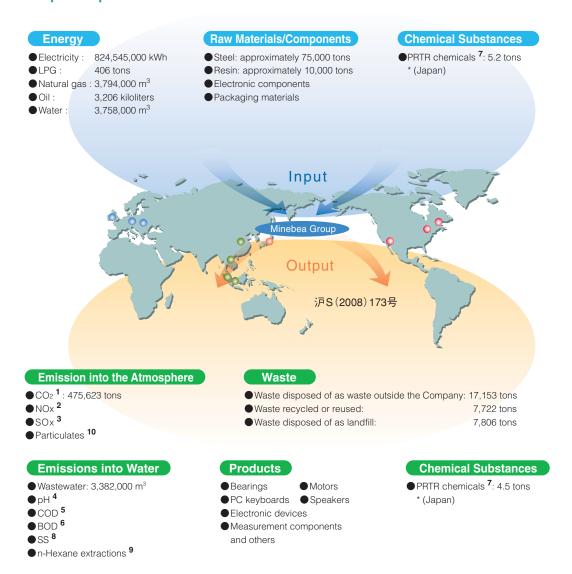
Minebea's global presence currently encompasses 28 plants in 9 countries and over 40 sales offices in 13 countries, having operations in a wide-ranging field. The chart below depicts input and output from Minebea's plants in fiscal 2008.

# ■ Input-Output Flow and Material Balance <sup>11</sup>



#### Glossary

1. CO2: Carbon dioxide 2. NOx: Nitrogen oxides

3. SOx: Sulfur oxides

Emissions of CO<sub>2</sub>, NO<sub>x</sub> and SO<sub>x</sub> 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 11. Material balance ratings usually take five days. BOD is commonly used to monitor pollution in effluent discharged into rivers.

#### 7. PRTR chemicals: Chemical substances included in the 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. Data for plants overseas is in the process of being collated.

### 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

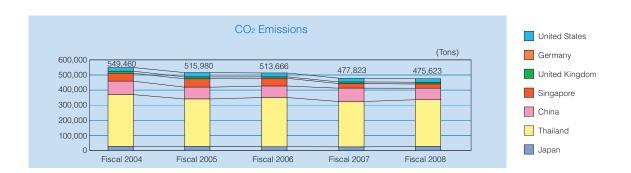
Particulates are microscopic solid matter contained in exhaust gas generated as a result of combustion, heating or chemical reaction.

The net of "input" and "output".

## ■ Energy Consumption and Resulting CO₂ Emissions (Fiscal 2008)

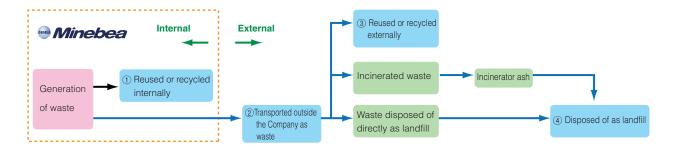
Energy	Unit	Japan	Thailand	China	Singapore	United Kingdom	Germany	United States	Total
Electricity	1,000 kWh	45,603	568,815	94,843	56,527	18,808	2,849	37,100	824,545
Kerosene	Kiloliters	59	0	158	0	0	0	22	239
Heavy oil A	Kiloliters	937	0	0	0	0	0	274	1,211
Light oil	Kiloliters	9	815	74	205	0	0	20	1,123
Gasoline	Kiloliters	20	332	222	45	0	13	1	633
LPG	Tons	93	35	195	11	0	0	72	406
Natural gas	1,000 m <sup>3</sup>	765	2,115	0	0	140	106	668	3,794
Water	1,000 m <sup>3</sup>	196	2,465	279	208	532	2	76	3,758
CO <sub>2</sub> emissions	Tons	24,175	309,451	76,425	31,425	9,187	1,246	23,714	475,623

Note: In determining values for use in calculating CO<sub>2</sub> emissions at sites in Japan, Minebea referred to the Greenhouse Gas Emission Calculation Guideline for Businesses, version 2.3, published by Japan's Ministry of the Environment. In determining values for use in calculating CO<sub>2</sub> emissions overseas, Minebea referred to Greenhouse Gas (GHG) Protocol (2005) criteria.



# ■ Waste 12

								(Tons)
Classification	Japan	Thailand	China	Singapore	United Kingdom	Germany	United States	Total
①Reused or recycled								
internally	30	177	1,949	237	5	0	34	2,432
②Transported outside								
the Company as waste	1,232	6,015	1,150	3,765	332	13	4,646	17,153
③Reused or recycled								
externally	311	1,320	0	2,486	155	12	3,438	7,722
④Disposed of as								
landfill	95	4,695	1,150	602	177	0	1,087	7,806
Note: Figures for waste disposed of as landfill (﴿) include estimates.								



#### Glossary

As used in this report, waste refers to industrial waste, that is, unwanted materials from industrial operations, and includes materials to be recycled. (Materials with negotiable values are not included.)

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

							(Tons)
DDTD Marshare Colonial III		Volume		Emissions			Plant
PRIR Number	PRTR Number Chemical	Handled	Released into the Atmosphere	Released into Water	Landfill	Waste	Plant
144	Dichloropentafluoropane(HCFC-225)	3.9	3.7	0	0	0.2	Karuizawa Plant
232	Nickel compounds	1.3	0	0.03	0	0.55	Fujisawa Plant
202		1.0	ŭ	0.00	Ü	0.00	

# **■** Minimizing Water and Air Pollution

# **©** Concentrations in Water

## Japan

Karuizawa Plant				(mg/liter)
Item	Legal Limit	Voluntary Limit	Maximum	Average
рН	5.8-8.6	6.0-8.0	7.8	7.5
COD	30	10	5.8	3.5
BOD	30	10	5.4	2.5
SS	50	30	13.0	9.7
n-Hexane extractions	5	2	<1.0	<1.0
Fujisawa Plant				(mg/liter)
Fujisawa Plant Item	Legal Limit	Voluntary Limit	Maximum	(mg/liter) Average
	Legal Limit 5.8-8.6	Voluntary Limit 6.6-7.8	Maximum 7.6	
Item		,		Average
Item pH	5.8-8.6	6.6-7.8	7.6	Average 7.3
Item pH COD	5.8-8.6 60	6.6-7.8 30	7.6 21.0	7.3 9.0

Hamamatsu Plant				(mg/liter)
Item	Legal Limit	Voluntary Limit	Maximum	Average
рН	5.8-8.6	6.0-8.0	7.7	7.4
COD	40	20	5.3	4.5
BOD	25	20	1.2	0.7
SS	40	25	8.2	2.7
n-Hexane extractions	5	5	<1.0	<1.0

## China

Shanghai Plant				(mg/liter)
Item	Legal Limit	Voluntary Limit	Maximum	Average
рН	6-9	7-8	7.7	7.5
COD	60	20	18.8	14.2
BOD	15	5	1.7	0.9
SS	70	10	5.6	3.9
n-Hexane extractions	3	1	0.8	0.7

Xicen Plant				(mg/liter)
Item	Legal Limit	Voluntary Limit	Maximum	Average
рН	6-9	7-8	7.9	7.6
COD	60	20	14.8	9.1
BOD	15	5	1.6	0.9
SS	70	10	5.8	4.6
n-Hexane extractions	3	1	0.7	0.7

## Thailand

Bang Pa-in Plant				(mg/liter)
Item	Legal Limit	Voluntary Limit	Maximum	Average
рН	5.5-9.0	6.5-8.5	8.0	7.7
COD	120	80	33.7	32.1
BOD	20	18	3.1	3.0
SS	50	20	3.8	2.2
n-Hexane extractions	5	5	2.9	2.1
Rojana Plant				(mg/liter)
Item	Limit for Industrial Estate	Voluntary Limit	Maximum	Average
рН	5.5-9.0	6.0-8.8	7.2	6.8
COD	1250	1000	262.0	215.0
BOD	500	450	55.0	49.0
SS	200	150	39.0	19.0
n-Hexane extractions	10	10	7.4	3.3

Lop Buri Plant (mg/lite								
Item	Legal Limit	Voluntary Limit	Maximum	Average				
рН	5.5-9.0	6.5-8.5	7.9	7.6				
COD	120	80	73.0	49.9				
BOD	20	18	7.0	3.4				
SS	50	20	12.0	6.4				
n-Hexane extractions	5	5	1.7	1.1				
Ayutthaya Plant				(mg/liter)				
Item	Legal Limit	Voluntary Limit	Maximum	Average				
рН	5.5-9.0	6.5-8.5	7.7	7.6				
COD	120	80	34.3	27.4				
BOD	20	18	<3.0	<3.0				
SS	50	20	1.7	1.1				
n-Hexane extractions	5	5	2.8	2.0				

# **©Concentrations in Air**

Karuizawa Plant (Vacuum hot water boiler)								
Item	Unit	Legal Limit	Voluntary Limit	Maximum	Average			
Particulates	g/m <sup>3</sup> N	-	0.25	0.006	0.006			
NOx	ppm	-	150	75	75			
SOx	m <sup>3</sup> N/h	-	1	0.021	0.021			
Fujisawa Plant (Section	nal hot wa	ter boiler)						
Item	Unit	Legal Limit	Voluntary Limit	Maximum	Average			
Particulates	g/m <sup>3</sup> N	0.3	0.25	0.01	< 0.01			
NOx	ppm	180	150	85	78			
SOx	m <sup>3</sup> N/h	1.2	1	0.015	0.011			

Hamamatsu Plant (Absorption chiller heater)								
Unit	Legal Limit	Voluntary Limit	Maximum	Average				
g/m <sup>3</sup> N	0.3	0.2	< 0.01	0.01				
ppm	180	100	83	72.5				
m <sup>3</sup> N/h	-	-	-	-				
	g/m³N ppm	g/m <sup>3</sup> N 0.3 ppm 180	g/m <sup>3</sup> N 0.3 0.2 ppm 180 100	g/m³N 0.3 0.2 <0.01 ppm 180 100 83				