Reducing Environmental Loads in Production Activities at JFE Engineering

JFE Holdings				
JFE Steel	JFE Engineering	Kawasaki Microelectronics	JFE Urban Development	JFE R&D

Preventing Global Warming

In 1997, the Japan Society of Industrial Machinery Manufacturers (JISM) established a "Voluntary Action Plan for the Environment by the Industrial Machinery Industry" which called for positive, voluntary efforts to prevent global warming by the industry as a whole, targeting an annual improvement of 1% in unit CO_2 emissions (CO_2 emissions per unit of production) until 2010.

Based on these circumstances, JFE Engineering implemented Environmental Management Systems suited to the functions and features of business at each of its works and is making efforts to prevent global warming.

JFE Engineering has three production sites, Tsurumi Center, Shimizu Works, and Tsu Works. Shimizu Works is a production division with work centering on fabrication of steel structures, whereas work at Tsu Works and Tsurumi Center is broadly divided between the office division, which performs design and other work, and the production division, which fabricates steel structures, and manufactures and assembles equipment and machinery.

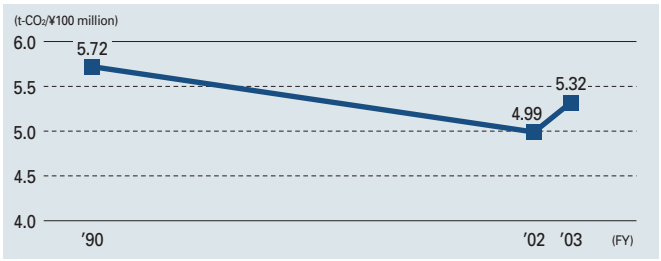
In the production divisions, targets call for a reduction of unit energy consumption (electricity consumption per unit weight of steel processed) in FY2003 to 94% of the FY1997 level. Efforts include a changeover to energy saving lighting system and turning off welders and other equipment when not in use. Unit energy consumption in the production divisions at Tsurumi Center and Shimizu Works was reduced to 93% and 88% of the FY1997 levels, respectively, achieving the target value for FY2003. However, at Tsu Works, nighttime power consumption increased due to a change to a 2-shift system accompanying an increase in orders. Consequently, unit energy consumption increased to 108% in comparison with FY1997, and the works did not achieve the target.

In the office division, efforts include power conservation activities such as turning off lights during the lunch break and turning off personal computers when not in use, together with check patrols. Power consumption in the office division in FY2003 showed a 6% decrease from FY1997 at Tsurumi Center and a 4% decrease from FY1999 at Tsu Works.

As a result of these activities, the combined CO_2 emissions in the production and office divisions showed a decline of 7% from FY2002, to 13,200 tons (21% decrease from FY1990). However, due to a decline in sales revenues, unit CO_2 emissions in FY2003 increased by 6% from FY2002, rising to 5.3 tons/¥100 million (decrease of 7% from FY1990).

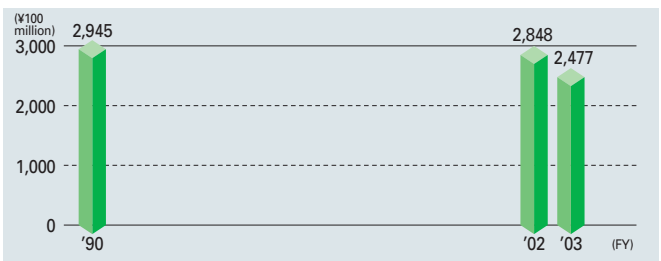
It should also be noted that JFE Engineering is currently working to establish procedures for determining energy consumption and CO_2 emissions in work at construction sites.

Transition of unit CO_2 emissions



Transition of actual CO_2 emissions (total of office and production divisions)

Transition of sales revenues[*1]



*1) Does not include sales in the shipbuilding division.


Tsurumi Center


Shimizu Works


Tsu Works

Reducing Generation/ Discharge of Waste

JFE Engineering has three works, which fabricate steel structures, and manufacture and assemble machinery, and execute various types of construction work related to utility infrastructure in the fields of energy, the environment, water, steel manufacturing, and civil engineering/construction at locations throughout Japan. Based on the features of these business activities, the company is making efforts to "reduce generation/discharge of waste at construction sites" together with to "reduce generation/discharge of waste at works."

The three works set respective targets for FY2003 and are endeavoring to reduce generation/discharge of waste associated with production activities.

Tsurumi Center set a target of reducing waste treatment costs to ¥8.2 million, and made efforts to ensure thoroughgoing sorting of byproducts, including complete sorting of recyclable resources, and effective use of a waste plastic compacting machine. Waste treatment costs for FY2003 were 7.7 million, achieving the target.

Shimizu Works set a target of 0.72 tons/1000 hours for waste generation per unit of operating time. Efforts include thoroughgoing sorting. However, painting work increased due to increased bridge construction, resulting in a considerable increase in slag*1 and shot scrap.*2 Waste per unit of operating time was 1.03 tons/1000 hours and did not achieve the target. For the future, the works is studying methods of recycling slag.

Tsu Works also set a target in terms of waste per unit of operating time, at 0.11 tons/1000 hours. In addition to thoroughgoing sorting of byproducts, the works made efforts to recycle slag and shot scrap as a mulling/roadbed material and realized a recycling ratio of 97.5%. Waste per unit of operating time was 0.10 tons/1000 hours, achieving the target.

In site construction work, in FY2003, a target of 40% or less was set for reduction of the landfill disposal rate*3 of construction site waste, to be achieved by FY2004. Efforts include thoroughgoing sorting of waste and volume reduction/recycling, etc. In particular, because rubble and sludge account for the major part of landfill disposal waste at construction sites, reduction of these wastes is indispensable. For rubble (concrete and asphalt debris), JFE Engineering carries out thoroughgoing recycling. Sludge is positively recycled at the discharge site by applying sludge reforming, etc. As a result, the landfill disposal rate of construction site waste was 30% in FY2003, achieving the target ahead of schedule.

***1) Slag**
Waste generated during welding and cutting steel plates.

***2) Shot scrap**
Residue containing sand, iron rust, and paint, generated when sandblasting is performed to remove old paint from steel structures.

***3) Landfill disposal rate**
Landfill disposal rate (%) = [Generated waste-(Recycling + Reduction)] / Generated waste

Reduction of wastes in production division

Works (unit)	Target	Actual
Tsurumi Center (million yen/year)*4	8.20	7.70
Shimizu Works (t/1000 hrs)*5	0.72	1.03
Tsu Works (t/1000 hrs)*5	0.11	0.10

***4)** Annual waste treatment cost.
***5)** Amount of waste generated per unit of operating time.

Reduction of construction site waste

	Target	Actual
Landfill disposal rate of construction site waste	40%	30%

Control and Reduction of Chemical Substances

In accordance with PRTR Law (Law concerning Reporting, etc. of Release to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management), JFE Engineering has been controlling and reducing releases of designated chemicals.

Substances reported under PRTR (FY2003)
(Substances handled more than 1 ton per year at Tsurumi Center, Shimizu Works and Tsu Works)

(Unit: kg)

No	Substance	Releases				Transfers	
		Air	Public waters	Soil on-site	Landfill on-site	Sewerage	Off-site
1	Zinc compounds	0	0	0	0	0	470
30	Epoxy resin	0	0	0	0	0	26,544
40	Ethylbenzene	24,920	0	0	0	0	1,343
63	Xylene	80,769	0	0	0	0	5,151
230	Lead compounds	0	0	0	0	0	5,251
227	Toluene	49,049	0	0	0	0	3,427
232	Nickel compounds	0	0	0	0	0	2,020
311	Manganese and its compounds	0	0	0	0	0	30,720
Total		154,738	0	0	0	0	74,926
		Total releases 154,738				Total transfers 74,926	