



Corporate Environmental Report

Energy

Scale deposit on condenser tubes reduces the heat transfer efficiency of chillers and increases energy consumption. By means of the Ball Technic System (BTS)TM a fully automated condenser cleaning system circulates slightly oversized sponge balls to scour off all scales and fouling.

At ST's Toa Payoh site in Singapore, in 1999 this resulted in chiller energy consumption reduction by an average of 20% or 170MWh per month, with savings of K\$ 120 per year.



Meet the most stringent environmental regulations of any country in which we operate, at all of our locations worldwide.

REGULATIONS

The corporate specifications for waste water and air emissions, the substitution of all ODS Class 1 in manufacturing and facilities, and the choice of EMAS, for instance, are examples of adopting and measuring against the most stringent regulations.

On a regular basis, the Corporate Environmental Working Groups (CEWG) who manage the environmental priorities of the Company, strictly control this subject and issue the environmental standards to be adopted by the entire corporation.

Reduce total energy consumed per million dollars of standard production value by at least 5% per year.

ENERGY

Energy saving and reduction of greenhouse gases emission are amongst the highest environmental priorities of the Company. ST acknowledges the importance of the Kyoto Protocol commitment and began its project to reduce greenhouse gas emissions in 1996, shortly after the signing of the EPA Memorandum of Understanding. Since 1996, ST has focused on defining corporate-wide emission reduction goals and on developing a clear technical roadmap for achieving these targets at all ST sites around the world. In particular, the Company focuses on the improvement of energy efficiency and reduction of PFC emissions to meet its rigorous goals.

NEW

Continue to reduce total energy consumption for million dollars of added value by at least 5% per year.

ELECTRICITY CONSUMPTION PER MILLION \$ OF STANDARD PRODUCTION VALUE



The Company strongly believes that energy efficiency offers an important source of competitive advantage over inattentive competitors. Energy efficiency not only protects the environment, but can also increase profits, improve yield, reduce construction cost and enhance human performance while attracting the attention of the public.

Today, at ST, it is calculated that energy efficiency actions will enable the Company to save some 50% of the electricity that ST would need in the year 2010 at the current efficiency level.

- In our Singapore (Toa Payoh) plant, chiller pump motors are operated at minimum speed to pump chilled water based on demand flow rate. The reduced operating speed cuts the energy consumed by 50%. This represents 530MWh per year or 1% of the total plant energy consumption. In the same plant, the final rinse de-ionized water is heated to 50 degrees by the air conditioning hot refrigerant instead of the use of electrical heaters representing a saving of 25MWh per month.
- At the Company's Malta plant, heat recovery units have been installed on the air compressors. Following an investigation of the operation of the heat recovery unit, the temperature and flow of heated water was set so that the amount of diesel consumed by the site was reduced from a yearly consumption of 446,950 liters to 216,140 liters in 1999, bringing a savings of \$95,000.

Utilize alternative or renewable energy sources to a meaningful degree (at least 3 pilot plants by end 1999).

ENERGY AND CO2 EMISSION REDUCTION

ST has set a series of very precise goals regarding energy saving and greenhouse gases emission reduction. Four main factors have been determined: improvement of the energy consumption of factories through widespread action in everything which uses electricity; adopting alternative energy sources such as cogeneration which generates energy in an efficient way; using renewable energies; and through reforestation.

In 1999, the Company used 1300GWh of energy, equivalent to the consumption of a city the size of Venice in Italy.

Through this consumption, ST was indirectly responsible for emitting about 660,000 tons of CO₂. If the Company continues to grow at an average rate of 15% per year, without taking corrective measures, it is estimated that by the year 2010 energy consumption will rise 6200 GWh. The resulting CO₂ emissions would equal the total of all fossil fuels burned in the Republic of Malta.

NEW

Alternative energies: adopt, wherever possible, alternative energy sources such as cogeneration and fuel cells

The goal at ST is to keep consumption down to 3,500GWh, nearly enough to supply a city the size of Lyon in France. If the Company can reach the goal set by the new Decalogue for the period 1994-2010, savings of 18 GWh, and almost \$900 million will result.

NEW

Renewable energies: increase their utilization (wind, photovoltaics and thermal solar) so that they represent at least 5% of our total energy supplies by end 2010.

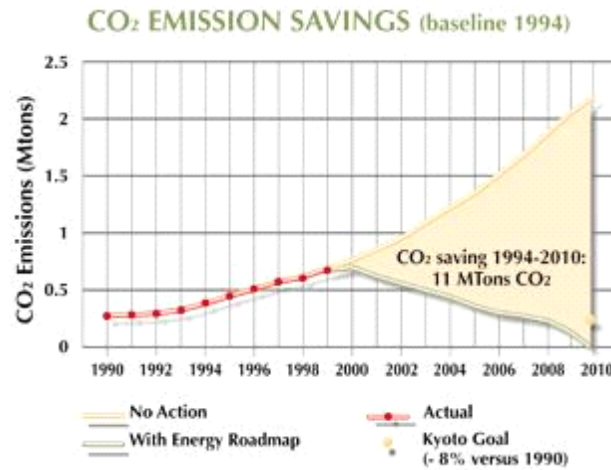
Not only will this have an immediate effect on the Company's profits, but will allow ST to reduce the energy consumption per million dollars of production value by a factor of three versus the 1990 Kyoto Protocol baseline. If the improvement in energy mix foreseen for 2010 is achieved (65% cogeneration, 30% conventional, 5% renewable), the Company's CO₂ emissions per million dollars of production value will drop from nearly 500 emitted in 1999 to only 80 tons in 2010.

NEW

CO₂ : reduce total emissions due to our energy consumption by a least a factor 10 in 2010 versus 1990.

Finally, the Company will carry out plans for reforestation to reach the environmental neutrality goal by 2010 by planting sufficient trees to sequester an amount of CO₂ equivalent to remaining emissions (about one million tons). Reforestation will mainly take place in tropical countries where the sequestration capacity of trees is greater and land costs are lower. However we aim to carry out some 10% of the work, if economically possible, in countries where we have a presence: Italy, France, Morocco, Malta and the United States, for instance. The size of the area planted with trees will be about 350 Km², an area equivalent to half the size of Singapore.

The overall effect on the environment will be savings of 11 million tons of CO₂ during the period from 1994 - 2010.



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