

Yokkaichi Refinery

as of March 31, 2004

| | |
|--------------------|--|
| Address: | 1-1 Daikyo-cho, Yokkaichi-shi, Mie-ken |
| Start-up: | July 1943 |
| Total area: | 1,188,075m ² |
| Employees: | 321 |
| Capacity: | 155,000 barrels/day |
| ISO 9001: | February 18, 1997 |
| ISO 14001: | March 20, 1998 |



About Yokkaichi Refinery

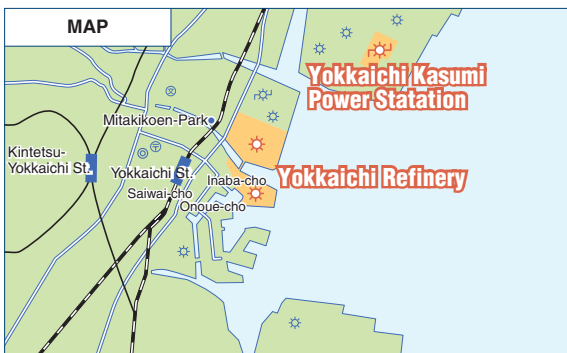
Yokkaichi Refinery is located in the center of Chukyo industrial area and plays a significant role as an important base in energy supply to cover a wide area including Chubu, Hokuriku and Kinki regions, as well as being Cosmo's only lubricating oil production base. From July 2003, Kasumi Power Station has been in operation and we made inroads into IPP business. Accordingly, we are a part of company's business expansion plan to become an integrated energy company. On the other hand, its location is blessed with nature, overseeing the Suzuka Mountain Range and the Bay of Ise. With residential areas nearby, we act with *environmental conservation of the community and earth* in mind and put efforts into symbiosis with local community. When constructing the Kasumi Power Station, we conducted an environmental assessment for four years and realized conservation of rare flora and fauna, as well as non-expansion of environmental impact. We put our best efforts into global environmental conservation. Apart from monthly voluntarily clean-ups, through hosting junior soccer school for local junior high school students, mothers' volleyball tournaments and other events for the local community association, we maintain close communication with the local community and operate as a refinery loved by the community.



Masatoshi Sawada
Director
Yokkaichi Refinery

Communication activity

- Regular maintenance briefings (participated by the local community associations and Chubu Region Citizens' Center)
- Hashikita district pollution/disaster prevention liaison meeting (participated by Hashikita district local community association, Hashikita District Citizens' Center and two Umaokoshi district corporations)
- Fishery cooperative and Cosmo Oil liaison meetings regarding IPP business and environmental conservation
- Community activities participated by employees: Mount Takahama Bishamon temple spring festival, mothers' volleyball tournaments, Inaba town grand golf tournaments, Hashikita district cultural festival, Kinsa Inari New Year's day festival and others



Award

Received an award from Mie prefecture high-pressure gas safety association for contribution to safety of high-pressure gas.

Number of staff holding environmental qualifications

| | |
|---|-----|
| Air pollution control manager | 17 |
| Water pollution control manager | 16 |
| Noise pollution control manager | 4 |
| Vibration pollution control manager | 3 |
| Dioxin pollution control manager | 3 |
| Hazardous materials officer (Class A & B) | 432 |
| High-pressure gas production safety manager (Class A & B) | 288 |
| Qualified person for heat management | 21 |
| Qualified person for electricity management | 5 |
| Specially controlled industrial waste manager | 6 |
| Engineering manager for disposal facilities of industrial waste | 6 |
| Boiler operator (Special grade) | 8 |
| Boiler operator (1st & 2nd grade) | 244 |

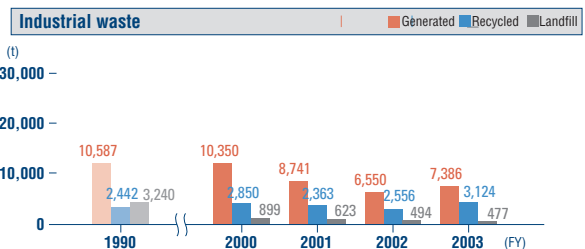
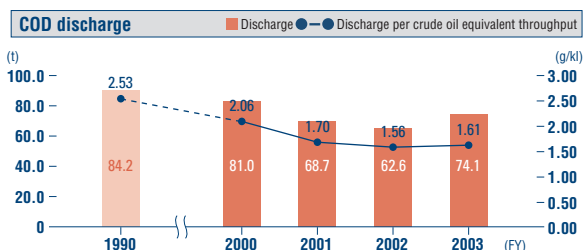
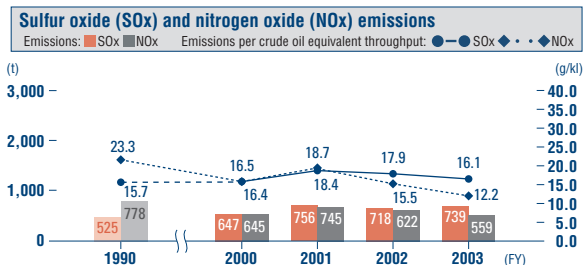
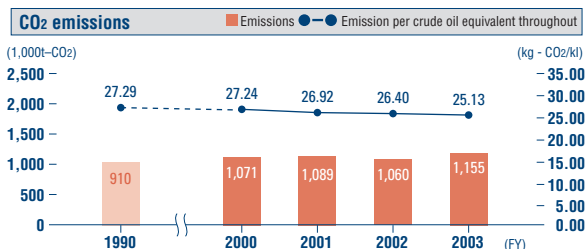
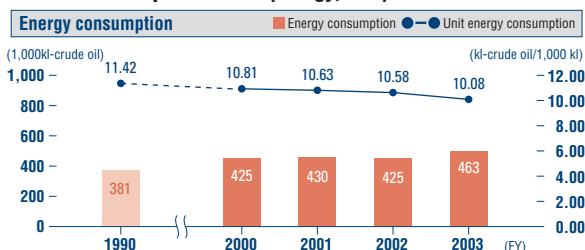
| | |
|---|------------------------------------|
| Number of refinery visitors in FY2003 | 69 times, 701 visitors |
| No accident record (total hours, as of Dec. 2003) | 6,829,000 hours |
| PCB custody | High pressure condenser: 59 |

Regulated pollutants

| Pollutants | Pollutant | Standard | Actual Performance in FY 2003 | |
|------------------|---|-----------|-------------------------------|---------|
| | | | Maximum | Average |
| Air pollutants | NOx (m ³ N/hour; total pollutant load control) | 80.8 | 57.4 | 34.7 |
| | SOx (m ³ N/hour; total pollutant load control) | 109.48 | 59.0 | 32.5 |
| | Particulate (boiler; g/m ³ N) | 0.049 | 0.047 | 0.024 |
| | | | | |
| Water pollutants | COD (kg/day; total pollutant load control) | 535 | 405.2 | 203.3 |
| | COD (mg/L) | 160 (120) | 10.0 | 4.6 |
| | SS (mg/L) | 200 (150) | 8.0 | 6.0 |
| | Oil Content (mg/L) | 1 | Below measurement threshold | |
| | Nitrogen (mg/L) | 15 | Below measurement threshold | |
| | Phosphorus (mg/L) | 1.5 | 0.08 | 0.05 |
| | Phenols (mg/L) | 1 | 0.10 | 0.10 |

Values in () are daily average.

Environmental performance (energy, etc.)



Environmental performance (PRTR)

Data includes Yokkaichi Kasumi Power Station

| PRTR listed substances | | Releases | | | | Transfers |
|-------------------------|---------|----------|-------|------|-------|-----------|
| | | Air | Water | Soil | Total | |
| 2-aminoethanol | kg/year | 0 | 0 | 0 | 0 | 0 |
| Ethyl benzene | kg/year | 360 | 0 | 0 | 360 | 0 |
| Xylene | kg/year | 1,500 | 0 | 0 | 1,500 | 0 |
| 1,3,5-trimethyl benzene | kg/year | 1.5 | 0 | 0 | 1.5 | 0 |
| Toluene | kg/year | 4,500 | 0 | 0 | 4,500 | 0 |
| Nickel compounds | kg/year | 0 | 0 | 0 | 0 | 15,000 |
| Hydrazine | kg/year | 0 | 0 | 0 | 0 | 0 |
| Benzene | kg/year | 1,500 | 0 | 0 | 1,500 | 0 |
| 1,2-dichloroethane | kg/year | 0 | 0 | 0 | 0 | 0 |

Kasumi PS environmental performance

| Air pollutants | Substance | Emissions | Industrial waste | Generated (t/year) | 2,923 |
|------------------|--------------|-----------|--------------------------|-------------------------------|-------|
| | NOx (t/year) | 68 | | Recycled (t/year) | 2,923 |
| | SOx (t/year) | 77 | | Sent to landfill (t/year) | 0 |
| Water pollutants | Substance | Emissions | Energy consumption | 10,000kl-crude oil/year | |
| | COD (t/year) | 0.3 | Carbon dioxide emissions | 30,000t-CO ₂ /year | |

Environmental accounting

Data includes Yokkaichi Kasumi Power Station

| Environmental costs (million yen) | | | |
|-----------------------------------|---|--------------|--------------|
| Item | | FY 2003 | |
| | | Investment | Expenditure |
| Business area | Pollution prevention | 6,969 | 2,235 |
| | Global environmental conservation | 2,551 | 2,678 |
| | Resource circulation | 0 | 174 |
| Up/Down-stream | Green Purchasing | 0 | 0 |
| | Reduction of environmental impact of products | 269 | 4,394 |
| | Sulfur reduction of products | 113 | 2,638 |
| | Substitution of toxic substances in gasoline | 156 | 1,756 |
| Management activity | | 128 | 125 |
| Research and development | | 0 | 0 |
| Social activity | | 0 | 0 |
| Total | | 9,917 | 9,606 |

Purchasing recycled paper: 1 million yen

Data includes Yokkaichi Kasumi Power Station

| Economic benefits (million yen) | | | |
|--|--|------------|--------------|
| Item | | FY 2003 | |
| | | Investment | Expenditure |
| Costs saved through energy conservation (cogeneration) | | | 855 |
| Gypsum sales income | | | 117 |
| Benefits of ammonium recycle facility establishment | | | 76 |
| Total | | | 1,048 |

Data includes Yokkaichi Kasumi Power Station

| Environmental benefits | | | |
|---|---------------------------------|---------------------------|--------------------------------|
| Item | | FY 2003 | |
| | | Concentrations/unit value | Impact |
| Business area | | | |
| Reduced resources input into business activities | | | |
| Energy input | 0.50 (kl-crude/1,000kl) | | -1,915 (TJ) |
| Water input | 50 (kg/kl) | | -2,691 (1,000t) |
| Reduced emissions and waste generation | | | |
| Emissions to air: | | | |
| CO ₂ | 1.26 (kg-CO ₂ /kl) | | -125 (1,000t-CO ₂) |
| SOx | 1.8 (g/kl) | | -99 (t) |
| NOx | 3.3 (g/kl) | | -4 (t) |
| Benzene | 0.00 (g/kl) | | 0.00 (t) |
| Emissions to water: | | | |
| CO ₂ | -0.05 (g/kl) | | -11.8 (t) |
| Industrial waste: | | | |
| Generated | 2 (g/kl) | | -3,759 (t) |
| Recycled | -4 (g/kl) | | -3,491 (t) |
| Landfill | 2 (g/kl) | | 17 (t) |
| Up/Down-stream benefits | | | |
| Reduced environmental impact of products | | | |
| Reduced sulfur content in products | (sulfur content: mass %) | | (potential SOx: t) |
| High octane gasoline | 0.0000 | | 0 |
| Regular gasoline | -0.0001 | | -7 |
| Naphtha | 0.0000 | | 24 |
| Jet fuel oil | 0.0000 | | -1 |
| Kerosene | 0.0001 | | -4 |
| Diesel fuel | 0.0255 | | 419 |
| Heavy fuel oil A | 0.0109 | | -316 |
| Heavy fuel oil C | -0.0210 | | -136 |
| LPG | 0.0002 | | 1 |
| Total | 0.0294 | | -20 |
| Reducing benzene in gasoline | 0.0010 (vol %) | | -483 (t) |
| CO ₂ emissions from product use | -0.0011 (t-CO ₂ /kl) | | -900 (1,000t-CO ₂) |

* Environmental Impact is increased in most of items; one of the reasons for this is that environmental impact from Yokkaichi Kasumi Power Station is added to FY2003 loading figure (Concentration/unit is calculated without the environmental impact of Yokkaichi Kasumi Power Station).