

RASHTRIYA CHEMICALS & FERTILIZERS LTD., TROMBAY UNIT

ENERGY CONSERVATION

1. THE COMPANY PROFILE

Rashtriya Chemicals and Fertilizers Limited, Chembur, a Government of India Undertaking is one of the largest integrated Fertilizer and Industrial chemicals complex in the country. It was incorporated on 6th March'1978 on reorganization of the erst-while Fertilizer Corporation of India Ltd. and National Fertilizer Limited.

RCF has always selected the best available technology at the time of inception of every plant and followed it up with up-gradation from time to time to improve energy efficiencies and make the plants ecofriendly and competitive.

The first phase plants of Trombay Unit are Ammonia, Urea, Complex Fertilizer Suphala (15:15:15) Sulfuric Acid and Nitric Acid were commissioned in October-November, 1965. In the second phase, Methanol Plant was put up in 1966 which was known as Trombay II diversification. This was followed by further diversification schemes, which included Ammonium Bicarbonate Plant, Sodium Nitrite/Nitrate Plant, Methylamines Plant, Concentrated Nitric Acid Plant, and Phosphoric Acid Plant.

Further expansion in terms of Nitric Acid Plant, Complex Fertilizer Ammonium Nitrate Phosphate (20.8:20.80:0), additional Steam Generation and Water Treatment Plant, Bagging and Effluent Treatment Plant was commissioned in 1979. This was termed as Trombay-IV expansion. In 1977 further expansion (Trombay-V) was launched which had one Ammonia and one Urea Plant with Associated Gas Compressor, Steam Generation, Water Treatment and Bagging Plant. This project was commissioned in 1981. The main products and their present installed capacities are given in the Table below:-

Installed Capacities of RCF Plants

	<u>Plants</u>	<u>Present Capacity</u>	<u>Year of Commissioning</u>
A.	<u>Trombay-I</u>		
	Ammonia (Revamped)	350	1965
	Nitrophosphate (15:15:15)	1100	1965
	Sulphuric Acid (DC DA)	300	1966
	Nitric Acid	320	1965
B.	<u>Trombay-II</u>		
	Methanol (Revamped)	150	1966
C.	<u>Trombay - III (Diversification)</u>		
	Ammonium Bicarbonate	12	1968
	Sodium Nitrate/Nitrite	12	1972
	Methylamines	12	1974
	Conc. Nitric Acid	60	1972
	Phosphoric Acid	100	1975
D.	<u>Trombay-IV</u>		
	Ammonium Nitrate Phosphate (20.8:20.8:0)	1200	1979
	Nitric Acid	750	1979
E.	<u>Trombay-V</u>		
	Ammonia	900	1981
	Urea	1000	1981

2. Energy Consumption:

RCF is a highly energy intensive unit, using the energy in the form of

- Associated gas,
- Electricity and
- Process steam.

Commissioning of Ammonia I syn Loop & other energy reduction programmes the power & Associated gas bills have reduced. The average electricity demand of Trombay complex during 2003 - 2004 was **2,46,284 MWH**. Associated gas which is used both as feed and fuel has annual consumption of the order of **398 Million SM³**. About 28717 MT of sulphur and 219619 MT of Rock Phosphate are also consumed annually.

- **The average annual fuel and Electricity bills are of the order of Rs. 106.47 crores & Rs. 93.37 crores respectively at the present rates of inputs.**

The annual energy bill for the R.C.F Trombay complex is given below in the table that follows:

	Total Electricity Bill (In Rs. Lakhs)	Total Fuel Bill (In Rs.Lakhs)	Total Energy Bill (In Rs. Lakhs)
2001-02	10689	12509	23198
2002-03	10072	11897	21969
2003-04	9337	10647	19984

3. Energy Conservation commitment, policy and set up.

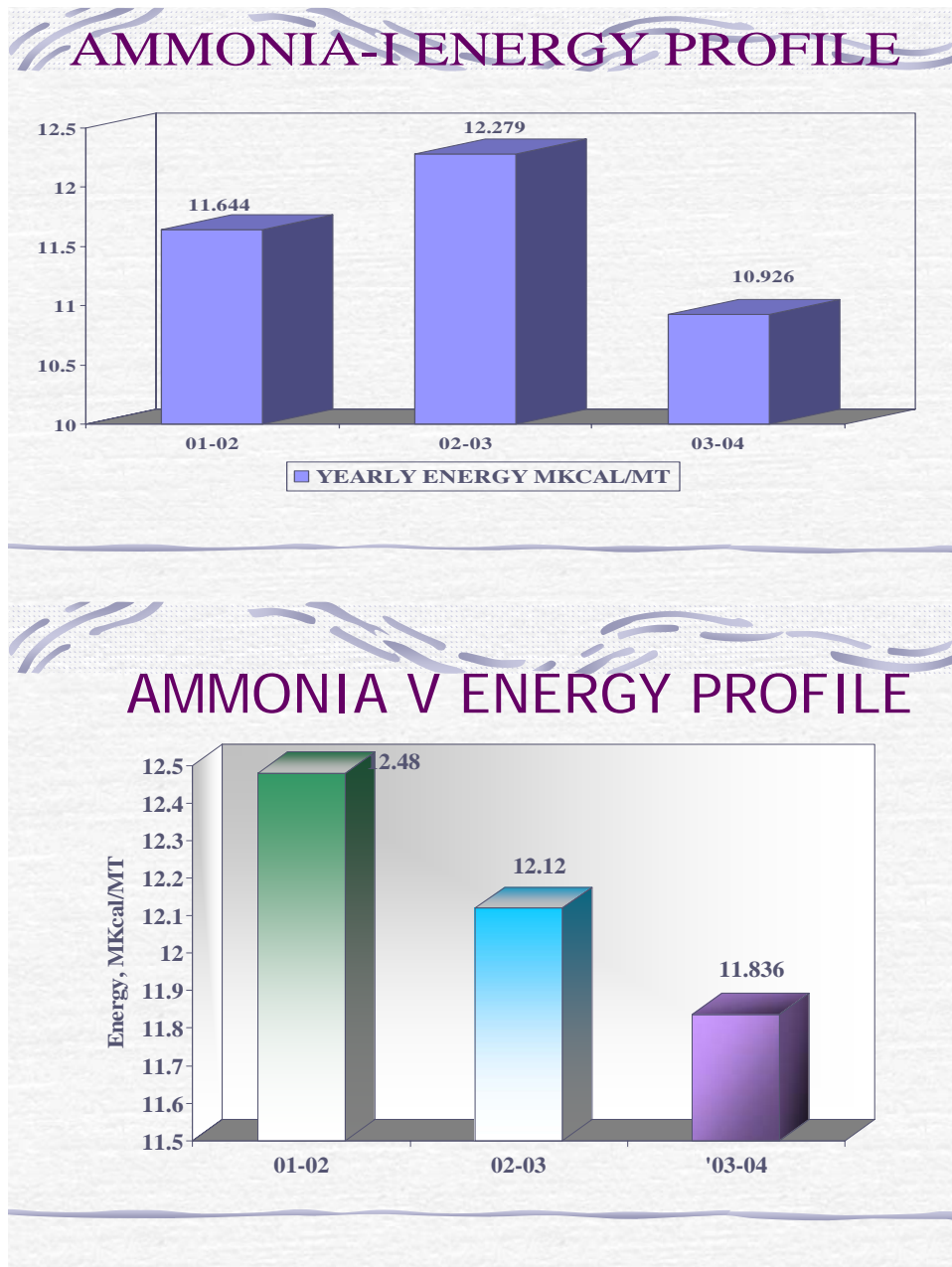
Considerable efforts have been made to reduce consumption of raw materials and energy in age-old energy intensive plants since beginning. A system of reporting and reviewing was initiated in order to optimise the energy consumption, raw material consumption as well as utility consumption.

An Energy Cell with qualified engineers and an Energy Manager has been set up to analyze the day to day energy consumption and variation in the factory. Jobs of carrying out energy conservation programs are also part of the energy cell. Regular reports are being generated to identify the areas of improvement with respect to energy conservation and also equipment's which are causing production constraints. On the basis of these reports, a number of proposals for energy conservation already have been under taken and implemented.

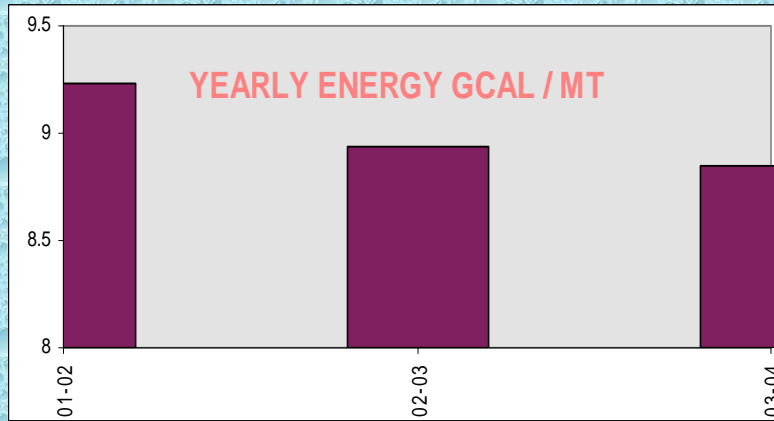
Energy conservation opportunities are usually identified based on energy audits, case histories of successful conservation measures implemented by other plants and through suggestions received from the operating and technical personnel etc.

4. Energy Conservation Achievements

A selected number of energy conservation measures over the last few years show continual improvements, which have given substantial energy savings. The graphical representations of these conservations are as given below:

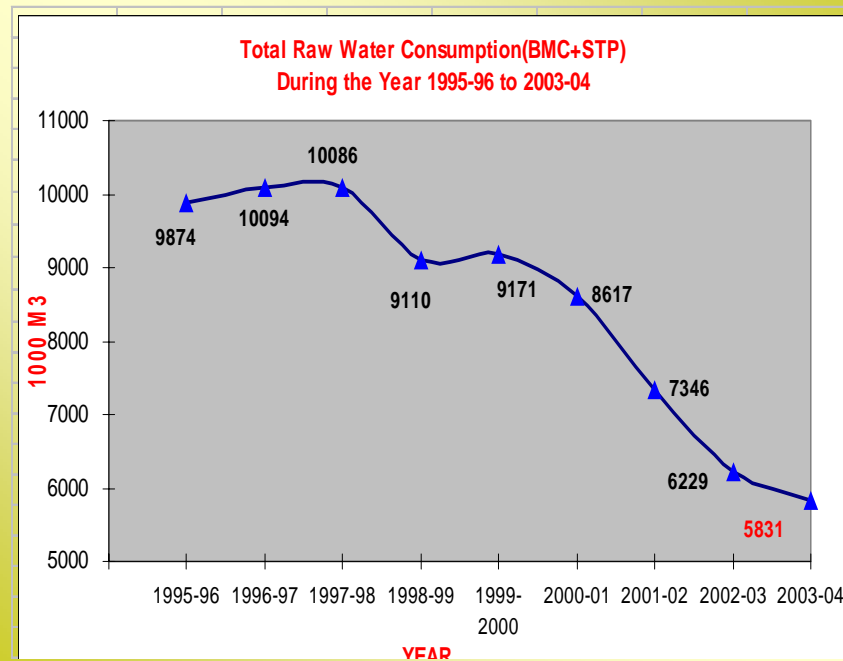


METHANOL ENERGY PROFILE

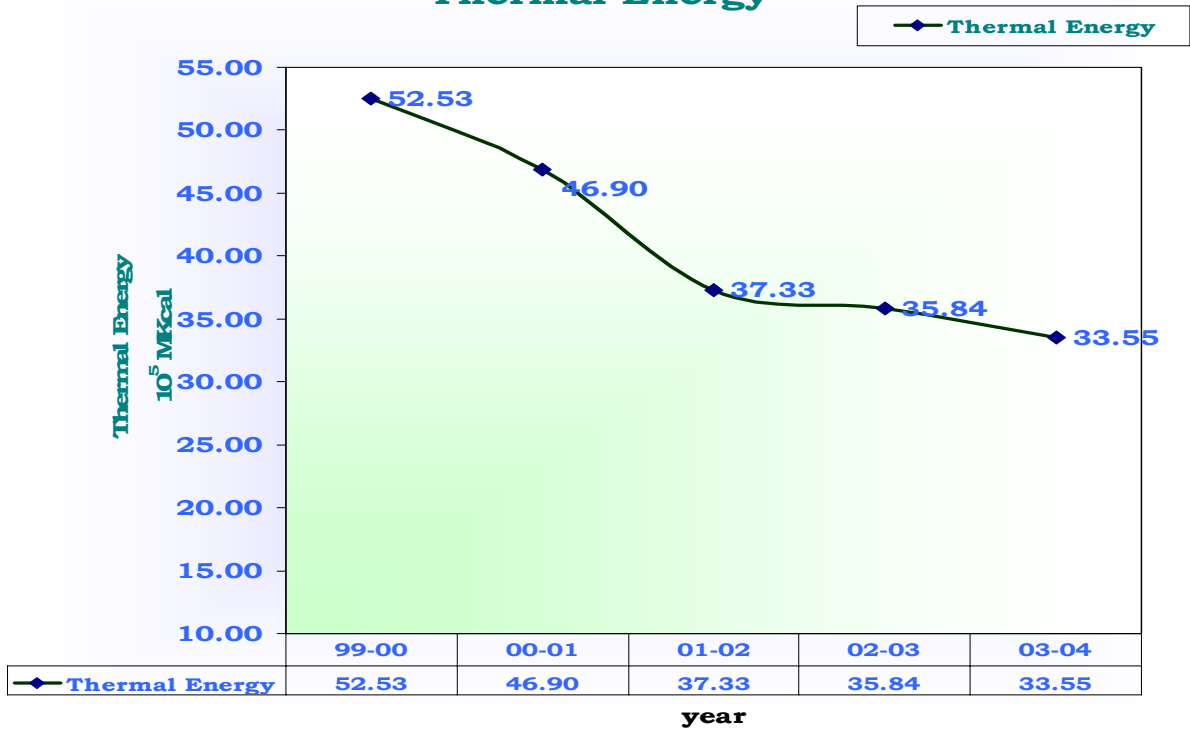


ENERGY REDUCED FROM 9.233 TO 8.85 Gcal / MT

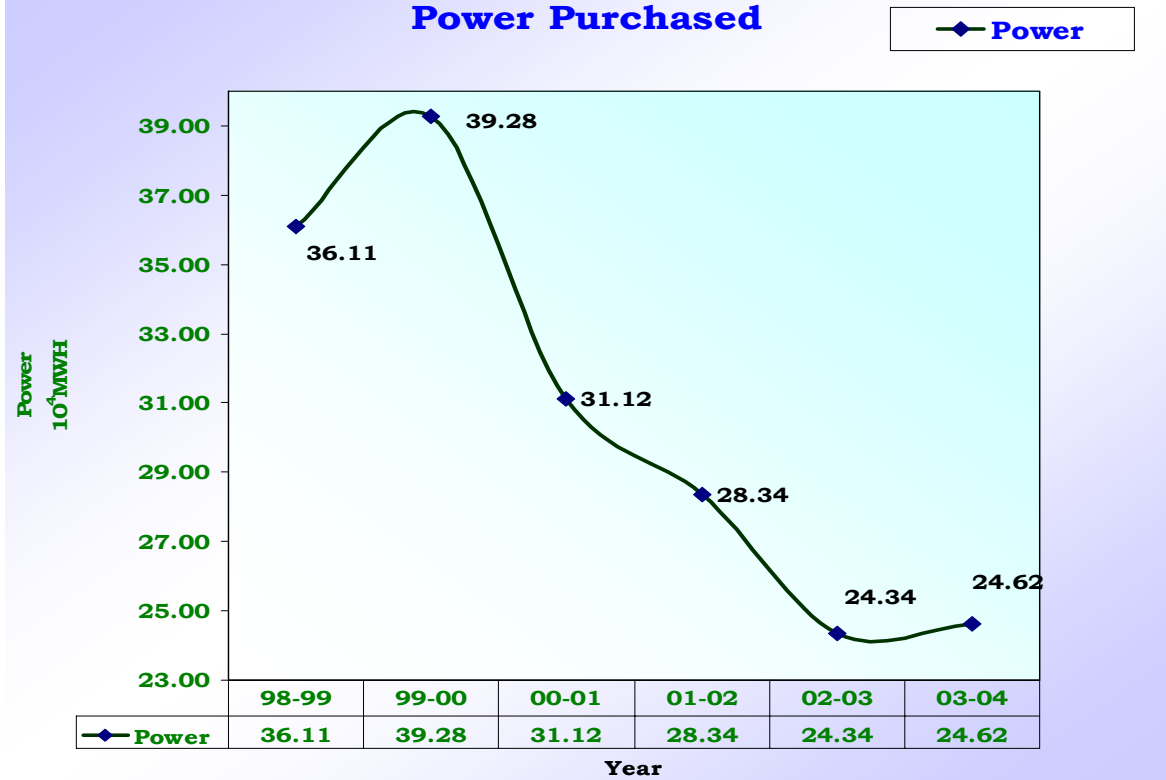
WATER CONSUMPTION



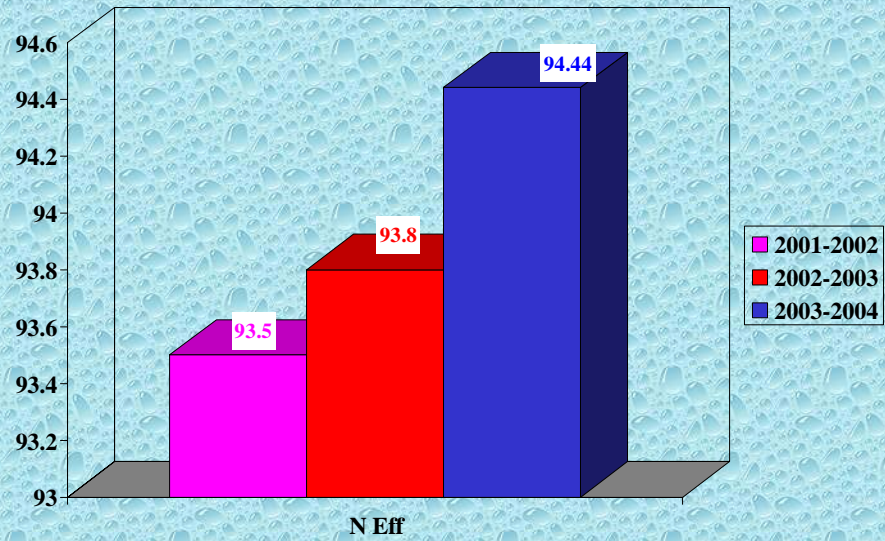
Thermal Energy



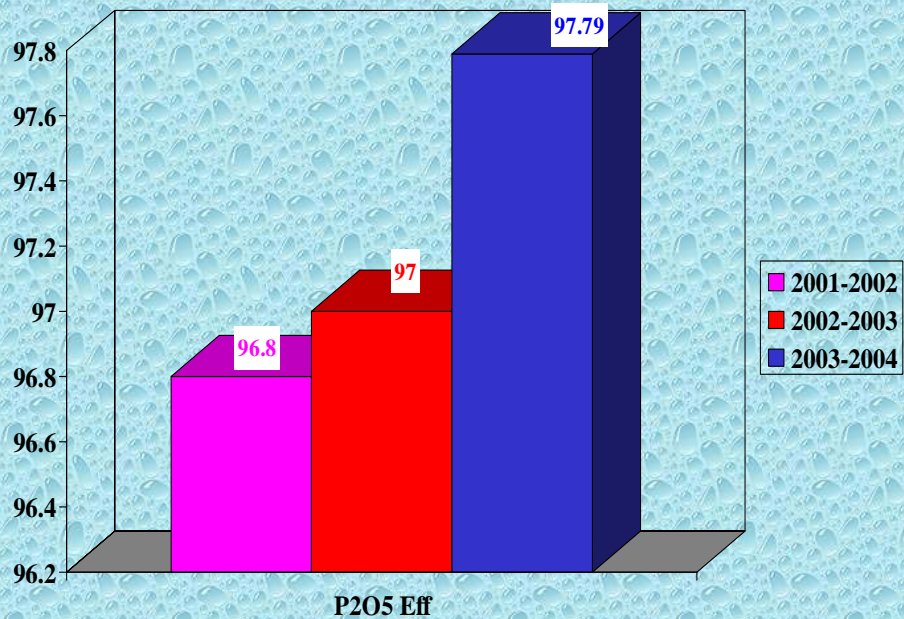
Power Purchased



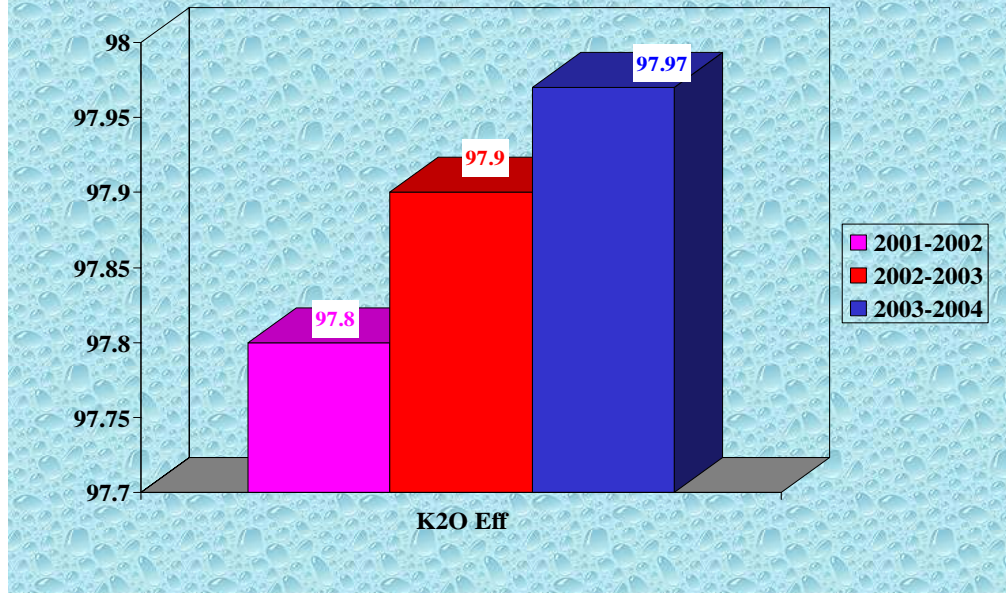
Improvements in Nutrient Efficiencies



Improvements in Nutrient Efficiencies



Improvements in Nutrient Efficiencies



4. ENVIRONMENT & SAFETY

The phenomenal industrial development that we witnessed over the past decade has brought enormous benefits at an almost incredible rate to meet the needs of growing population and providing them with better quality of life. However, this also has resulted in fast degradation of our environment. The evidences about the reality of acid rain, ozone layer thinning; depletion of bio diversity and global warming now convinces the vast majority of scientists, industry and government. In the light of above, efforts to reduce the environmental impacts resulting from industrial operation and services have been changing focus. Governmental promotion of traditional command and control approach which led industries to go for end-of-pipe treatment has been transformed to waste minimisation and other cleaner production approach. Similarly the wait and see attitude of many industrial establishments regarding environmental regulations and pollution control has been gradually moving towards the more proactive approach available through application of ISO-14001 and other Environment Management System (EMS) structures.

Rashtriya Chemicals and Fertilisers Limited (RCF), a Government of India Undertaking, began its operations in 1965 as Trombay unit of the erstwhile Fertiliser Corporation of India and became an independent company upon its re-organisation in 1978. Over the years, it has grown into two multi-plant complexes with a product range varying from fertilisers to basic chemicals. The company's operations started with a small group of plants at the Trombay Complex in Mumbai, while the giant size fertiliser plants at Thal complex, in Raigad district of Maharashtra, were commissioned in 1985.

RCF has always selected the best available technology at the time of inception of every plant and followed it up with technical upgradation from time to time to improve energy efficiencies and make the plants more eco-friendly and competitive. This has enabled the company to consistently comply with the growing number of stringent regulatory standards inspite of the fact that the first group of plants was commissioned way back in 1965.

Environment Management at Trombay Unit is a challenging task with the very fact that the unit is located amidst the crowded Chembur populi and also by the fact that our giant Trombay Complex manufacturers a wide range of Fertilizer products (Nitrogenous and Complex) and a host of intermediate and industrial products.

The major components in air emissions from RCF plants include, sulfur di-oxide, sulfuric acid mist, flourine, oxides of nitrogen, ammonia and particulate matter which are always maintained within the permissible limits stipulated by the Maharashtra Pollution Control Board (MPCB). This is ensured through proper selection of technology and incorporating appropriate additional abatement measures, wherever required.

With our aim to sustain our operations in an environment friendly manner we established an Environment Management System (EMS) which is ISO-14001 compliant.

ENVIRONMENT MANAGEMENT SET-UP

The overall environment management responsibility lays with the environment management cell led by Deputy General Manager assisted by a Chief Engineer and host of other engineers and technicians. At micro level the respective plant management has the ultimate responsibility of ensuring that the emission and effluents from each of their process activity are maintained well within the stipulated norms through pre documented operational control procedures. The centralised effluent treatment plant has been set up to ensure that all liquid effluents are treated and discharged as per the standards stipulated by the pollution control board.

ISO-14000 CERTIFICATION

At RCF, Trombay, We have established a committed system for environmental improvement and also achieved ISO-14000 certification for the system. Many chemical and fertilizer industries have already got ISO certifications. Environment Management System may be existing in industries in a rudimentary and

disorganized form. However following the ISO series requirements give following definite advantages to any organization:

Assuring all our customers of our commitment to demonstrable environmental management.

Enhancing the image of the company.

Improved cost control.

Conserving input materials and energy.

Maximum emphasis on prevention rather than corrective action

Evidence of Regulatory Compliance.

Process of "Continual Improvement"

It is the result of the RCF management's vision that RCF's plants today are equipped with technology and systems comparable with other similar plants in the world to minimise pollution levels to international standards.

Energy Management Policy



We, at Rashtriya Chemicals & Fertilizers Limited, Trombay Unit are committed to optimally utilize various forms of energy in a cost effective manner aimed at conservation of scarce energy resources. We shall strive to achieve our goal through :

- ➔ **Formulation of overall energy strategy & Targets.**
- ➔ **Adoption of energy efficient technologies/equipment.**
- ➔ **Close monitoring, controlling and reviewing the consumption of various forms of energy through an effective Energy Management System.**
- ➔ **All-round active participation of employees through Small Group Activities.**
- ➔ **Regular Energy Audits aimed to minimize energy losses.**

s/d

(N.K. Sharma)

Executive Director (Trombay)

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