

Minebea's global presence currently encompasses 29 plants in nine countries and 44 sales offices in 13 countries. Minebea acknowledges that these plants and sales offices exert a burden on the environment. This burden comprises "input," that is, the raw materials, energy and other materials the Company consumes for use in production, and "output," or the CO₂ emissions, industrial waste and products it discharges. The chart below depicts input and output from Minebea's plants in fiscal 2005.

◆ Input-Output Flow and Material Balance¹¹

Energy

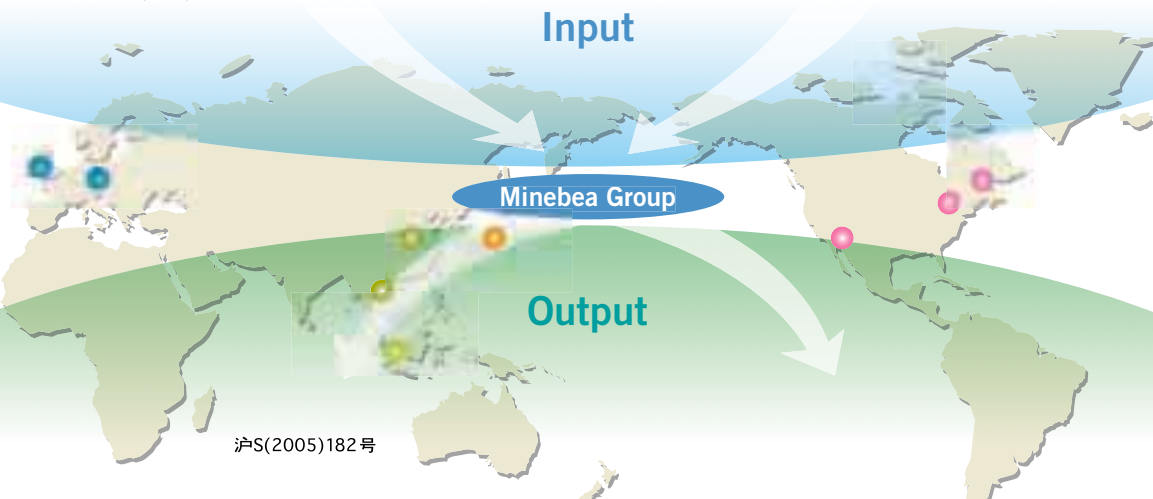
- Electricity: 804,435,000 kwh
- LPG: 1,995 tons
- City gas: 3,982,000 m³
- Oil: 3,904 kiloliters
- Water: 3,563,000 m³

Raw Materials/Components

- Steel: approximately 56,000 tons
- Resin: approximately 20,400 tons
- Electronic components
- Packaging materials

Chemical Substances

- PRTR chemicals ⁷: 13.6 tons (Japan)



Emissions into the Atmosphere

- CO₂ ¹: 515,981 tons
- NO_x ²
- SO_x ³
- Particulates ¹⁰

Waste

- Waste disposed of as waste outside the Company: 37,243 tons
- Waste recycled or reused: 28,750 tons
- Waste disposed of as landfill: 4,869 tons

Emissions into Water

- Wastewater: 3,300,000 m³
- pH ⁴
- COD ⁵
- BOD ⁶
- SS ⁸
- n-Hexane extractions ⁹

Products

- Bearings
- Motors
- PC keyboards
- Speakers
- Electronic devices
- Measuring components
- Others

Chemical Substances

- PRTR chemicals ⁷: 12.2 tons (Japan)

Glossary

1. CO₂: Carbon dioxide
2. NO_x: Nitrogen oxides
3. SO_x: Sulfur oxides

Emissions of CO₂, NO_x and SO_x result from the burning of coal, oil, gasoline and other fuels by, among others, thermal power generation, plant boilers and exhaust emissions from cars and trucks.

4. pH: A solution's pH reading indicates whether it is alkaline or acidic. The pH range is from 0 to 14, with 7.0 being neutral. Anything above 7.0 is alkaline, anything below 7.0 is acidic.

5. COD: Chemical oxygen demand
The amount of oxygen required for oxidation of organic solids in water to CO₂. COD readings can be obtained more quickly than BOD readings, but they are less reliable. COD is commonly used to monitor pollution in effluent discharged into oceans and lakes.

6. BOD: Biological oxygen demand
The amount of oxygen required for the biological oxidation of organic solids in water. The higher the BOD reading, the greater the level of pollution. BOD ratings usually take five days. BOD is commonly used to monitor pollution in effluent discharged into rivers.

7. PRTR substances: Substances included in a Pollutant Release and Transfer Register (PRTR)

In Japan, the Law Concerning the Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management requires companies to register and monitor the release and transfer of designated PRTR substances. Many other countries have or are preparing similar laws.

8. SS: Suspended solids

This term refers to matter suspended or dissolved in water or wastewater. The higher the percentage, the greater the water's turbidity.

9. n-Hexane extractions

This term refers to the volume of oils and cleaning fluids extracted from water using the chemical n-Hexane. As used in this report, it denotes the volume of mineral oil extracted using n-Hexane.

10. Particulates

Particulates are microscopic solid matter contained in exhaust gas generated as a result of combustion, heating or chemical reaction.

11. Material balance

The net of "input" and "output."

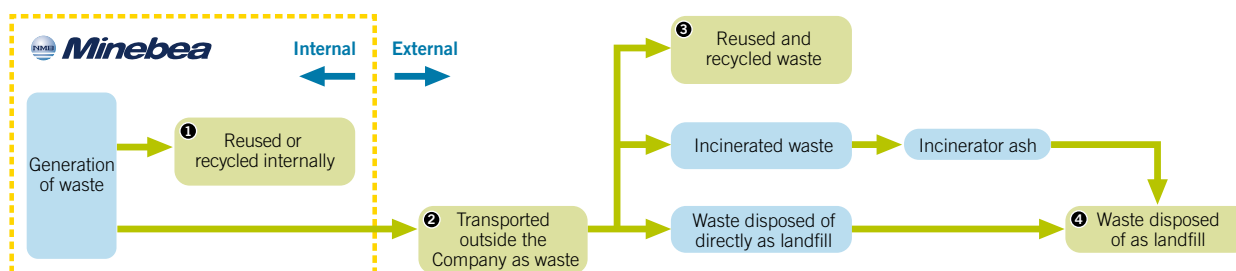
◆ Energy Consumption and Resulting CO₂ Emissions (Fiscal 2005)

Energy	Unit	Japan	Thailand	China	Singapore	United Kingdom	Germany	United States	Total
Electricity	1,000 kWh	51,722	526,295	96,309	70,454	19,461	1,809	38,385	804,435
Kerosene	Kiloliters	70	0	388	0	0	0	6	464
Heavy oil	Kiloliters	1,265	0	12	0	0	0	0	1,277
Fuel oil	Kiloliters	10	892	189	0	320	4	170	1,585
Gasoline	Kiloliters	27	392	86	62	0	9	2	578
LPG	Tons	663	1,091	173	18	0	0	50	1,995
City gas	1,000 m ³	496	0	0	0	1,804	75	1,607	3,982
Water	1,000 m ³	245	2,603	289	222	131	0	73	3,563
CO ₂ emissions	Tons	26,278	317,040	77,817	53,884	13,771	1,076	26,115	515,981

Note: In determining values for use in calculating CO₂ emissions at sites in Japan, Minebea referred to the Greenhouse Gas Emission Calculation Guideline for Businesses, published by Japan's Ministry of the Environment. In determining values for use in calculating CO₂ emissions overseas, Minebea referred Greenhouse (GHG) Protocol and Clean Development Mechanism and Joint Implementation (CDM/JI) criteria. Figures presented in the Minebea Group Environmental Report 2004 were calculated using values applicable for Japan only and were thus inaccurate.

◆ Waste¹

	Japan	Thailand	China	Singapore	United Kingdom	Germany	United States	Total
① Reused or recycled internally	133	162	1,655	559	6	0	26	2,541
② Transported outside the Company as waste	1,408	15,624	8,655	7,103	1,903	44	2,506	37,243
③ Reused or recycled externally	363	13,972	6,976	4,901	594	32	1,912	28,750
④ Disposed of as landfill	204	1,652	0	1,129	1,305	6	573	4,869



◆ Handling and Transfer of PRTR Chemicals (Japan; as reported to relevant authorities)

PRTR Number	Chemical	Volume Handled	Emissions			Transfer	Plant
			Released into the Atmosphere	Released into Water	Landfill	Waste	
69	Hexavalent chromium compounds	1.7	0	0	0	1.1	Fujisawa Plant
144	Dichloropentafluoropropane (HCFC-225)	10.8	10.6	0	0	0.2	Karuizawa Plant
232	Nickel compounds	1.1	0	0	0	0.3	Fujisawa Plant

Glossary

1. Waste

As used in this report, waste refers to industrial waste, that is, unwanted materials from industrial operations, and includes materials with negotiable value and materials to be recycled.

◆ Minimizing Water and Air Pollution

■ Concentrations in Water

Japan

Karuizawa Plant (Mg/liter)				
	Legal Limit	Voluntary Limit	Maximum	Average
pH	5.8–8.6	6.0–8.0	7.7	7.5
COD	40	30	6.2	3.6
BOD	40	30	9.3	3.3
SS	60	55	48.0	21.8
n-Hexane extractions	5	5	<1.0	<1.0

Fujisawa Plant (Mg/liter)				
	Legal Limit	Voluntary Limit	Maximum	Average
pH	5.8–8.6	6.6–7.8	7.5	7.2
COD	60	30	13.0	8.0
BOD	60	30	24.0	6.2
SS	90	10	7.0	3.5
n-Hexane extractions	5	2	1.0	<1.0

Hamamatsu Plant (Mg/liter)				
	Legal Limit	Voluntary Limit	Maximum	Average
pH	5.8–8.6	6.0–8.0	7.6	7.1
COD	40	20	9.0	5.2
BOD	25	20	2.8	1.0
SS	40	25	8.6	2.7
n-Hexane extractions	5	5	<1.0	<1.0

China

Shanghai Plant (Mg/liter)				
	Legal Limit	Voluntary Limit	Maximum	Average
pH	6–9	7–8	8.0	7.7
COD	60	20	18.3	11.3
BOD	15	5	3.4	1.5
SS	70	10	9.0	5.0
n-Hexane extractions	3	1	1.0	0.7

Xicen Plant (Mg/liter)				
	Legal Limit	Voluntary Limit	Maximum	Average
pH	6–9	7–8	8.0	7.6
COD	60	20	19.0	11.9
BOD	15	5	4.2	1.6
SS	70	10	9.0	6.0
n-Hexane extractions	3	1	1.0	0.7

Thailand

Bang Pa-in Plant (Mg/liter)				
	Legal Limit	Voluntary Limit	Maximum	Average
pH	5.5–9.0	6.5–8.5	8.3	7.6
COD	120	80	38.1	34.3
BOD	20	18	5.1	3.4
SS	50	20	3.9	2.6
n-Hexane extractions	5	5	0.8	0.7

Lop Buri Plant (Mg/liter)				
	Legal Limit	Voluntary Limit	Maximum	Average
pH	5.5–9.0	6.5–8.5	8.2	7.9
COD	120	80	49.5	35.1
BOD	20	18	7.6	5.0
SS	50	20	11.1	9.1
n-Hexane extractions	5	5	2.6	2.3

Rojana Plant (Mg/liter)				
	Limit for Industrial Estate	Voluntary Limit	Maximum	Average
pH	5.5–9.0	6.5–8.0	7.3	7.0
COD	1,250	1,000	351.0	233.7
BOD	1,000	500	70.0	60.3
SS	200	150	28.0	15.5
n-Hexane extractions	10	10	4.3	2.2

Ayutthaya Plant (Mg/liter)				
	Legal Limit	Voluntary Limit	Maximum	Average
pH	5.5–9.0	6.5–8.5	7.6	7.5
COD	120	80	27.2	22.0
BOD	20	18	3.0	3.0
SS	50	20	2.2	1.2
n-Hexane extractions	5	5	0.5	0.5

■ Concentrations in Air

Karuizawa Plant (Absorption 600-ton boiler)					
	Unit	National Limit	Voluntary Limit	Maximum	Average
Particulates	g/m³N	0.3	0.25	0.007	0.007
NOx	ppm	180	150	81	81
SOx	m³N/h	1.2	1.0	0.33	0.33

Fujisawa Plant (Sectional hot water boiler)					
	Unit	National Limit	Voluntary Limit	Maximum	Average
Particulates	g/m³N	0.3	0.15	—	<0.001
NOx	ppm	150	80	77	65
SOx	m³N/h	0.525	0.250	0.006	0.006

Hamamatsu Plant (Absorption chiller heater)					
	Unit	National Limit	Voluntary Limit	Maximum	Average
Particulates	g/m³N	0.3	0.2	—	<0.01
NOx	ppm	180	100	77	72
SOx	m³N/h	—	—	—	—



Wastewater treatment facility, Fujisawa Plant (Japan)