

# Appendix

## Plant Report

### ● Environmental data on MFTBC's plants

\*Eliminated Amount converted into a different substance by incineration, decomposition, reaction, etc.

\*Consumed: Amount either converted into a different substance by reaction or captured in products.

Data can be found on the following pages on the state of emissions of main indicators of air and water quality and on the uses of substances covered by the PRTR system at each of MFTBC's plants in fiscal 2003. (The limits shown are the strictest laid down under the various laws, ordinances and environmental protection agreements applicable to those plants. In the case of emissions into the atmosphere, maximums are shown. Type 1 designated chemicals whose use is one ton per year or more are shown in the following PRTR tables.)

#### Kawasaki Plant (ISO 14001 certified: December 1999)



Address	10, Okura-cho, Nakahara-ku, Kawasaki-shi, Kanagawa
Established	1941
Total site area	432,100m <sup>2</sup>
Total building area	304,700m <sup>2</sup>
Employees	3,200
Main products	Small, medium and large trucks, truck and bus engines and industrial engines
Production processes	Machining, stamping, welding, painting and assembling

#### ◎Air

Substance	Equipment	Unit	Regulation	Actual
NOx	Boilers	ppm	130	74
	Heating systems	ppm	150	74
	Ovens	ppm	250	10
	Gas turbines	ppm	70	29
Dust	Boilers	g/m <sup>3</sup> N	0.05	0.002
	Heating systems	g/m <sup>3</sup> N	0.05	0.002
	Ovens	g/m <sup>3</sup> N	0.25	0.001
	Gas turbines	g/m <sup>3</sup> N	0.025	0.001

#### ◎Water

Substance	Unit	Regulation	Max	Min	Average
BOD	mg/l	300	86	3.2	22.7
SS	mg/l	300	51	0.1	12.8
Oil	mg/l	5	4.9	0.1	1.5
Total nitrogen	mg/l	150	21	2.7	9.1
Total phosphates	mg/l	20	1.9	0.047	0.8
Copper	mg/l	3	ND	ND	ND
Zinc	mg/l	3	0.25	ND	0.1
Manganese	mg/l	1	0.54	ND	0.2

#### ◎Substances covered by PRTR (Units: kg/year)

Substance no.	Substance name	Quantity used	Emitted		Transferred		Recycled	Eliminated	Consumed
			Air	Public water	Sewage	Waste			
1	Zinc compounds (water-soluble)	2,753	0	0	44	303	0	0	2,406
16	2-aminoethanol	5,604	0	0	5,604	0	0	0	0
40	Ethylbenzene	16,133	2,512	0	0	0	0	0	13,621
43	Ethylene glycol	814,941	0	0	0	0	0	0	814,941
63	Xylene	282,200	210,765	0	0	598	46,758	7,146	16,933
227	Toluene	160,607	96,578	0	0	35	0	6,607	57,387
230	Lead and its compounds	1,628	0	0	3	163	0	0	1,462
232	Nickel compounds	878	0	0	106	470	0	0	302
299	Benzene	4,791	142	0	0	0	0	0	4,649
309	Poly (oxyethylene) nonylphenyl ether	1,645	0	0	101	1,544	0	0	0
311	Manganese and its compounds	1,877	2	0	68	336	0	0	1,471
346	Molybdenum and its compounds	3,686	0	0	0	0	3,070	0	616
Total		1,296,743	309,999	0	5,926	3,449	49,828	13,753	913,788

#### Nakatsu Plant (ISO 14001 certified: November 2000, within expanded scope of Kawasaki Plant)



Address	4001, Aza-Sakuradai, Nakatsu, Aikawa-machi, Aiko-gun, Kanagawa
Established	1975
Total site area	35,700 m <sup>2</sup>
Total building area	17,400 m <sup>2</sup>
Employees	170
Main products	Gear-related parts for transmissions
Production processes	Machining, heat treating

#### ◎Air

Substance	Equipment	Unit	Regulation	Actual
NOx	Boilers	ppm	150	110
Dust	Boilers	g/m <sup>3</sup> N	0.3	0.001

#### ◎Water

Substance	Unit	Regulation	Max	Min	Average
BOD	mg/l	300	8.7	0.8	3.4
SS	mg/l	300	25	0.3	3.9
Oil	mg/l	5	2.1	0.1	0.5
Total nitrogen	mg/l	150	9.8	2.5	6.2
Total phosphates	mg/l	20	0.14	0.094	0.12
Copper	mg/l	3	ND	ND	ND
Zinc	mg/l	3	0.052	ND	0.052
Manganese	mg/l	1	ND	ND	ND

#### ◎Substances covered by PRTR (Units: kg/year)

Substance no.	Substance name	Quantity used	Emitted		Transferred		Recycled	Eliminated	Consumed
			Air	Public water	Sewage	Waste			
63	Xylene	2,222	11	0	0	0	0	0	2,211
227	Toluene	2,646	33	0	0	0	0	0	2,613
Total		4,868	44	0	0	0	0	0	4,824

#### Notes

**NOx**: General term for nitrogen oxides, which cause acid rain and produce photochemical oxidants.

**SOx**: General term for sulfur oxides, which cause sulfuric acid mist and acid rain.

**BOD**: Biological Oxygen Demand. Primary index for measuring contamination by organic substances in rivers. The higher the value, the less clear the water.

**COD**: Chemical Oxygen Demand. Primary index for measuring contamination by organic substances in lakes, marshes and the sea. The higher the value, the less clear the water.

**SS**: Suspended Solids. Small particles of solid pollutants – 2 mm diameter or less – that are suspended in liquids

**ND**: Not detected. Does not mean "none," but below the applicable limit of detection.

**Oye Bus Plant (ISO 14001 certified: November 1998, as part of MMC Nagoya Plant; in November 2003, recertified within expanded scope of Kawasaki Plant)**


Address	3998-16, Aza-Minami, Motohoshizaki-cho, Minato-ku, Nagoya-shi, Aichi
Established	1982
Total site area	42,600 m <sup>2</sup>
Total building area	28,000 m <sup>2</sup>
Employees	220
Main products	Small buses
Production processes	Welding, painting, assembling

**◎Air**

No emitting facilities

**◎Water**

Treatment is entrusted to another company

**◎Substances covered by PRTR (Units: kg/year)**

Substance no.	Substance name	Quantity used	Emitted		Transferred		Recycled	Eliminated	Consumed
			Air	Public water	Sewage	Waste			
1	Zinc compounds (water-soluble)	4,930	0	79	0	0	542	0	4,309
43	Ethylene glycol	32,836	0	0	0	0	0	0	32,836
63	Xylene	73,416	67,500	0	0	1,995	3,738	0	183
227	Toluene	7,919	5,544	0	0	778	1,369	0	228
232	Nickel compounds	2,010	0	243	0	5	1,071	0	691
Total		121,111	73,044	322	0	2,778	6,720	0	38,247

**● Environmental Data on MFTBC's Affiliates' Plants**

Data can be found on the following pages on the state of emissions of main indicators of air and water quality at each of MFTBC's main production affiliates in Japan in fiscal 2003. The limits shown are the strictest laid down under the various laws, ordinances and environmental protection agreements applied to those affiliates. In the case of emissions into the atmosphere, maximums are shown. (See p. 31 for technical terms used in the tables.)

**Mitsubishi Fuso Techno-Metal Co., Ltd. Nihonmatsu Plant (ISO 14001 certified: March 2003)**

Address	100, Takada, Nihonmatsu-shi, Fukushima
Established	1971
Total site area	326,000 m <sup>2</sup>
Total building area	65,400 m <sup>2</sup>
Employees	75
Main products	Vehicle parts, construction machinery, industrial castings, forgings, and aluminum parts
Production processes	Casting, forging, aluminum die casting, metal molding, machining

**◎Air**

Substance	Equipment	Unit	Regulation	Actual
NOx	Boilers	ppm	200	62
	Heating furnaces	ppm	170	110
	Stand-alone generators	ppm	750	700
Dust	Boilers	g/m <sup>3</sup> N	0.2	0.008
	Heating furnaces	g/m <sup>3</sup> N	0.2	0.02
	Stand-alone generators	g/m <sup>3</sup> N	0.1	0.008
Dioxins	Incinerators	na-TEQ/m <sup>3</sup> N	5	0.13

**◎Water**

Substance	Unit	Regulation	Max	Min	Average
COD	mg/ℓ	20	7.2	2.9	5.0
BOD	mg/ℓ	20	3.4	<1.0	1.8
SS	mg/ℓ	40	3.0	<2.0	2.0
Oil	mg/ℓ	5	1.4	<1.0	<1.0

**Mitsubishi Fuso Bus Manufacturing Co., Ltd. (ISO 14001 certified: December 2003)**

Address	1, Dojo, Fuchu-machi, Nei-gun, Toyama
Established	1950
Total site area	176,900 m <sup>2</sup>
Total building area	52,400 m <sup>2</sup>
Employees	720
Main products	Medium and large buses
Production processes	Welding, painting, assembling

**◎Air**

Substance	Equipment	Unit	Regulation	Actual
NOx	Boilers	ppm	150	46.25
	Heating systems	ppm	170	18.4
Dust	Boilers	g/m <sup>3</sup> N	0.1	<0.02
	Heating systems	g/m <sup>3</sup> N	0.2	<0.05

**◎Water**

Substance	Unit	Regulation	Max	Min	Average
BOD	mg/ℓ	20	3.1	1.2	2.34
SS	mg/ℓ	40	14.0	4.0	7.33
Oil	mg/ℓ	5	ND	ND	ND

**PABCO Co., Ltd. Sagami Plant (ISO 14001 certified: June 2000)**

Address	456, Kashiwagaya, Ebina-shi, Kanagawa
Established	1945
Total site area	88,700 m <sup>2</sup>
Total building area	56,200 m <sup>2</sup>
Employees	565
Main products	Bodies to be mounted on trucks
Production processes	Welding, painting, assembling

**◎Air**

Substance	Equipment	Unit	Regulation	Actual
NOx	Boilers	ppm	(150)	42
Dust	Boilers	g/m <sup>3</sup> N	0.1	0.001

**◎Water**

Substance	Unit	Regulation	Max	Min	Average
BOD	mg/ℓ	300	26.0	1.0	21.8
SS	mg/ℓ	300	12.0	2.7	5.9
Oil	mg/ℓ	5	3.2	1.2	2.2

# Appendix

## History of Environmental Activities

Year	Development of products and technologies	Management and production sectors, etc
1991-1995	1991	•Plastic parts weighing at least 100g or more marked with identifying code
	1992	•Awarded Japan Gas Turbine Society's technology prize for development of ceramic turbine rotor •Introduction of cogeneration system at Oye Plant
	1993	•Start of road tests of methanol-powered Canter 1993 •"MMC Environmental Plan" formulated and "Basic Philosophy on the Environment" established
	1994	•Start of sales of buses fitted with hydraulic hybrid systems "MBECS" •Start of trial sales of methanol-powered Canter •Development of Canter natural gas vehicle •Elimination of CFC-12 refrigerant from air conditioners in all new models and switch to HFC-134a for all vehicles •Launch of moves to reduce use of lead in new models 1994 •CFC(fluorocarbons) entirely eliminated from production processes
	1995	•Announcement of MBECS-II (first diesel car to meet 1999 exhaust emissions regulations) •Canter HEV powered by a series-type propulsion system developed and Exhibited at 31st Tokyo Motor Show •Road tests started on city bus fitted with DPF system 1995 •Elimination of 1.1.1-trichloroethene totally from all production processes
1996-2000	1996	•Development of mechanical AT "INOMAT" •MBECS-III offering improved high efficiency goes on sale •First ever common-rail fuel injection system adopted for mass-produced tractor engines •"LPG Canter" goes on sale •DPF system for city buses goes into commercial service; 30 vehicles delivered to Yokohama 1996 •"MMC Environmental Plan" revised •Recycling Committee established under the MMC Environmental Council
	1997	•"CNG Canter" goes on sale •Reduced use of HFC-134a refrigerant in air conditioners by about 20% 1997 •Okazaki and Kawasaki plants take part in Environmental Agency's PRTR Pilot Project •First "Plant Environmental Topics" for distribution to suppliers, etc. •"MMC Group Environmental Liaison Council" established to liaise between major affiliates and MMC
	1998	•"CNG Aero Star" goes on sale 1998 •Abolition of use Tetrachloroethene and dichloromethane chlorine cleaning agents
	1999	•"Basic Philosophy on the Environment" replaced by new "MMC Environmental Guidelines" •Environmental Affairs Department established (called Environmental & Technical Affairs Department from April 2000) •Publication of First "MMC Environmental Report" issued •Kawasaki Plant acquires ISO 14001 certification (all domestic plants now ISO 14001 compliant) 1999 •"MMC Environmental Plan" revised •Recycling Committee established under the MMC Environmental Council
	2000	•Hybrid electric drive system for large buses developed, and exhibited at Tokyo Motor Show 2000 •Launch of Green Procurement (suppliers requested to cooperate in environmental activities) •Development of environmental management systems for dealers
2001-2004	2002	•New "MIQCS" combustion system wins JSAE's Technological Development Award •Research into reducing tire noise wins JSAE's Asahara Award for the Promotion of Science •"Aero Star Non-Step HEV" used as a shuttle bus to Shizuoka Stadium during World Cup Soccer 2002 •Recycling Promotion Office established •Zero landfill waste target achieved by all plants •"MMC Environmental Sustainability Plan" (medium-term plan) announced
	2003	•Cumulative output of certified LEVs by Fuso Bus exceeds 400 •Super Great heavy-duty truck certified for Ultra-low PM Exhaust Emissions (☆☆☆) goes on sale 2003 •Truck and bus division spun off from MMC to form Mitsubishi Fuso Truck and Bus Corporation (MFTBC) •Technical Administration Department established as core body for promotion of environmental activities
	2004	•Canter truck certified for Ultra-low PM Exhaust Emissions (☆☆☆) goes on sale •Hybrid ultra-low-floor bus "Aero Non-Step HEV" released

## Editor's Notes

### Origin of the Name "Fuso"

In 1932, ideas for a nickname for the new B46 bus were solicited from employees, and "Fuso" was chosen. "Fuso," to the ancient Chinese, was the name of a sacred tree that, they said, grew in the east where the sun rose, and was once used as another name for Japan. The tree is what we know today as the hibiscus.



### This and Future Publications

Thank you very much for your interest in this environmental report – the first edition published by MFTBC itself.

All items in the report are in accordance with the "Environmental Reporting Guidelines" of the Ministry of the Environment, and we have tried to present them in a manner and style readily understandable to general readers. This being our initial attempt, however, we are afraid there must be numerous areas where we could have been clearer or more complete. We hope for your patience as we strive to improve. Additionally, we will endeavor to have the next edition – for FY2005 – available in a more timely fashion.

To assist us in this effort, we would be grateful if you would give us your comments by taking a moment to complete the questionnaire at the end of the report.

As noted at the right, this environmental report itself reflects important *environmental* considerations.

### Environmental Considerations in Publishing this Report

**This report is printed on paper certified by the Forest Stewardship Council (FSC), using soybean oil ink and without water.**

#### FSC-certified paper

FSC certification means the wood used in making the paper came from forests that have been independently inspected and certified as meeting the highest standards for environmental and social responsibility. It includes a "chain of custody" audit of all companies in the transport and production processes – trucking and shipping, manufacturing, wholesaling and retailing, and printing – to assure purchasers that the final product was in fact made from wood from such forests.

#### FSC forest certification system

The system promotes sustainable forestry by certifying appropriate forest management and labeling wood harvested from such forests, and products made from such wood.

It serves to:

- 1) Help prevent decline and loss of forests throughout the world.

#### Soybean oil ink ("soy ink")

The ink uses soybean oil instead of petroleum-based solvents, and is recognized by the Japan Environment Association as an "eco mark" product.

It serves to:

- 1) Reduce air pollution by reducing the presence of volatile organic compounds (VOCs),
- 2) Increase the recycling of printed matter because it is easier to separate from paper,
- 3) Reduce soil pollution because it readily decomposes in landfills, and
- 4) Reduce the use of petroleum products.

Overall, in comparison with conventional inks, the use of soy ink has significant benefits for people and the environment.

#### Waterless printing

Waterless printing eliminates the use of chemical "dampening water" required in conventional printing.

It serves to:

- 1) Reduce the use of harmful organic substances and alcohol, and
- 2) Reduce the use of other harmful substances in plate making (e.g., conventional printing involves alkali solutions of at least pH12).

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