acid	0	0	0	21,000	0
Antimony and antimony compounds	0	0	0	4,800	0
Polyoxyethylene octyl phenyl ether	0	0	0	3,700	29
Hydroquinone	0	0	0	3,100	0
3-methylpyridine	0	0	0	1,900	0
Allyl alcohol	0	0	0	1,600	0
Water soluble lead compounds	0	0	0	170	140
Molybdenum and molybdenum compounds	0	0	0	16	0
Phthalic anhydride	0	0	0	7	0
Ferric chloride	0	0	0	0	0
Carbon tetrachloride	0	0	0	0	0
Water-soluble salts of peroxodisulfuric acid	0	0	0	0	0
Methacrylic acid, 2-ethylhexyl ester	0	0	0	0	0
total	75,004	0	0	271,961	694

■ Air Pollutant Measurements

	Unit	Facility name	Measured value (average value)
NOx	ppm	CGS2	58
		CGS3	27
		Reacting furnace 1	72
		Reacting furnace 2	69
		Reacting furnace 3	57
		Refrigerator	24
		Incinerator	49
SOx	Nm ³ /h	Incinerator	<0.002
Dust	g/Nm ³	CGS2	<0.001
		CGS3	<0.001
		Reacting furnace 1	<0.005
		Reacting furnace 2	<0.005
		Reacting furnace 3	<0.005
		Refrigerator	<0.005
		Dryer	0.007
		Incinerator	0.007

■ Water Pollutant Measurements

Unit: mg/l

	Measurement item	Measured value (average value)
Living environment items	Nitrite-nitrogen, nitrate-nitrogen compounds	10
	Biological oxygen demand (BOD)	10
	Chemical oxygen demand (COD)	15
	Suspended solids	17
	Water soluble lead compounds	0.1
	Soluble manganese and its compounds	0.2
	Phosphorous content	0.05
	Nitrogen content	22
	Fluorine and its compounds	5.7

Note: The substances below were all under the detectable limit.

Cyanogen, organic phosphorous, lead, arsenic, mercury, alkyl mercury, copper and its compounds, soluble iron and its compounds, chrome and its compounds, PCB, trichloroethylene, carbon tetrachloride, 1,2-Dichloroethane, n-Hexane extracts (animal/plant oils), n-Hexane extracts (mineral oil), copper and its compounds

■ Noise and Vibration Measurements

Unit: dB

		Measured value (average value)
Noise	Morning, evening	47
Vibration	Day	36
	Night	33