# Stopping Global Warming

As a manufacturer, the KUBOTA Group has placed special emphasis on its production process in implementing measures to prevent global warming. To add momentum to our group-wide activities to reduce $CO_2$ emissions from FY2010, we have set new medium-term goals and are concentrating our efforts on their achievement.

## Reducing $CO_2$ emissions

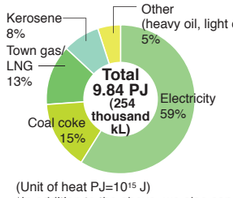
**Targets and results in FY2009**

| Main theme of activity | FY2009 targets | FY2009 results |
|---|---|---|
| ●$CO_2$ emissions | ●Decrease from the FY2005 level | A 12.3% increase over the 2005 level |
| ●$CO_2$ emissions per unit of sales | ●A 1% decrease over the previous year | A 12% increase over the previous year |
| ●$CO_2$ emissions during distribution per unit of sales | ●A 1% decrease over the previous year | A 1.9% decrease over the previous year |

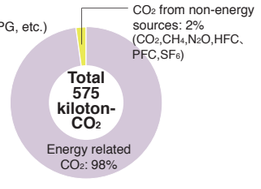
### Total energy inputs and $CO_2$ emissions

The total $CO_2$ emissions amounted to 575 kiloton-$CO_2$, up by 12.3% over the FY2005 level (up by 7.4% over the previous year), while $CO_2$ emissions per unit of sales increased by 12% over the previous year. In both cases, we failed to reach our targets.
The failure to meet these targets is partly attributable to the inclusion of an increased number of business sites (the KUBOTA Group companies' non-production sites) in calculating the amount of $CO_2$ emissions, and also due to the increase in the $CO_2$ emission factors of the electric power companies.
As a means of energy-conservation, we have replaced compressors, transformers, and lighting equipment with higher-efficiency models, and introduced inverter-based facilities in FY2009.

**Total energy inputs**

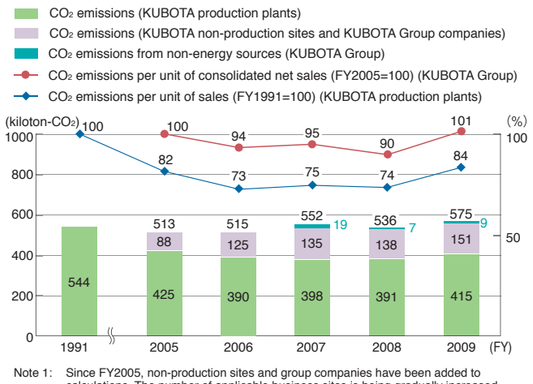



**$CO_2$ emissions**




(Unit of heat PJ=$10^{15}$ J)
*In addition to the above, we also consumed electricity generated in-house by cogeneration (1,850 MWh) and solar power (40 MWh).

### Trends in $CO_2$ emissions and $CO_2$ emissions per unit of sales

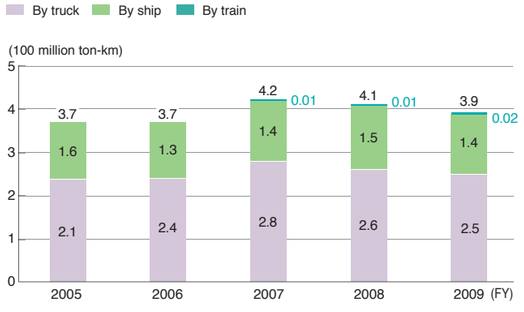



Note 1: Since FY2005, non-production sites and group companies have been added to calculations. The number of applicable business sites is being gradually increased.
Note 2: $CO_2$ emissions per unit of sales=$CO_2$ emissions/sales

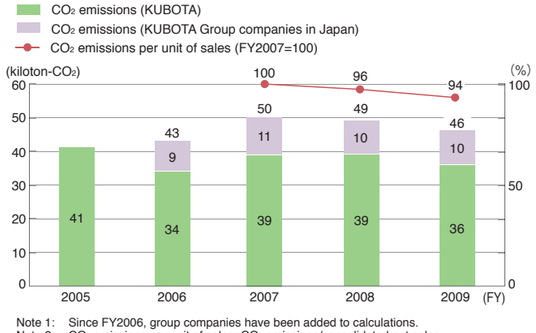
### $CO_2$ emissions during distribution (amount of freight shipped and $CO_2$ emissions)

390 million ton-km of freight were shipped in Japan in FY2009 and the amount of $CO_2$ emissions resulting from those shipments was 46 kiloton-$CO_2$, thus reducing the $CO_2$ emissions during distribution per unit of sales by 1.9% over the previous year.

### Trends in freight shipping




### Trends in total $CO_2$ emissions during distribution and $CO_2$ emissions per unit of sales




Note 1: Since FY2006, group companies have been added to calculations.
Note 2: $CO_2$ emissions per unit of sales=$CO_2$ emissions/consolidated net sales
Note 3: The values of FY2007 and 2008 have been recalculated following changes to the calculation method.

**For more detailed information on "Conversion Coefficient," access the following website:**
**http://www.kubota.co.jp/english/c-data/csr/2009.html**



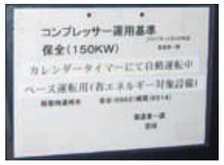
**Report from the front**

### Efforts to reduce electricity consumption by compressors under way at the Sakai Rinkai Plant

At the Sakai Rinkai Plant, various intensive measures have been implemented, led by the Energy Conservation Project Team, aimed at increasing energy conservation awareness among all employees, eliminating waste, and improving the operational efficiency of the facilities. Among these measures, the attempt to reduce electricity consumption through the use of compressors has proved to be the most effective.
In the past, the electricity required for the operation of compressors accounted for about 30% of all the electricity consumption at the plant. To reduce this ratio to 20%, we have taken the steps outlined below, and after one and half years, were able to achieve this goal (equivalent to a reduction of 213 t-$CO_2$/year). We remain committed to controlling the operation of the compressors to achieve greater efficiency and further reduce power consumption and $CO_2$ emissions.

**step1** Improve compressor operations (introduce scheduled operation)
**step2** Prevent air leaks (install main valves)
**step3** Introduce inverter compressors
**step4** Optimize air pressure (separate the high-pressure air and low-pressure air piping systems)

**Operational improvements**



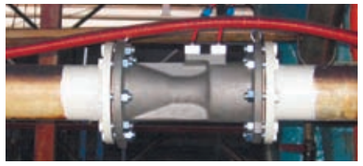

Management of the operation schedule

**Air leak prevention**

Detection of air leaks

Main valves installed

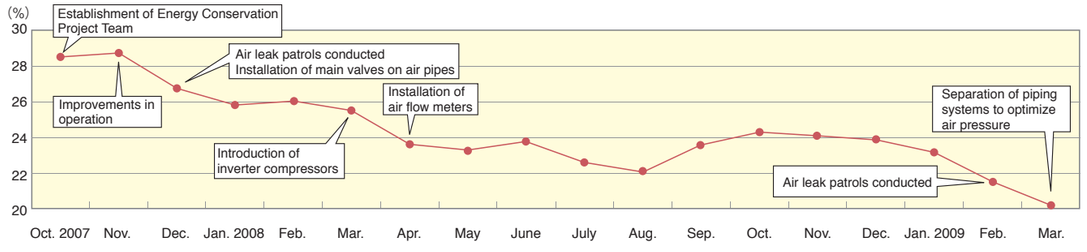
**Air flow measuring equipment in place**



Air flow measuring equipment

Air flow meters

**Changes in the ratio of electricity consumed by compressors to total electricity consumption at the plant**




**Highlight**

## New target for promoting more concentrated efforts to reduce $CO_2$ emissions

**Target: Reduce $CO_2$ emissions per unit of sales by at least 10% between FY2010 and FY2013**

As part of the worldwide efforts to prevent global warming, Japan is required to reduce greenhouse gas emissions by 6% from the 1990 level by the end of the first commitment period (2008-2012) as specified in the Kyoto Protocol.
We, at the KUBOTA Group, have been promoting measures to reduce $CO_2$ emissions focusing on energy conservation in our production process; in FY2009 we achieved a 32.3% reduction in $CO_2$ emissions per unit of sales over the 1991 level.
Our highest priority goal in promoting group-wide environmental preservation activities is "Stop Global Warming." In pursuit of this goal, one of the most important issues in addressing global environmental problems, we have set a new target to reduce $CO_2$ emissions per unit of sales by at least 10% from the FY2009 level by FY2013, and will continue our group-wide commitment to this.

### Changes in $CO_2$ emissions per unit of sales