

## Unit profile

The Rs. 75 crore IFFCO, Kalol Unit, located 26 kms. from Ahmedabad on the Ahmedabad Mehasana highway, started commercial production in April, 1975 in a area covering 96 hectares. The unit consists of plants to produce 1100 tpd Ammonia, 1650 tpd Urea, 6 tpd Dry Ice and 12 tpd Liquid CO<sub>2</sub> alongwith necessary offsite facilities. The natural gas and R-LNG are used as the feed stock for the manufacture of ammonia along with 250 tpd naphtha feed based pre-reformer system. Associated gas, naphtha and LSHS are used as fuels. Water is supplied by GIDC from 15 borewells around the Unit.

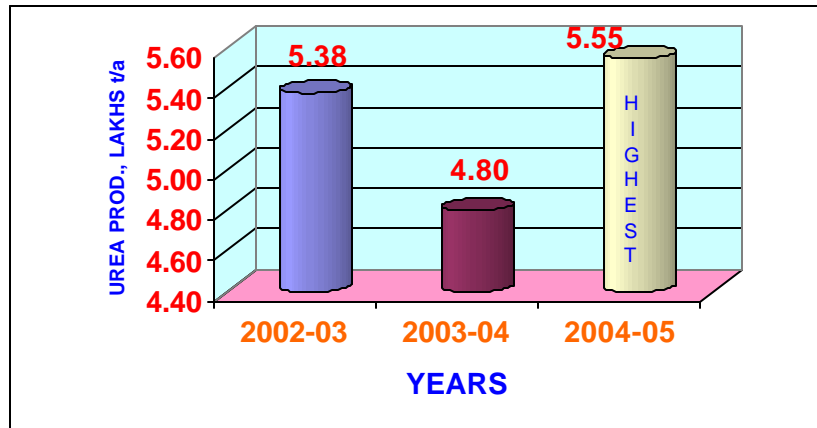
The Kalol unit produced 554507 MT of urea and 341946 tonne of ammonia during the year 2004-2005 attaining a capacity utilisation of 101.84 % and 94.20 % respectively. The production performance of kalol unit is steady improving is as shown below.

### ***Urea Production and capacity utilisation***

<b>Paticulars</b>	<b>Unit</b>	<b>2002-2003</b>	<b>2003-2004</b>	<b>2004-2005</b>
Urea Production	tonne/year	538096	479504	554507
Cap. Utilisation	%	98.82	88.06#	101.84

# Urea plant was shut down from 20/08/03 to 30/09/03 to spare ammonia for IFFCO Kandla for DAP production. Necessary permission for the same was obtained from Ministry of Chemical & Fertilisers, Department of Fertilisers, New Delhi vide letter Ref.No.DO.No.5197/JSM/03 dated 19<sup>th</sup> August 2003 and 22<sup>nd</sup> September 2003.

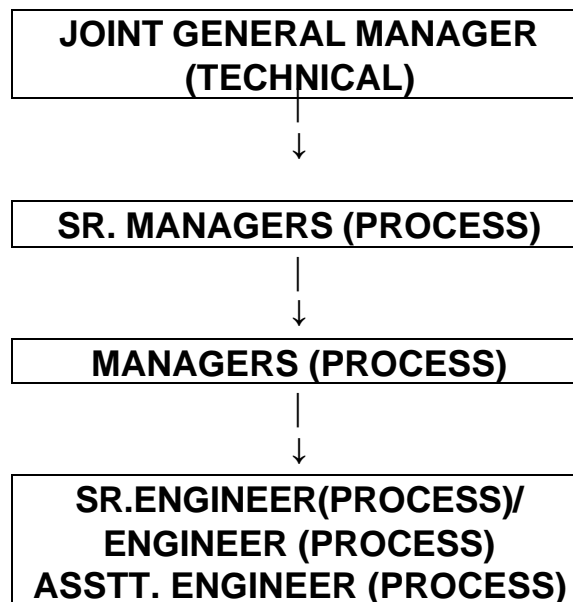
Production performance of urea plant is as under.



## **Energy Conservation Commitment, Policy and Set-up**

Process Engineering Section of Technical Department is the main internal agency for regular energy audit. Process engineering section is headed by one Joint General Manger, Two Sr. Manager and he is assisted by three Managers. At present, there are one Senior Engineer, one Engineer and one Asstt. Engineer working at Process Engineering Section.

### **Organisation chart of Process Engineering Section**



Process Engg. Section, IFFCO Kalol carry out energy audit on regular basis. Plant operation are studied in detail to identify the areas for reducing specific energy consumption and minimizing losses.

- Conducting in-house energy audit for the plant.
- Monitoring the energy consumption norms and corrective actions for the deviations.
- Development of human resource for the energy awareness.
- Adoption of improved technology for enhancing the energy efficiency, improving the productivity and the plant reliability.
- Creating the safe, healthy and energy conscious working environment.

## **Energy Conservation Plans and targets**

IFFCO Kalol unit is committed to further improve its energy performance by finding out new avenues on continuous basis. The Kalol unit is working on the following proposals as a part of its future plans for energy conservation.

Following schemes will be implemented in the year 2005-06 in ammonia plant to save 409600 Gcal per year.

- Heat recovery in offsite BFW coil.
- New ID fan, turbine for primary reformer in ammonia plant.
- LTS Guard bed + new BFW Preheaters.
- Improved shift outlet system.
- Two Stage aMDEA system for CO<sub>2</sub> removal in ammonia plant.
- Dry MU-gas (Ammonia wash) + Change MU point .
- S-50 converter incl 1st cat charge, intern electric SU-heater, MP boile.
- Syn gas compressor LP/HP modifications+New kickback.
- Modifications in ammonia refrigeration compressor.

## **Environment**

As a part of concern for cleaner environment and commitment for ISO– 14001 certification for both plant and township, following activities have been carried out during Year 2003-2004.

### **1. Water Conservation**

Final liquid effluent is utilized for gardening purpose within the plant premises so as to reduce raw water consumption.

### **2. Tree Plantation**

In order to develop cleaner & greener environment, 28.5 acres & 30.5 acres area are covered As green belt in plant & township respectively and 1 acres of land is covered as green belt during year in the plant. Also 1990 Nos. fruit plants and 4812 Nos. foresty plants have been distributed to near by villages during the year.

### **(3) Disposal of Biomedical waste :**

We have our own set up for bio medical waste treatment facility like autoclaving, chemical treatment and also disposal facility for sharpes (needles and blades) by burying in rectangular pit constructed as per the guidelines mentioned in clause of Biomedical waste rule 1998.

#### **(4) Solid Waste Disposal**

Sludge generated in effluent treatment plant (ETP) contains natural salt to Ca and Mg same is disposed off to GPCB approved land fill site at Ahmedabad. Spent catalyst are sold to GPCB approved vendors for reprocessing. Spent lube oil is collected and mixed with fuel oil to use as fuel in the boiler.

#### **(5) Vermicomposting System**

To avoid air and land pollution which was caused due to burning of solid waste, vermicomposting system for conversion of 350 kg/day of domestic and garden waste into organic manure has been implemented at IFFCO township during Aug.2002. As a part of it domestic waste is segregated. Bio-degradable waste after partial decomposition at vermicomposting site is shifted to vermibeds wherein special species of earthworms are utilized for further treatment of waste. The resulting manure rich in NPK is utilized for farming and gardening purpose.

Township of Kalol unit is the first as single identity in India which has been selected by USAID for ISO-14001 certification. IFFCO Kalol township has been awarded ISO-14001 certification for its Environment Management System by BVQI on 2nd June'2001.

Following schemes have been implemented during last three years to reduce the effluent and to reuse the same.

- Dust Extraction System in B & MH Plant.
- Non-Chromate based cooling water system.
- Installation of Sewage Water Treatment Plant at Township & reuse of treated water for gardening.
- Disc Oil skimmer
- Rain water recharging well.
- Use of effluent water for horticulture purpose.
- Ammonia recovery from flash tank condenser offgases.
- Recycle and reuse of effluent water for scrubbing of HCL fumes.
- Use of bulk effluent for horticulture purpose.
- Use of circulating cooling water for backwash of sand filters in place of raw water.
- Diversion of flash tank vapours to first evaporator scrubber

## Safety

Kalol Unit has won second prize "RUNNER-UP from NATIONAL SAFETY AWARDS 2003" under Scheme No.II (Manufacturing of Chemicals & Fertiliser Industries Group) at National Level. This is the highest award in Industrial Safety in India being given by Government of India.

Protecting the public in the vicinity and the employees from exposure to toxic, has been a keystone of the company's overall safety programme. It involves integrated approach to human safety that began with selection of proven manufacturing technology and extends through personnel training, protective equipment's usage, workplace monitoring, safety audit, inspection and transport precautions.

Safety audit and risk assessment surveys by safety specialists is being carried out every year to assess workplace hazards and to check the safety of operating persons and plants..

Employees exposed to hazardous materials are given proper protective equipment and trained how to use it during regular operations and in emergency situation. Upgrading of the safety appliances for improving the reliability of the personnel protection is a regular feature at our unit. Operation, Maintenance and Safe Handling procedures are written for various hazardous substances and are circulated to all the employees.

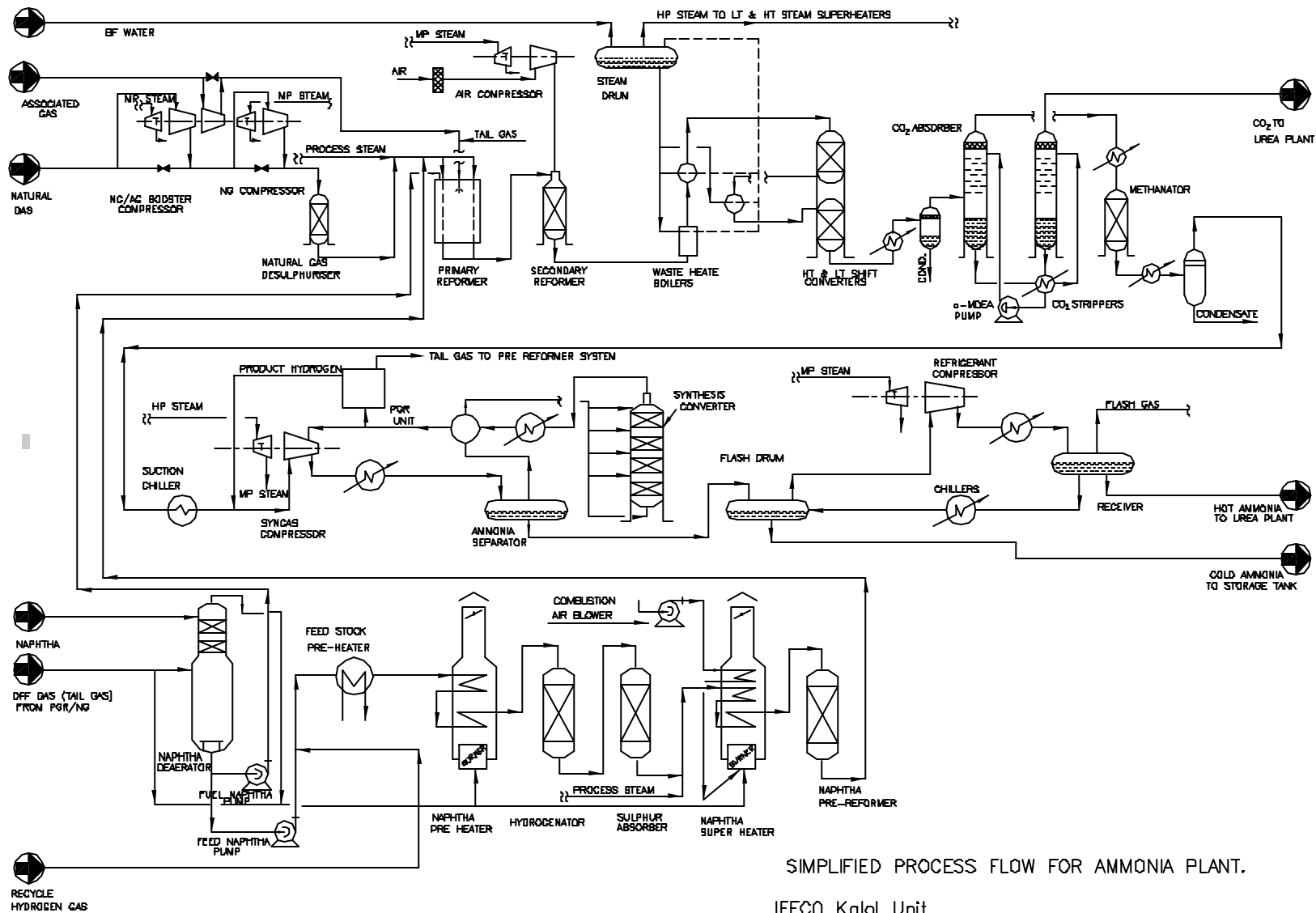
The safety philosophy and commitment is spelt out in our safety, health & environment policy duly issued by the Managing Director of IFFCO. The policy is widely circulated to all employees and is also binding on the contractor and is a contractual obligation.

Safety, health and Environment control are responsibilities of all levels of management and Employees and they are considered collectively as one of the measures for their career development.

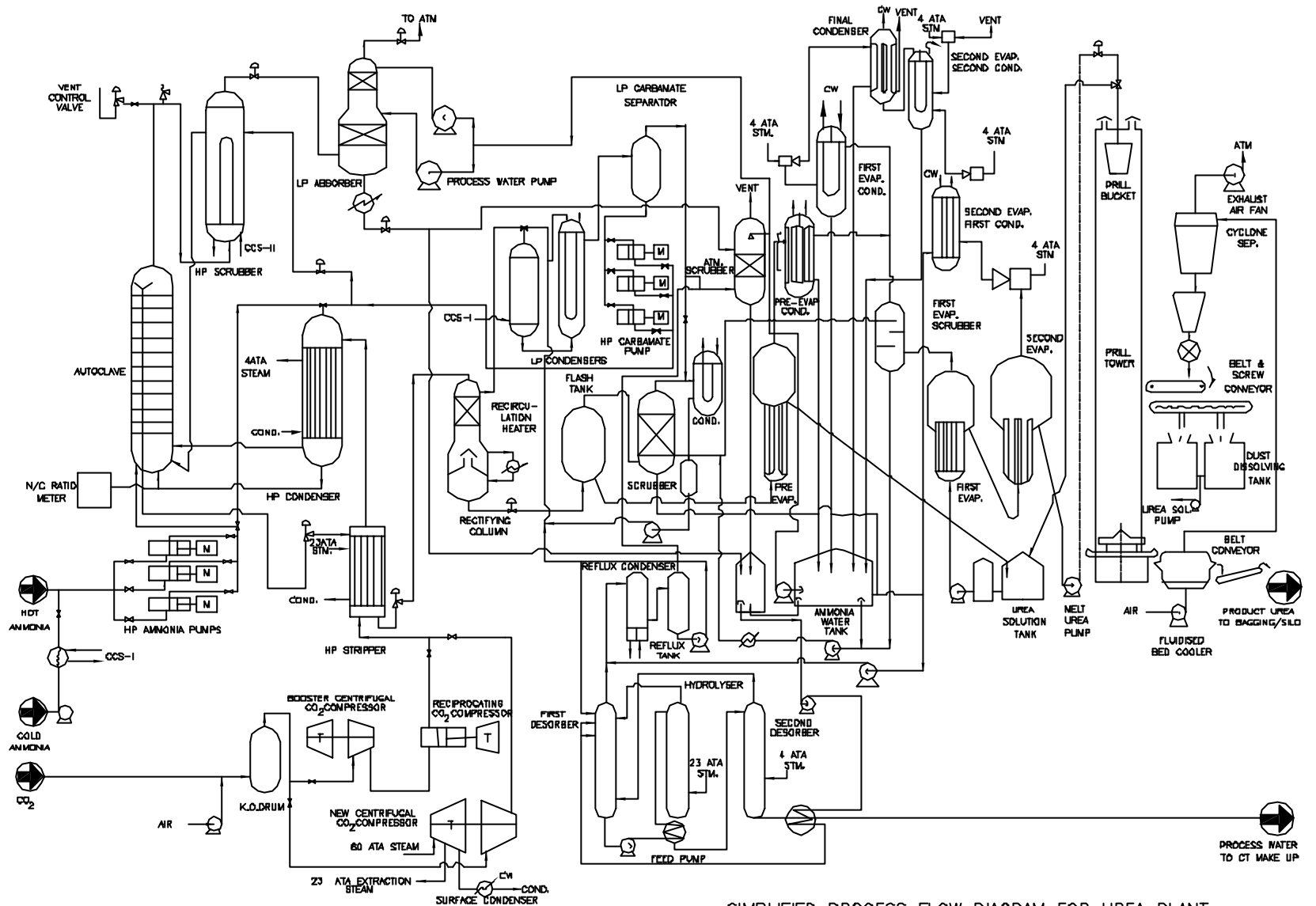
Safety promotion is a regular activity at IFFCO Kalol. Total commitment of top management has enthused the staff for achieving a good work environment and accident free job performance. This is reflected by winning safety awards at most every year from Gujarat Safety Council.

There are two safety committee like Shop Floor Safety Committee and Central Safety Committee to provide safe and fearless working conditions at working place, which have enhanced the moral of the employees, resulting higher productivity without any accident i.e. safer production.

Finally it is conclude that genuine concern and sincere commitment of the top management has brought in an ambiance where there is a total commitment of all the employees to get along with their jobs with lot of confidence and safety consciousness. Varied facets of the safety and health aspects were kept in mind and the holistic approach of the company could make our plant a place to work comfortably and neighbourhood to live peacefully.



SIMPLIFIED PROCESS FLOW FOR AMMONIA PLANT.



SIMPLIFIED PROCESS FLOW DIAGRAM FOR UREA PLANT

IFFCO Kalol Unit

**List of photographs for Different schemes for the year 2004-05.**

- 1.0** Increase in number of plates in heat exchanger for reducing ammonia loss
- 2.0** Provision of CO<sub>2</sub> to Dry Ice plant from 4<sup>th</sup> stage suction instead of final stage discharge of CO<sub>2</sub> centrifugal compressor.
- 3.0** Installation of smaller capacity low head surface condensate pump in urea plant.
- 4.0** Bigger size vapour ammonia transfer line from storage to ammonia plant
- 5.0** Provision of lower capacity and higher efficiency ammonia pump to supply Ammonia to Urea



W-1296  
REGULATOR SYSTEM  
WATER PUMP







