

RASHTRIYA CHEMICALS & FERTILIZERS LTD.

Trombay Unit, Chembur, Mumbai (Maharashtra)

Unit Profile

Rashtriya Chemicals and Fertilizers Limited (RCF), a Government of India Undertaking, began its operations in 1965 as Trombay unit of the erstwhile Fertilizer Corporation of India and became an independent company upon its re-organization in 1978. Over the years, it has grown into two multi-plant complexes with a product range varying from fertilizers to basic chemicals. The company's operations started with a small group of plants at the Trombay Complex in Mumbai, while the giant size fertilizer plants at Thal complex, in Raigad district of Maharashtra, were commissioned in 1985. Presently the company is operating 21 plants at Trombay Unit and 14 plants at Thal Unit.

RCF always strives for upkeep of the plants through modernizing and upgrading technology. Revamping and de-bottlenecking is the secret that has kept the company thriving for four and a half decades. As part of modernization, RCF has recently modernized its Ammonia - I, Ammonia-V, Nitric Acid, Methanol and ANP plants. This has facilitated plants to sustain operations and meet technological challenges of improved efficiency, lower energy consumption and maintain environmental norms.



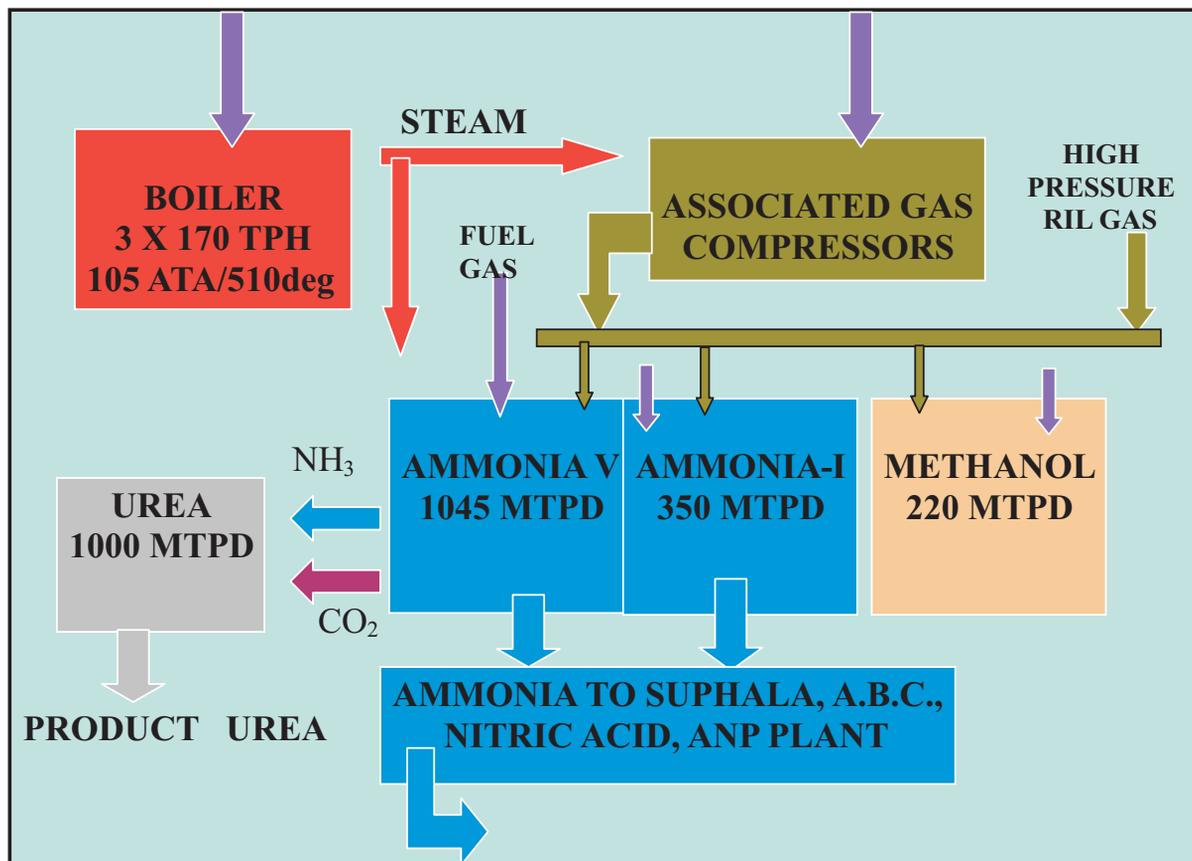
BIRD'S EYE VIEW - RCF TROMBAY UNIT

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 eco-friendly and competitive. RCF, Trombay Unit is accredited with ISO-9000 certificate for its quality Management System, ISO-14001 for its Environment Management System and OHSAS 18001 for Occupational Health & safety Management System.

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

- Associated gas
- Electricity and
- Process steam

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



Production of Major Plants in 2009-10 and 2010-11 in MT/Year

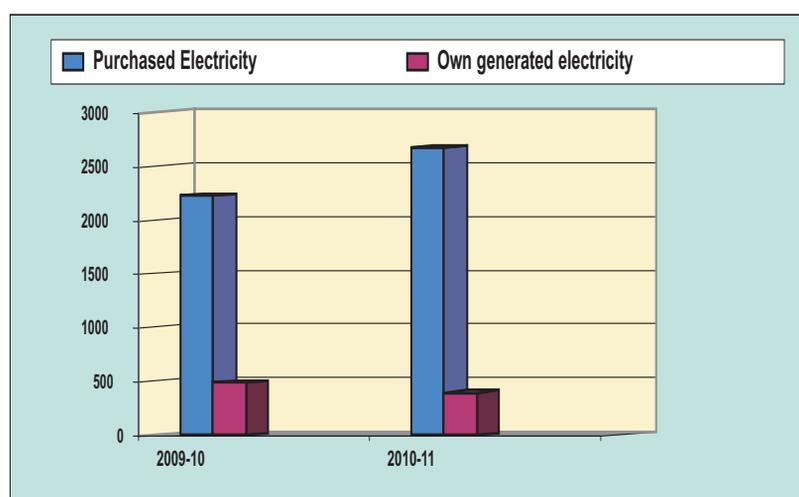
Name of the Plant	2009-10	2010-11
Ammonia-V	330235	320330
Ammonia-I	87856	97800
Methanol	44103	68700
Urea-V	306905	341090
Suphala	490000	447000
Ammonium Nitro Phosphate	17070	157935
Nitric Acid-IV	263105	254120
Nitric Acid-I	99710	108235
Sulphuric Acid	59753	77842
Phosphoric Acid	17040	27170

Energy Consumption

Electrical Energy Consumption for 2009-10 and 2010-11

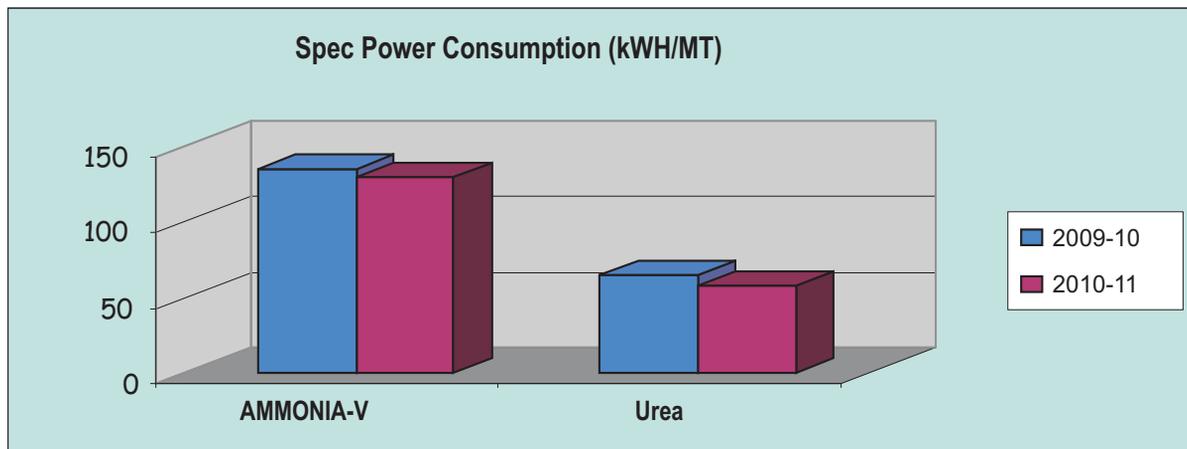
In Lacs kWh	2009-10	2010-11
Purchased Electricity	2224.32	2670.9685
Own Generated Electricity	493.04	393.56
Total Electricity Consumed	2717.36	3064.53

Total Electricity consumed by the unit can be attributed to the fact that production levels of many of the plants has increased. Also the new projects like ANP Granulation Unit, Rapid Wall Plant and Methanol Plant are commissioned during the year 2010-11.



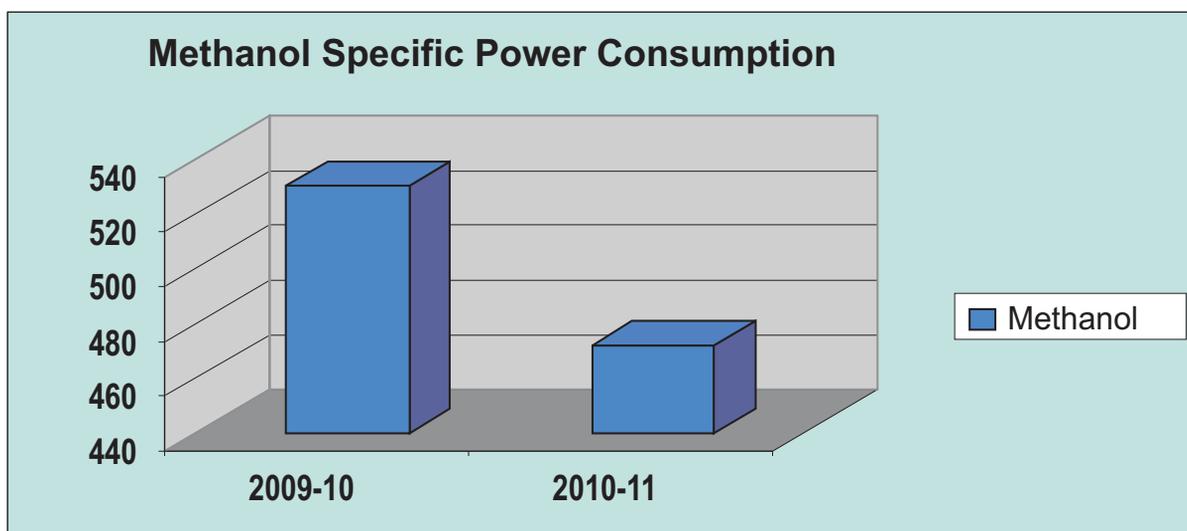
Comparison for Specific Power Consumption for Ammonia-V and Urea-V Plants

In kWh/MT	AMMONIA-V	Urea
2009-10	134.389	64.788
2010-11	129.496	57.815



Specific Power Consumption for Methanol Plant

In kWh/MT	Methanol
2009-10	530.282
2010-11	471.800



The electrical consumption of RCF Trombay unit has increased in 2010-11 as compared to 2009-10 which is mainly due to increased production of plants like Ammonia-I, Urea-V Methanol, ANP, Nitric Acid-I and Phosphoric Acid. In year 2010-11, Rapid Wall plant, ANP plant Granulation and Methanol plant revamp projects were implemented.

The Specific electrical consumption of Ammonia-V, Methanol and Urea-V plants has decreased as indicated in above graphs.

Energy Conservation Measures implemented in Financial Year 2010-11

1. Revamping of Methanol Plant to enhance production up to 220 + 10% MTPD with reduced specific energy consumption.

- In the revamp project, New HTAS Reformer with Steam – CO₂ Reforming was installed thereby reducing Fuel consumption and steam consumption due to low Steam-carbon ratio in the Reformer. The steam production of the plant has also increased due to installation of High Capacity Waste Heat Boiler coil.
- The Specific Gas (Feed + Fuel) consumption has reduced from 986 Sm³/MT (2009-10) to 951 Sm³ per MT (2010-11).
- The Specific Steam export increased from 0.9 MT (Pressure-12 atm abs, Temp- 260°C) per MT in 2009-10 to 1.42 MT (Pressure – 40 atm abs, Temp-400°C) per MT of Methanol produced in 2010-11.
- This has enabled to reduce Specific Energy consumption for Methanol production to 8.062 MKcal/MT from 8.924 MKcal/MT.

2. Connecting tails column bottom directly to slop water line in Methanol Plant

Earlier the bottom stream of the tails column was pumped to the Effluent Pit of the plant. The modification is made to connect this bottom stream directly to the slop water line going to the effluent pit. This has resulted in stopping of the pump and saving of electrical energy.

3. Energy Efficient Motor for Nitric Acid supply pump

Replacement of ordinary 22 KW / 3000 RPM motor by new energy efficient motor of same rating for Nitric Acid supply pump in Nitric Acid plant leading to saving in electrical energy.

4. Installation and commissioning of Vapour Absorption Machine (VAM) at inlet of Process Air Compressor (PAC)

- This has increasing Process Air flow to secondary reformer by 2000-2500 Nm³/hr as suction temperature of PAC reduced to 12-15° C against ambient temp 30-35° C. This has increased the throughput of PAC. and hence the

plant can be operated at optimum load. This has led to increase in plant production by about 25-30 MT per day.

- Specific energy of plant reduced from 10.65 Mkal/MT (2009-10) to 10.32 Mkal/MT (2010-11).

5. Provision of Two out of Three voting for critical TRIP SWITCHES in Ammonia-I plant. (Assuming 4 trips/annum)

- This has reduced tripping of plant due to false alarm and thus reduced losses due to such tripping of Ammonia-I plant. Saving of Associated gas to the tune of 2.3 Lacs Nm³ (in form of Feed, Fuel and Steam) and saving of Electrical Power - 5 Lacs kWh.
6. Provision of constant voltage stabilizer for plant lighting in Ammonia-I plant. This has led to savings in electrical energy.
 7. Replacement of existing Mine wool insulation by calcium silicate insulation of 105 ATA steam line for Boiler-I. This has led to savings in Steam to the tune of about 2 MTPD.
 8. Replacement of existing CS Galvanized drive shaft with composite fiber shaft of cooling tower fans in Ammonia-V plant. This has reduced the weight of drive shaft by 50%, and also led to saving of electrical power. In addition this shall increase equipment life and reduce vibrations.
 9. Three Steam trap were replaced with condensate pots in Urea Plant. The steam traps at LP decomposer, Waste Water Re-boiler, 1st Vacuum Evaporator were replaced. This has reduced losses of steam to the tune of 1-1.2 MT per hour.
 10. Installation of VFD for Ammonia Solution Recycle pump (P-607) (37 KW) in Urea plant. This has led to savings in electrical energy.
 11. Installation of VFD for Product Dryer (11 KW) in Ammonium Bi-Carbonate plant. This has led to savings in electrical energy.
 12. Installation of two number of VFD for slurry transfer pumps in Suphala plant. This has led to savings in electrical energy.
 13. Installation of 10 energy efficient motors in sulphur pit of Sulphuric Acid Plant. This has led to savings in electrical energy.

Energy Conservation Commitment, Policy and Set up

Considerable efforts have been made to reduce energy consumption of age-old plants making use of latest technology.

An Energy Cell with an Energy Manager and qualified engineers has been set up to analyze the day to day energy consumption levels in various process plants in the factory. Energy Conservation Opportunities are 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

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.

Date : 30.11.2005



(U. S. Jha)
Chairman & Managing Director

Environment & Safety

The integrated Quality, Environment, Health and Safety Policy is attached:

