Eco-factories

Eco-factory is a term we coined to signify efforts by the NEC Electronics Group to reduce the environmental impact of our factories through efficient use of resources, reduction of greenhouse gas emissions, reduction and regulation of chemical substances, reduction and recycling of industrial waste, and implementation of environmental risk management.

Efficient Use of Energy

Our energy strategy comprises activities to promote efficient use of energy.

The NEC Electronics Group is currently working to reduce the amount of energy it consumes, with the goal of reducing CO_2 emissions per real production unit to 75% or less of the fiscal 1990 level by fiscal 2010. Thus far, we have actively participated in efforts by the semiconductor industry to use energy efficiently by working to eliminate wasteful use of energy, and reexamining our manufacturing processes. We also work closely with production facility and incidental facility industries to promote energy conservation measures.

Also, in recent years we have been implementing energy-saving measures from the standpoint of improved productivity.

Improving efficiency of existing manufacturing lines

The NEC Electronics Group has prepared a booklet of energy-saving measures that is used and applied by all group companies.

In the first half of fiscal 2005, we achieved implementation of 80% of the measures. The booklet is updated every year; the latest update in February 2006 added eight new energy-saving measures. At present, we have completed implementation of 61 of the 82 tasks and are at work on the remaining 21 tasks.

Some of the energy-saving measures implemented by manufacturing lines

1. Introduction of high-efficiency turbo chillers and an optimal control system
2. Use of FFU (filter fan unit) air conditioning systems
3. Use of localized clean chambers
4. Introduction of energy-saving through-flow boilers
5. Introduction of energy-saving exhaust-treatment method
6. Introduction of inverters
7. Energy supply control during idling

Upgrade of chillers

The NEC Electronics Group plans to upgrade all factory chillers that contain specified CFCs. Besides using these ozone-depleting substances as refrigerants, conventional chillers are outdated and thus are unsatisfactory in terms of energy efficiency. Upgrading is anticipated to result in 20% or more improvement in energy efficiency per unit. This will help prevent depletion of the ozone layer while also contributing to energy conservation. Upgrading in group companies in Japan is almost complete. Plans call for completion of upgrading in all group companies in and outside Japan by fiscal 2008.

Improving efficiency of newer manufacturing lines

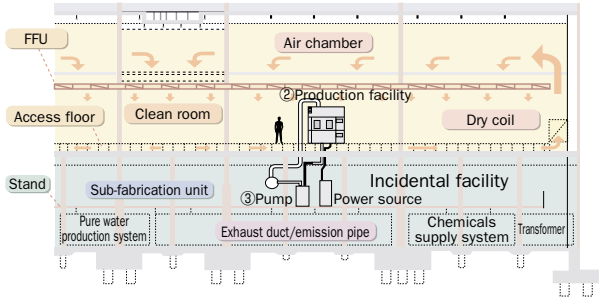
Recently, a mini-environment system was employed for a newly installed semiconductor manufacturing line. The system maintains a high level of cleanliness within a limited area of the clean room where products are handled, while lowering the cleanliness levels of other factory areas to increase energy efficiency. This system, combined with effective utilization of waste heat and outside air, helped cut energy consumption by 20% or more compared to a conventional system. The technology is also employed for the 300-mm wafer fabrication line installed at NEC Yamagata.

Some of the energy-saving measures implemented by new manufacturing lines

Introduction of high-efficiency systems and equipment

1. Large clean room and mini-environment system
2. Use of the latest energy-saving manufacturing equipment
3. Use of the latest model oilless pumps

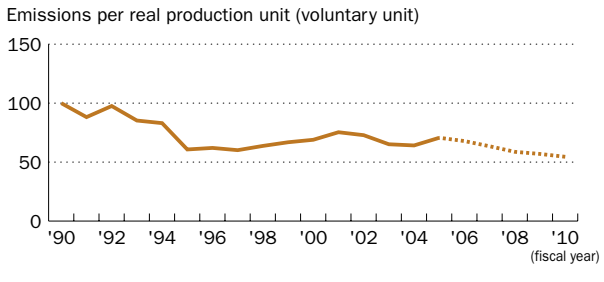
Schematic diagram of a new manufacturing line



Transitions in CO_2 emissions

During this past fiscal year, the rise in CO_2 emissions resulting from expansion of NEC Yamagata's 300-mm wafer line and decline in production output caused CO_2 emissions per real production unit to rise by 6.5 points.

Fluctuation in CO_2 emissions per real production unit



*Until 2001, we used the CO_2 conversion factor specified by Japan's Ministry of the Environment. Since fiscal 2002, we have used a fixed value (0.4t-CO2/MWh) to evaluate activity results.
*One real production unit equals the amount of CO_2 emissions divided by (output divided by the Bank of Japan's Domestic Corporate Goods Price Index figure for electrical machinery and equipment).