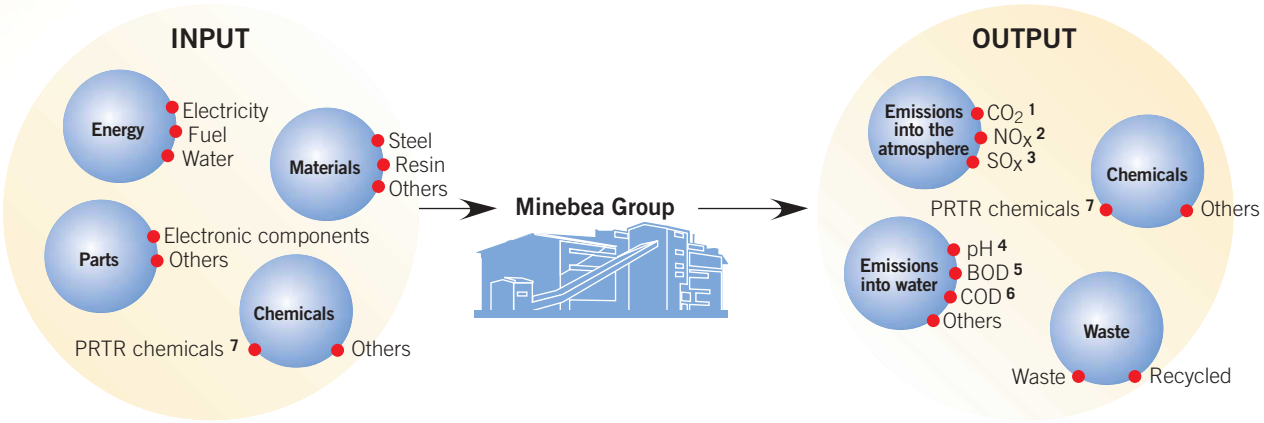
The Minebea Group currently has plants and sales offices in 14 countries. Minebea acknowledges that the activities of these bases exert a burden on the global environment. This burden comprises the materials and energy that a company uses in production ("input") and emissions released during production that impact the environment ("output"). The following is an input–output analysis of our plants in Asia—our principal mass production base—and Japan, where we have our parent plants, in fiscal 2002.

INPUT-OUTPUT FLOW



ENERGY CONSUMPTION AND RESULTING CO_2 EMISSIONS

	Unit	Japan	Thailand	China	Singapore
Consumption					
Electricity	10,000 kwh	5,978	55,448	10,030	7,296
Fuel, gas	Kiloliters	2,958	3,001	1,453	300
Water	1,000 m^3	320	3,700	420	283
Emissions					
CO_2	Metric tons	33,806	211,632	51,755	27,849

HANDLING AND TRANSFER OF PRTR CHEMICALS (JAPAN)

(Tons)

PRTR Number	Chemical	Volume Handled	Emissions			Transfer	Plant
			Released into the Atmosphere	Released into Water	Landfill	Waste	
69	Hexavalent chromium compounds	1.5	0	0	0	0.3	Fujisawa Manufacturing Unit
144	Dichloropentafluoropropane (or HCFC-225)	15.0	14.8	0	0	0.2	Karuizawa Manufacturing Unit
232	Nickel compounds	0.6	0	0	0	0.2	Fujisawa Manufacturing Unit
232	Nickel compounds	14.1	0	0	0	1.5	Hamamatsu Manufacturing Unit
311	Manganese and manganese compounds	90.6	0	0	0	13.1	Hamamatsu Manufacturing Unit

Glossary

1. **CO_2: Carbon dioxide**
2. **NO_X: Nitrogen oxides**
3. **SO_X: Sulfur oxides**
   Emissions of CO_2, NO_X and SO_X result from the burning of coal, oil, gasoline and other fuels.
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. **BOD: Biochemical oxygen demand**
   The amount of oxygen required for the biochemical oxidation of organic solids in water. The higher the BOD reading, the greater the level of pollution. BOD is commonly used to monitor pollution in effluent discharged into rivers.
6. **COD: Chemical oxygen demand**
   The amount of oxygen required for oxidation of organic solids in water to CO_2. 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.
7. **PRTR substances: Substances included in a Pollutant Release and Transfer Register**
   In Japan, the Law Concerning the Reporting, etc. of Release 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.

MINIMIZING WATER AND AIR POLLUTION

Concentrations in Water

Japan
Karuizawa Manufacturing Unit (Mg/liter)

	Legal Limit	Voluntary Limit	Maximum	Average
pH	5.8–8.6	6.0–8.0	7.9	7.7
COD	40	30	21.0	7.0
BOD	40	30	17.0	8.1
SS[8]	60	55	40.0	20.7
n-Hexane extractions[9]	5	5	2.9	<1.0

Hamamatsu Manufacturing Unit (Mg/liter)

	Legal Limit	Voluntary Limit	Maximum	Average
pH	5.8–8.6	6.0–7.0	7.4	7.2
COD	40	20	8.4	6.7
BOD	25	20	2.9	1.5
SS	40	25	5.8	2.2
n-Hexane extractions	5	5	1.1	<1.0

Fujisawa Manufacturing Unit (Mg/liter)

	Legal Limit	Voluntary Limit	Maximum	Average
pH	5.8–8.6	6.6–7.8	7.2	6.8
COD	60	30	28.0	20.0
BOD	60	30	21.0	15.0
SS	90	10	8.0	5.0
n-Hexane extractions	5	2	1.0	<1.0

Thailand
Bang Pa-in Plant (Mg/liter)

	Legal Limit	Voluntary Limit	Maximum	Average
pH	5.5–9.0	6.5–8.5	8.5	8.2
COD	120	80	24.0	17.2
BOD	20	18	5.0	1.8
SS	50	20	6.0	1.7
n-Hexane extractions	5	5	1.5	0.8

China
Shanghai Factory (Mg/liter)

	Legal Limit	Voluntary Limit	Maximum	Average
pH	6.0–9.0	7.0–8.0	8.0	7.6
COD	60	20	16.7	13.2
BOD	15	5	2.2	1.3
SS	70	10	5.0	3.0
n-Hexane extractions	3	1	1.0	0.7

Concentrations in Air

Japan
Karuizawa Manufacturing Unit
(Absorption 600-ton boiler)

	Unit	National Limit	Voluntary Limit	Maximum	Average
Particulates[10]	g/m³N	0.3	0.25	0.019	0.014
NO_X	ppm	180	150	80	77
SO_X	m³N/H	1.2	1.0	0.35	0.31

Karuizawa Manufacturing Unit
(Absorption 310-ton boiler)

	Unit	National Limit	Voluntary Limit	Maximum	Average
Particulates	g/m³N	0.3	0.25	0.009	0.009
NO_X	ppm	180	150	75	65
SO_X	m³N/H	1.1	1.0	0.27	0.19

Hamamatsu Manufacturing Unit
(Absorption chiller heater)

	Unit	National Limit	Voluntary Limit	Maximum	Average
Particulates	g/m³N	0.3	0.2	—	<0.01
NO_X	ppm	180	100	65	61
SO_X	m³N/H	—	—	—	—

Fujisawa Manufacturing Unit
(Sectional hot water boiler)

	Unit	National Limit	Voluntary Limit	Maximum	Average
Particulates	g/m³N	0.3	0.15	—	<0.01
NO_X	ppm	150	80	77	69
SO_X	m³N/H	0.525	0.250	0.01	0.09

Glossary

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.

WASTE

(Tons)

Plant		Reused or Recycled	Disposed of as Waste	Landfill
Japan	Karuizawa Manufacturing Unit	690	389	5
	Hamamatsu Manufacturing Unit	311	167	89
	Fujisawa Manufacturing Unit	855	632	79
	Omori Manufacturing Unit	133	49	88
	Minebea Onkyo Co., Ltd.	4	5	2
	NMB Electronics, Inc.	20	3	0
		2,013	1,245	263
Thailand		19,644	12,214	4,053
China		5,268	1,406	76
Singapore		5,364	1,269	1,070