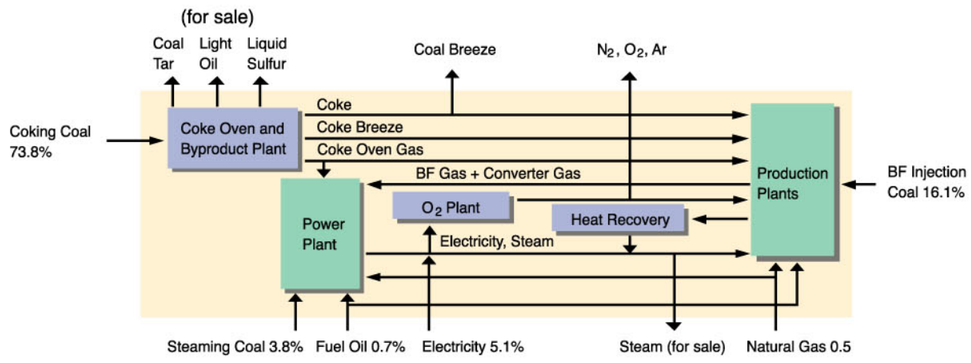
>> Energy and Water Resources

Energy consumption is a major cost for energy intensive industry. Use of energy generates waste gases which include particulates, SOx, NOx, CO_2, dusts and sludge, contributing to environmental load. CSC has taken energy conservation as a means to reduce costs and environmental loads since its establishment and has gained much experience and satisfactory results. Carbon dioxide is the major greenhouse gas discharged from the steel industry, mostly due to energy consumption. Hence, energy conservation has a lot to do with reduction of CO_2 emissions.

Composition of Energy Consumption

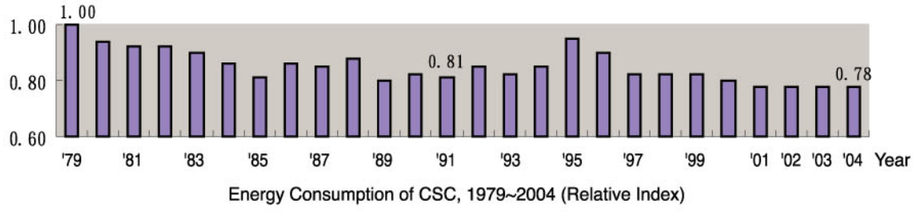
Metallurgical coal is a major energy source of CSC, amounting to 73.8% of its total energy consumed in 2004. Other energy inputs include injection coal for the blast furnace 16.1%, steaming coal 3.8%, fuel oil 0.7%, purchased electricity 5.1% and natural gas 0.5%.

Fuel gases, originating from metallurgical coal and injection coal, are generated in the coke ovens, blast furnaces and converters of CSC. These self-generated gases are used in various production plants with remainder used in a co-generation power station to improve the overall energy efficiency. Byproducts of the energy system such as coal tar, light oil, coke breeze and steam, etc. are sold to external users. The composition of energy consumption at CSC in 2004 is shown in the following chart:



Current Status and Trend

In 2004, CSC consumed 5,661 Mcal of energy for each tonne of steel products produced (5,267 Mcal per ton of crude steel), which is 22% lower than that of 1979 in the beginning of its operation. The energy consumption trend of CSC over the years is shown in the chart below:



Energy Consumption of CSC, 1979~2004 (Relative Index)

CSC discharged 2.22 tonnes of CO_2 for each tonne of steel products (2.06 tonnes/tonne of crude steel) in 2004. The trend of CO_2 emissions over the years is similar to that of energy consumption.

Examples of Energy Conservation and Reduction of Greenhouse Gases

A. Improved Large Pump Efficiency in Water Plants

After a thorough check among all large pumps in water plants, it was found that carbon steel turbines of Phase I and Phase II pumps were old and rusted, causing a low efficiency. Therefore a schedule is made to change all carbon steel turbines into stainless steel turbines in 3 years time. By end of 2004, 25 sets of pumps have been renewed, which will save as much as NT$12,370,000 a year on electricity. Thirty-nine sets are yet to be renewed, and once it is done another NT$19,300,000 will be saved per year with pump efficiency increasing from 68% to 78%.

B. In the Steel Rolling Plant

To better distribute energy and to improve operation technology in the power plants and steel rolling plants, a few measures are taken: unstable fuel gas COG is given to use in the reheating furnaces in steel rolling plants, and it is encouraged not to use fuel oil; furnaces in the power plants increase use of fuel gas generated from BF and BOF, reduction of off-peak self-generated electricity, and occasional supply of natural gas, etc. The results show that CSC in 2004 used only 62% of fuel oil consumed in 2003, 20% less than peak-consumption amount in the previous years. Wise use of self- generated fuel gas is not only energy saving, but also a good method to reduce cost and air pollution.

Water Conservation

CSC is an integrated steel mill that stays in high temperature and needs an enormous amount of water for cooling, rust removal, lubrication, dusting and other environmental purposes. Water comes from Tung Kang River, supplied through Feng Shan Water Supply Plant, Taiwan Water Corporation. In 2004 CSC needed a daily use 7.2 million cubic meters of cooling water, but after several improvement projects that encourage water efficiency and reuse, CSC only uses 165,000 cubic meters of water per day with a 97.6% recycling rate. Water-saving measures include reduced equipment water; recycling and reuse of cooling water; water discharged from cooling towers and industrial effluent is recycled and reused for secondary water system such as coke quenching, BF slag water-quenching, stockpiles, spray on roads, environmental protection, greening, and even water from BOF sludge can be recycled and reused for sintering process, optimizing multiple uses of water resources. CSC used 10.33 cubic meters of water for a ton of steel liquid in the beginning phase, and in 2004 the ratio has dropped to 5.30 cubic meters for a ton. Recently the company is exploring the possibility of using effluent for process makeup water to further increase water efficiency.

Water Pollution Control

A. Current Status and Trend

In 2004, effluent COD is 41.0mg/L, Suspended Solids (S.S.) 4.4mg/L, which is far lower than 1998 effluent standard (COD＜100mg/L，SS＜30mg/L). It is expected that once the newly established biochemical waste water treatment plant with O_3 oxidization equipment starts operation, water quality can be stabilized and even better.

B. Measures of Water Pollution Control

Effluent quality at present conforms to national effluent standard. The future water pollution prevention strategy will focus on existent equipment management and installation of backup facilities to increase operational flexibility and better water quality. Projects inaugurated in 2004 such as settling tanks in the industrial waste water treatment plant and treatment equipment of storm run-off wastewater collected from raw material stockpiles are scheduled to start operation in 2005. Scheduled projects in 2005 are improvement of aeration basin and construction of equalizing basin and emergency storage basin in the biochemical waste water treatment plant.