

INDIAN FARMERS FERTILISER COOPERATIVE LIMITED

**Phulpur Unit – I
Ghiyanagar, Allahabad (Uttar Pradesh)**

Unit Profile

Indian Farmers Fertilisers Cooperative Limited (IFFCO), globally acclaimed cooperative in fertilizer production and marketing has been striving for socio-economic upliftment of the rural population of India since inception. To ensure timely availability of quality fertilizers to the farmers, IFFCO came into being on 3rd November, 1967. Initially, IFFCO commissioned Kalol and Kandla plants in Gujarat in early 1975. Subsequently, the society expanded its base by erecting two more plants at Phulpur in U.P. in the year 1981

IFFCO-Phulpur Unit -I, is located at Phulpur, Allahabad in the state of Uttar Pradesh. It has been the world’s largest naphtha based Urea complex, consuming one full naphtha rake (2000 MT) daily. Both of its units have been performing well since beginning. Unit –I started its commercial production in March, 1981 and have a 977 MTPD Ammonia Plant designed and engineered by M/s. MW Kellogg, U.S.A. based on Steam Naphtha Reforming Process and 1670 MTPD Urea Plant based on M/s. Snamprogetti Technology. Three coal fired boilers having 125 MT/hr capacities each and 12.5 MW Turbo-Generator supplied by BHEL, India along with associated off sites facilities like DM water plant, Inert gas plant etc. was commissioned in March, 1981.

Energy Consumption

Ammonia & Urea manufacturing is highly energy intensive and it contributes more than 80% of the total cost of production Urea. Therefore, a slight change in energy consumptions affects the cost of production in a big way. Apart from cost of production reduction in energy saves the valuable fast depleting natural resources such as Naphtha & Coal. Therefore, the Energy conservation is a major corporate objective at IFFCO and it is a continuous process at its units.

IFFCO-Phulpur complex has become one of the lowest energy consuming units amongst Naphtha based fertilizer plants in India. It has substantially reduced its energy consumption during last three years. The details are highlighted below:

Plant	2004-05	2005-06	2006-07	2007-08
<i>Ammonia –I</i>	9.452	9.335	8.734	8.555
<i>Urea - I</i>	7.630	7.433	7.091	6.855

All figures are in **Million kCal/MT**

Energy Conservation Commitment and Policy

As energy contributes more than 80% of cost of production and sharp rise in energy cost, energy conservation receives top priority at IFFCO Phulpur.

Energy Management Policy

IFFCO Phulpur Unit is playing a vital role in the national economy by providing chemical fertiliser ‘Urea’ to the Indian Farmers for prosperity and growth. Manufacturing Process of Urea Complex is highly energy intensive and therefore, IFFCO Phulpur Unit is committed to produce good quality product with a mission

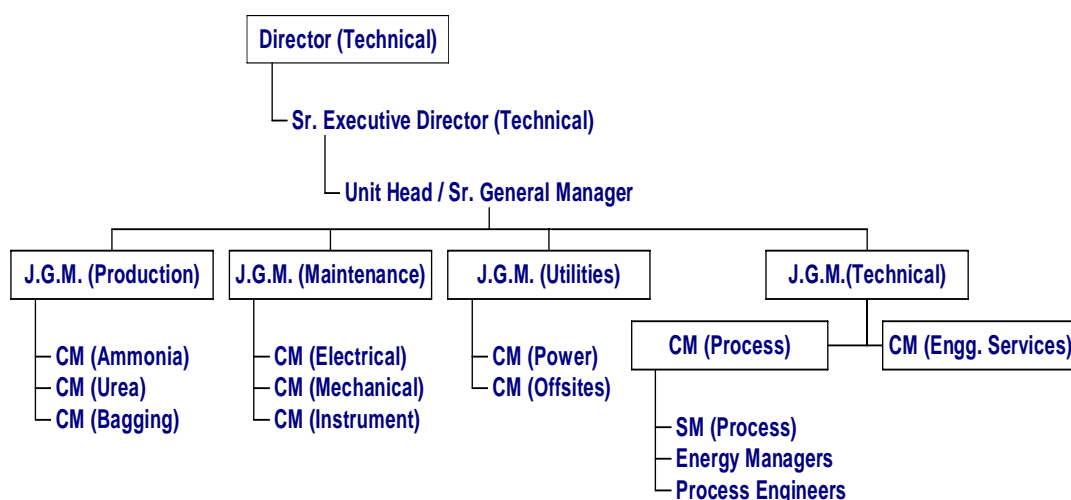
to reduce the specific energy consumption 1% every year. Action Plan for achieving the target is as follows:

- Regular Monitoring of Specific Energy Consumption and its Periodical Review.
- Adoption of Proven, Energy Efficient and Eco-Friendly Technologies.
- Adoption of Fuel and Energy Substitution resulting into improvement in efficiency and low cost.
- Gainful Recovery of Waste heat and Low Level Energy.
- Energy in Electrical Appliances including lighting to be conserved by modification/ modernization.
- Review and Appraisal for Maximizing Equipment Efficiencies. Benchmarking the Performance of the Unit with the other efficient Units.
- Training for All Employees for Energy Conservation.

Energy Conservation Cell

The energy consumption is monitored on daily basis. Phulpur unit has constituted a task force, headed by Joint General Manager – Technical. The task force comprises of senior persons from various departments, viz. Production, Maintenance, Utilities, Technical Services, Finance & accounts etc. It meets periodically to discuss the various loss points either due to plant operating troubles or owing to design limitations or development of new technology. Besides this, for improving the energy efficiency within the existing facilities, studies are carried out and modifications are done in-house.

ENERGY CONSERVATION MONITORING CELL AT IFFCO



The Engineers and operators / technicians connected to each plant are regularly sent for in house / outside training programmes and Seminars on Energy conservation to created their interest in this area as well as make them aware of the latest methods / developments in the field of Energy conservation. Reputed professionals are also invited as Faculty for the in - house training programmes.

Energy Conservation Achievements since Commissioning

Phulpur unit has always been a leader in adopting new developments in the field of fertilizer production and numbers of modifications / revamp have been carried out over the years which have resulted in substantial improvement in energy consumption. Major modifications carried out in Phulpur-I are listed as below:

PHULPUR-I

1. Purge Gas recovery unit in Ammonia-I plant
Net Improvement in energy saving : 0.1108 GCal/MT of Ammonia
2. Synthesis Converter Retrofit
Net Improvement in energy saving: 0.117 GCal/ MT of Ammonia
3. Lo - Heat benfield retrofit in CO2 removal system
Net Improvement in energy saving: 0.096 GCal/ MT of Ammonia
4. Modified CO2 Compressor Turbine in Urea plant
Net Improvement in energy saving: 0.16 MT Steam / MTof Urea
5. Installation of Pre- Concentrator in Urea plant (In Year 2001-02)
Net Improvement in energy saving: 0.08 GCal/ MT of Urea

There has been a steady decline in specific electrical and thermal energy consumption. Energy consumption in Phulpur-I has been brought down from the level of 12.5 GCal / MT in initial years to the current level of 6.8 GCal / MT i.e. a reduction of about 45.6 % . Following table shows the energy consumption pattern & savings achieved in energy during last three years which shows a remarkable reduction.

Plant	2004-05	2005-06	2006-07	2007-08	% Reduction over (2004-05)
Ammonia -I	9.452	9.335	8.734	8.555	9.5
Urea -I	7.630	7.433	7.091	6.855	10.2

All figures are in **Million kCal / MT**

Energy Conservation Projects

Energy conservation is an ongoing process at IFFCO. Following major proposals have been implemented at Phulpur unit as a part of its energy conservation.

▪ Energy Saving Project (ESP)

Phulpur unit has launched its major Energy Saving Project (ESP) worth Rs. 91.95 crores for its existing Ammonia plants. Phase- I of the project has been completed during March & April 2005. Phase-II of the project completed in 2006-2007. Recent energy conservation schemes are as follows:

ITEM DESCRIPTION	Savings	Investment in Rs. Lakhs	Project commencement & completion year
AMMONIA-I			
S-50 Converter & Syn. Loop Boiler	-	-	
Synthesis gas compressor Revamp	-	-	
Ammonia Wash Unit	-	-	
Final gas Chiller	-	-	
Integrated Energy Savings for above schemes	0.695 MkCal/MT	7045	Compl. : July'06
Installation of Capacitors for Power Factor Improvement	13.1 kW/hr.	27.0	Compl. : 06-07
Installation of Variable Speed Drives for Cooling Water Fans in Ammonia-I and Power Plant	80 kW/Hr	7.0	Compl. : 07-08

Installation of S-50 radial flow Synthesis Converter and MP Boiler

In order to get higher conversion, a new S-50 converter with a lower heat exchanger and an internal electrical start-up heater was installed at the down stream of existing Ammonia Synthesis Converter. The new converter having catalyst volume of 79 m³, increased the ammonia conversion per pass and reduced the gas circulation through the synthesis loop, thereby reducing the overall steam consumption in the Synthesis Compressor Turbine. With higher heat of reaction, Medium Pressure steam generation from the new vertical MP boiler installed downstream of new S-50 converter was chosen to optimize the overall steam balance of the plant.



S-50 Converter and MP Boiler

Synthesis Gas Compressor LP & HP case internal replacement

The present Syn Gas Compressor was of mid 1970 design and the operating conditions have changed largely after the installation of S-50 Converter and Loop re-piping, operating condition, particularly circulation rate changed drastically. This decreased the operating pressure of Synthesis loop. The new internals of LP & HP case was designed to meet the new operating condition and better efficiency. The combined efforts of matching the system & operating conditions, improvement in efficiency leads to lesser steam consumption in the Synthesis Compressor Turbine.

Ammonia Wash Unit

In order to send oxides free make-up gas directly to the Synthesis Converter, an Ammonia Wash Unit was installed between LP & HP case of Synthesis Compressor. The make up gas is washed with an Ammonia stream from Ammonia Separator to remove the oxides. Installation of Ammonia Wash Unit and Synthesis loop re-piping reduced the circulation rate in the synthesis loop and thereby reduced the power consumption in the Synthesis Gas Compressor.



Ammonia Wash Unit

Installation of Final Gas Chiller

Due to lower recirculation rate in Synthesis Gas Compressor, Refrigeration Compressor load was reduced .With the intention of increase in load of the Refrigeration Compressor, Final Gas Chiller was introduced to cool down the make-up gas to 6 deg. C from the present level of 27 deg. C. This will increase the volumetric efficiency due to lower inlet temperature of make-up gas leading to reduction in steam consumption in the Synthesis Gas Compressor for the same work output.



Final Gas Chiller

R-LNG Conversion Project

With increasing cost of Naphtha, Urea production from naphtha based plants comes to be very costly. Keeping this in view, one of the main guidelines provided under the new fertiliser policy is that all naphtha based urea plants are to be switched over to NG/RLNG so that they can also become viable and compete in the business of urea manufacturing. With this background, IFFCO-Phulpur has switched over to RLNG in place of use of costly liquid fuels naphtha, fuel oil, & diesel. RLNG changeover in Phulpur-I unit carried out during July 2006. Agreement with GAIL was entered on 25th August, 2004. Gas Pipe line laying of about 140 km from Tulendi to Phulpur was completed by GAIL. Accordingly, conversion of Ammonia-I Plant from Naphtha to R-LNG and RLNG conversion in Service Boilers-1 & 2 and 3 as support fuel successfully completed in 2006-07.



GAIL Terminal at Phulpur Unit

Installation of Variable Speed Drives for Cooling Tower Fans in Ammonia-I and Power Plant

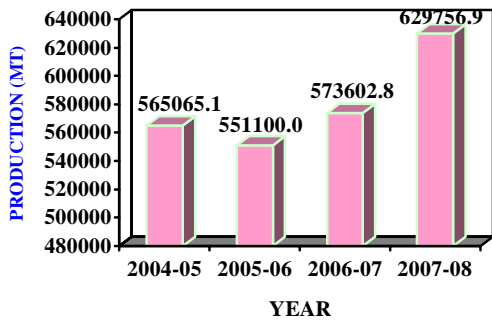
The cooling tower fans of Ammonia and Power plant were running at fixed RPM irrespective of the cooling required. As the ambient temperature is down, less cooling is required hence the RPM of fans can be reduced and electrical energy can be saved. Variable speed drive reduces the RPM as per the cooling required. In this way 80 KW/Hr electrical energy is saved.



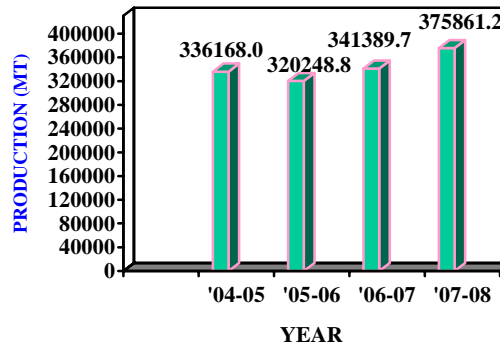
Variable Speed Drives Panel

PERFORMANCE AT A GLANCE

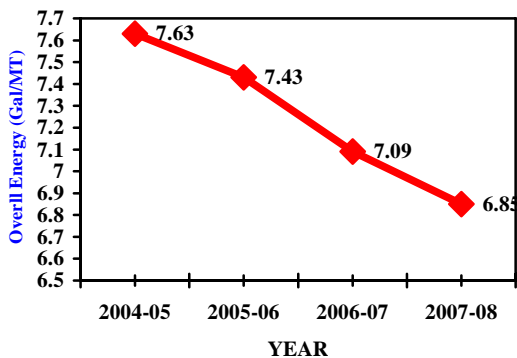
UREA-I PRODUCTION



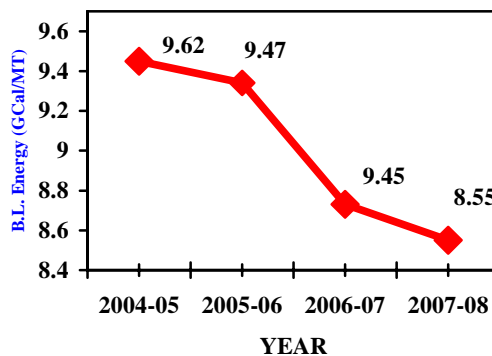
AMM-I PRODUCTION



UREA - I ENERGY CONSUMPTION
 10.2 % reduction over 2004-05



AMM - I ENERGY CONSUMPTION
 9.3% reduction over 2004-05



Environment and Safety

IFFCO Phulpur Unit is totally committed for maintaining an eco-friendly environment. For controlling air pollution, plants have been provided with Bag Filters, Electro Static Precipitators, Dust Extraction Systems, etc. A lush green belt with about 3 lakh trees has been developed all around the factory premises which is a natural means of air purification. To overcome the problem of fly ash disposal, generated in the Captive Power plant, a dense phase dry fly ash disposal plant has been installed which directly fills the fly ash in closed tankers for transportation of the ash to the cement plants manufacturing Portland Pozzolana cement.

Phulpur Unit has always put its best efforts for conserving water. The effluent generated in the plant is recycled back after purification in Reverse Osmosis Plant. Even the sewage water generated in the township is reused in the plant after treatment in sewage treatment plant. The plant is running on zero effluent discharge and total recycle basis. The present specific water consumption is the lowest among the fertiliser industry in the country. Plant and its township have ISO 14001 certification which speaks volumes about its environmental commitment. The complex has won number of awards for its environment improvement efforts.

Safety

Safety of employees is the prime concern of management at IFFCO Phulpur and all measures are taken so that no untoward incidence took place. Various initiatives on Safety Awareness including Safety Audits, Risk Analysis, Monitoring and Measurement, Routine Health Check-ups of all Employees are religiously being carried out in Phulpur Unit. The safety committee headed by chief of the Fire & Safety Department meets regularly and discusses the safety related problems with plant personnel's and remedial actions are taken accordingly.

INDIAN FARMERS FERTILISERS COOPERATIVE LIMITED

Kalol Unit
Gandhinagar Distt. (Gujarat)

Unit Profile

Kalol unit - the oldest unit of IFFCO is located at 26 km from Ahmedabad on the Ahmedabad Mehasana highway. The Unit started commercial production in April, 1975 in an area covering 96 hectares. The unit consists of plants to produce 910 t/d ammonia based on MW Kellogg USA natural gas steam reforming process and 1200 t/d urea based on Stamicarbon's CO₂ stripping process. Urea feed stocks i.e. ammonia and CO₂ are supplied from ammonia plant. Capacity of ammonia plant at IFFCO Kalol was uprated from 910 tpd to 1100 tpd in August, 1997 with installation of Pre-reformer unit using naphtha as feed stock. R-LNG which is the main feedstock is presently supplied by GSPCL. The fuels natural gas (NG) and associated gas (AG) are supplied by ONGC/GAIL from nearby gas wells and LSHS & Naphtha are from ONGC. Water is supplied by GIDC from 15 borewells around the Unit. The unit also has plants to produce 6 tpd Dry Ice and 12 tpd Liquid CO₂ along with necessary offsite facilities.



Energy Consumption

Kalol unit has produced 544501 MT of urea and 317531 tonne of ammonia during the year 2007-2008 attaining a capacity utilisation of 100 % and 87.47 % respectively. The ever lowest specific energy consumption of 5.956 Gcal/MT and 8.597 Gcal/MT was achieved in the year 2007-08 for Urea and Ammonia production respectively.

Energy Conservation Commitment, Policy and Organizational Set up

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

Energy conservation is a continuous process with constant scope for further improvement. With this objective and based on detailed study of energy audits, Ammonia plant Energy Saving Project – Phase II and other energy saving schemes were successfully commissioned in May-2006 and 2007. The efforts for further reduction in energy by executing small schemes by in-house resources are a continuous process.

Energy Policy

At IFFCO Kalol, optimum utilization of energy and the total energy management are the part of corporate mission and IFFCO is fully committed to reduce the specific energy consumption in the production of nitrogenous fertilizer through:

- Conducting in-house energy audit and monitoring the energy consumption norms.
- Carrying out various minor and major modifications.
- Adoption of technological advancement befitting to the old plant.
- Development of human resources.
- Creating safe, healthy and energy conscious working environment.
- Better housekeeping in the plant.

Energy Conservation Achievements

- The lowest yearly specific energy consumption of 8.597 Gcal/ t of Ammonia achieved during the year 2007-08.
- The lowest yearly specific energy consumption of 5.956 Gcal/ t of Urea achieved during the year 2007-08.
- The lowest monthly specific energy consumption of 8.234 Gcal/ t of Ammonia achieved in March-08.
- Ever lowest monthly specific energy consumption of 5.672 Gcal/ t of Urea achieved in December-06.

Energy Conservation Achievement of IFFCO Kalol has also been recognized by being awarded National Energy Conservation Award-2006 by Bureau of Energy Efficiency (BEE), Ministry of Power.

Important schemes implemented for performance improvement during the year 2007-08

1 Ammonia Plant

1.1 Bigger size Steam nozzle of Synthesis Gas Compressor Condensing Turbine



To close the 40 ata steam balance of Ammonia Plant after Energy Saving Projects, bigger size nozzle in condensing turbine of Syn. gas compressor has been installed. This has facilitated use of 40 ata steam upto 28 t/h instead of its maximum capacity of 20 t/h. As a result, load on Auxiliary Boiler of Ammonia plant has reduced. For enhanced torque, old coupling had been replaced with new one of higher rating. This has reduced steam consumption in Ammonia plant from 4.6 to 4.4 t/t NH₃.

1.2 Bigger size inter/after condenser for surface condenser (101-JCA).



To avoid uncondensed steam coming out from after condenser of surface condenser (101-JCA) along with the inerts, redundant bigger size inter/after condenser of NG booster compressor with more than double heat transfer area has been installed in place of old inter-after condenser. Vacuum of surface condenser has improved by 2 mm WC after this modification.

1.3 Installation of redundant preheater for Auxiliary Boiler fuel.



Redundant Lube oil cooler of GHH CO₂ compressor has been installed in ammonia plant to preheat auxiliary boiler fuel i.e. LNG fuel with LP steam upto 100°C. This has saved about 9 Sm³/h R-LNG.

2.0 Urea Plant

2.1 Plate type heat exchanger for Desorber feed in Urea plant.

To improve operating flexibility of desorber and to reduce LP steam consumption, welded plate desorber feed pre-heater has been installed to heat ammonia water feed to first desorber from 55° C to 130° C in place of existing shell and tube heat exchangers from 55° C to 113° C.

This has reduced about 1000 kg/h LP steam consumption. This has also improved operational flexibility of hydrolyser system.



2.2 Installation of two stage atmospheric scrubber in Urea plant.

Single bed atmospheric scrubber was replaced with new two ring bed scrubber with about 30 m³/h ammonia water at 40° C to top bed and about 80 m³/h ammonia water at 40° C recirculation to lower bed. The liquid outlet from atmospheric scrubber is sent to strong ammonia water tank for recovery in Hydrolyser system.

As a result of this modification, the ammonia emission from atmospheric scrubber has reduced from about 100 kg/h to 6 kg/h.



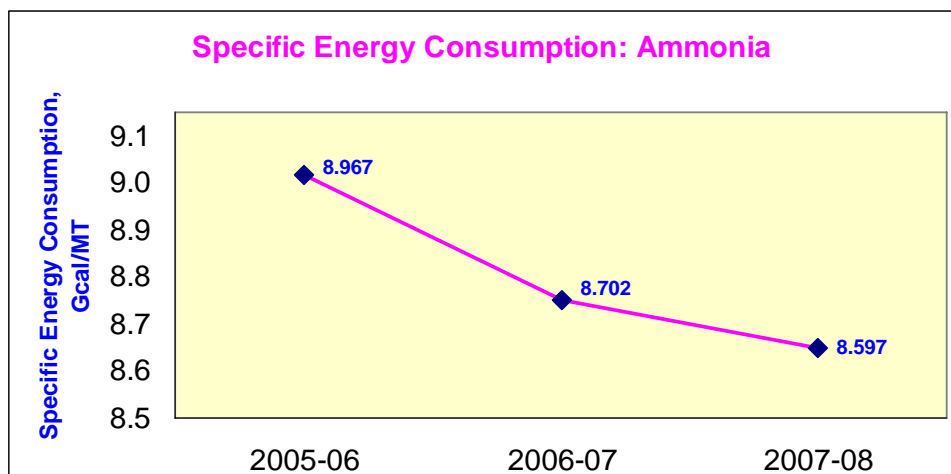
Energy Saving Project and schemes

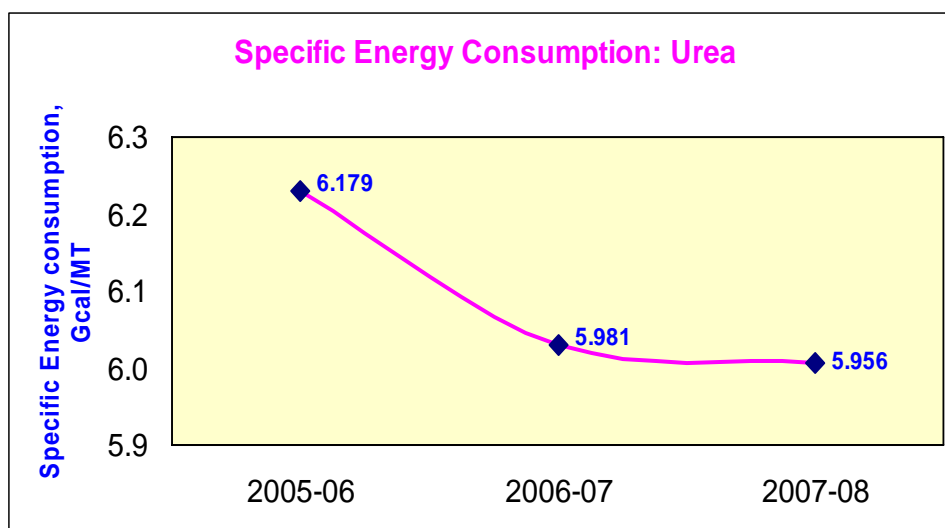
IFFCO Kalol Ammonia plant is of early 70's Kellogg technology and has limitations in implementing new technologies. Space availability is another major problem. In spite of these constraints Kalol unit is continuously putting efforts to reduce specific energy consumption.

Energy Saving Project (ESP) was one such measure which targeted to reduce specific energy consumption by 0.915 Gcal/t of ammonia at an estimated cost of Rs. 125.30 crores. ESP Phase-II was implemented and commissioned in April-May 2006. Other energy saving schemes were also implemented during the year 2007-08 to bring down the energy level of Kalol Unit despite being such a old plant.

There is considerable reduction in Specific Energy Consumption of Ammonia and in turn, Urea as a result of implementation of various schemes.

The reduction trend in Specific Energy Consumption for the last three years is shown below.





Energy Conservation Plans and Targets

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

Energy Conservation Measures	Anticipated Savings		Investment (Rs. Lakhs)	Project completion year
	GCal/Annum	Rs.lakhs/Annum		
*KBR Option-II Selected Schemes	85668	900	6280	2010

KBR Option-II Selected Schemes proposed by M/s KBR, USA, includes:

- Optimization of S/C ratio in Primary Reformer.
- Improvement in efficiency of Primary Reformer furnace by various modification / replacement or addition of coils in convection zone.
- Feed Gas saturator system.
- HTS and LTS converters retrofitted with radial / axial-radial flow catalyst baskets.
- Optimization of CO₂ removal system.
- Retrofitting of Syngas compressor HP-MP turbine.
- Retrofitting of Ammonia Synthesis loop with high grade waste heat recovery.
- Add-on small Purge Gas Recovery Unit.

Environment and Safety

Environment

IFFCO Kalol unit was the first in co-operative sector in fertiliser industry, to get ISO-9000 certificate for its quality system by BVQI (Bureau Veritas Quality International) in August-1996. The same was recertified by BVQI in August-1999.

During August' 2002 audit, the unit was recertified by BVQI for its quality system as per new ISO Standard Version **ISO 9001: 2000** .and recertified in October, 2005.

Unit has also been certified for ISO 14001 for environmental management system adopted since August-2000. The system was upgraded to meet the requirements of ISO 14001 -2004 version and the same was audited and certified by BVQI during October 2005 audit.

In February-2007 Kalol Unit adopted Integrated Management System comprising of QMS &EMS as per ISO 9001-2000 & ISO 14001-2004 and the same was recertified in December-2007.Kalol has been the first fertilizer unit to integrate the QMS & EMS.

The scrap disposal has become an ongoing exercise with optimum realization of residual value of items disposed off and clean and orderly scrap yards. There is highly evident "continual improvement" on QMS-EMS front at Kalol. Not only the environmental parameters are well maintained in the plants, there is a sizeable reduction in the consumption of natural resources, quantifiable in terms of specific consumption like energy, water and other process inputs. House keeping of the plants is appreciated by all the visitors and the unit has received running trophy for the best-maintained gardens in institutional category from Gujarat Horticultural Association for the fourth year in succession.

Safety

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.

COROMANDAL FERTILIZERS LIMITED

Kakinada (Andhra Pradesh)

Unit Profile

The company, formerly known as Godavari Fertilisers and Chemicals Ltd till Feb 08 was originally promoted as JV by Government of Andhra Pradesh and M/s. Indian Farmers Fertiliser Cooperative Limited (IFFCO), with a capital outlay of Rs.108 crores to produce 300,000 MT of Di-Ammonium Phosphate fertiliser. The Plant was expanded from time to time and the installed capacity has been revised to 10 lakhs MT per annum with capability to produce DAP and NPK grades.

In July 2003, the Company was taken over by the Murugappa Group of Companies and in February 2008, the Company was merged with Coromandel Fertilisers Limited (CFL) under Murugappa Group of Companies.

Energy Consumption

Description	Units	2005 – 06	2006 – 07	2007 – 08
Production	MT	1024307	1135316	1064306
Electrical Energy Consumed Per Annum	Lakh KWh	380.4	377.3	329.11
Specific Electrical Energy Consumption	KWh / MT	37.14	33.24	30.93
Thermal Energy Consumption Per Annum	Lakh SM3	57.5	46.8	37.83
Specific Thermal Energy Consumption	SM3 / MT	5.60	4.12	3.55

Energy Conservation Commitment, Policy and Organization Set up

CFL has given due attention for energy conservation at plant. They had installed Asia's first Industrial Solar Water heating system in the year 1998 at a cost of Rs 1.55 crores. This plant generates daily 120 kilo litres of Boiler feed water.

Major Projects include

- (1) Installation of Automatic Power Factor Correction (APFC) system with an investment of Rs 3.0 lakhs
- (2) Variable Frequency Drive for Quench Air Fan of A & B Trains with an investment of Rs 9.0 lakhs

As a part of commitment towards the Energy Conservation the Managing Director of CFL declared the Energy Management Policy which is produced below:

Energy Conservation Organization Set up

The plant energy conservation activities are headed by GM (Mfg). Designated Energy Manager reports to GM (Mfg). Management has established cross-functional Small Groups and Energy Management Cell. Small Groups consists of workmen, supervisors and middle management cadre.

Small Group members meet bi-monthly to take up suggestions and proposals on energy conservation. These small group members, under the guidance of functional head, analyze and discuss complex problems and arrive at consensus decision with a definite solution.

EM Cell deals with a specific task to achieve targeted reduction of specific energy consumption. EM cell meet monthly to track the consumption pattern and to suggest energy management projects. The taskforce group examines the viability of the recommendations of the small groups with respect to investment, time frame and return on investment.

GM (Mfg) submits proposals to the Management for allocation of budget. Execution is done by the concerned department. Designated Energy Manager monitors the improvements and sustainability of the implemented energy conservation project.

ENERGY MANAGEMENT POLICY

We, at Coromandel Fertilisers Limited, Kakinada a member of Murugappa Group of Companies, are committed to conserving scarce and irreplaceable energy resources and to making the Company one of the most energy efficient manufacturing facilities in our sector of industry.

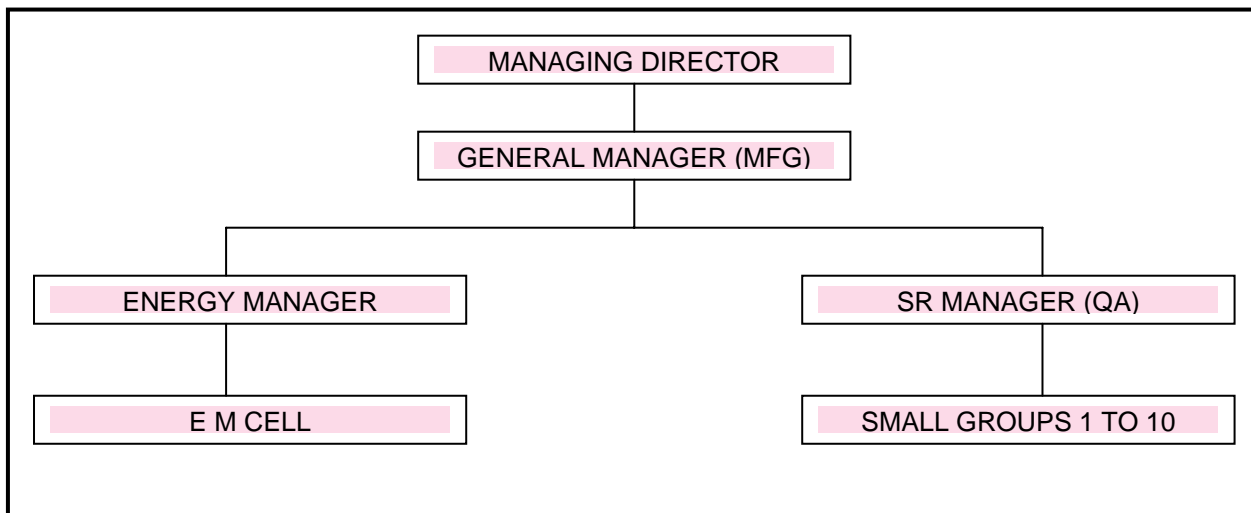
We shall take all necessary steps during technology selection, installation, operation and maintenance of plants/equipment to conserve energy and create awareness among employees of 'Energy Conservation' through training and participation in the process of conservation.

We shall also inculcate the habit of waste minimization to accomplish an eco-friendly environment.

03.03.2008


V. RAVICHANDRAN
MANAGING DIRECTOR

Energy Conservation Activity



Energy Conservation Achievements

Energy Conservation Projects during 2007 – 08

- (1) Energy Savers 3 Nos. installed for Lighting Circuits to reduce the power consumption. 3.29 Lakh KWh per annum power savings achieved due to installation of Energy Savers
 Investment: Rs 4.0 Lakhs
 Savings: Rs 8.22 Lakhs



- (2) Automatic Power Factor Correction (APFC) panel installed at Ammonia MCC to maintain the Power Factor at 0.99 lag. 0.60 Lakh KWh per annum power savings achieved due to installation of APFC Panel
 Investment: Rs 3.0 Lakhs
 Savings: Rs 1.50 Lakhs



- (3) VFD was installed for Quench Air Fan-A Train at DAP plant in place of damper control system. 2.23 Lakh KWh per annum power savings achieved due to installation of these VFD
Investment: Rs 4.5 Lakhs
Savings: Rs 5.6 Lakhs



- (4) VFD was installed for Quench Air Fan-B Train at DAP plant in place of damper control system. 2.23 Lakh KWh per annum power savings achieved due to installation of these VFD
Investment: Rs 4.5 Lakhs
Savings: Rs 5.6 Lakhs



- (5) Downsized the motor from 100 HP to 60 HP for Phos. Acid Supply Pump-A in DAP Plant. 0.34 Lakh KWh per annum power savings achieved due to down size of motor
Investment: Nil
Savings: Rs 0.84 Lakhs

Environment and Safety

CFL is an ISO-14001:2004, ISO 9001-2000 and OHSAS 18001 certified company .It has also implemented Process Safety Management System (PSMS.)