

The Fertilizers and Chemicals Travancore Limited – Cochin

FACT COCHIN DIVISION

Unit Profile

The Fertilizers And Chemicals Travancore Limited – Cochin Division (FACT-CD) is the second manufacturing division of FACT. The factory is situated at Ambalamedu, Kochi. The Division was formed as part of the planned efforts by Govt to give the greatest scope to the use of indigenous technology in setting up large sized fertilizer plants. FEDO and P & D of FCI (now PDIL) were entrusted with the responsibility of installing these large plants with minimum foreign assistance. The site development included the formation of an artificial reservoir stretching over 200 acres of low-lying paddy fields by constructing a suitable earthen dam to meet water requirements of plants and township. The reservoir is supplied with water from the Periyar Valley Irrigation Project through a canal.

The FACT-CD has two phases. The phase - I of the division is having facilities to produce 1,98,000 tonnes of Ammonia and 3,33,000 tonnes of Urea per annum. But due to financial crisis, these plants are not productive presently. Only phase II plants are in production now. Phase – II consists of three plants namely, Sulphuric acid plant, Phosphoric acid plant and NP plant having annual capacities of 3,30,000 MT, 115200 MT of P₂O₅ and 4,85,000 MT of complex fertilizers respectively.

The factory site is connected by rail, road and waterways, which facilitate movement of raw materials and products. FACT-CD has a track record of earnestness in combating pollution. The facility provided for treatment of effluents / emission include a Urea Hydrolyser stripper installed at Urea plant, a phase – II effluent treatment plant wherein the effluents are treated with controlled lime addition, Fume scrubbers for emissions from Complex plant, DCDA Process with Candle filters at the outlet of absorption towers of Sulphuric acid plant, start up scrubber system in the emission gas from Sulphuric acid plant and Alkaline scrubbing of emissions from Phosphoric acid plant to name a few.

A well-developed township for accommodating the employees is also provided at Ambalamedu close to the factory.

Specific Energy Consumption

The specific energy consumption figures for NP 20:20 for last three years are presented below:

Year	Electrical Energy ,kWh/ton	Thermal energy, MkCal/Ton
2001-2002	56.53	0.210
2002-2003	64.09	0.201
2003-2004	63.055	0.19146

Energy Conservation Achievements

The instrument air requirements of various plants in FACT – Cochin Division Phase-2 were being met from the individual instrument Air (IA) systems located in the respective plants. For Ammonia, Urea and Bagging plants in Phase-1 the total requirement was met from a single large H.T Khosla compressor located in Ammonia plant.

Consequent to the shut down of Ammonia and Urea plants in Phase-1 in February 2003, H.T khosla compressor was remaining idle. On studying the various IA systems, it was found feasible to meet the entire IA requirements of various plants from the H.T. Khosla compressor located in the Ammonia plant and all the other individual compressors could be stopped. A scheme was drawn up and the project was implemented by February 2004. On implementation it was observed that the instrument air from H.T.Khosla was sufficient to meet the total instrument air requirement envisaged. The project was implemented at a minimum cost of Rs. 2 lakhs making use of redundant lines. The annual savings from reduced power consumption is around Rs. 4.95 lakhs.

Energy Conservation Plans and Targets

Two projects have been planned for the coming years 2004 & 2005 using excess steam in Sulphuric Acid plant. The total electrical energy saving anticipated is 1921 MWh and the total investment is 27.5 lakhs.

Environment and Safety

Safety department

Safety department is functioning to provide safe and healthy work environment to the employees of this organization. The company is having a declared Health and Safety policy. A Safety committee is constituted with representatives of employees and senior officers from operations and maintenance departments. Chief Superintendent of Production is the chairman of the safety committee. The committee meets at regular intervals to discuss the accident prevention programmes. The employee's

representatives are encouraged to bring to the notice of the chairman about any unsafe conditions noted in plants. It is ensured that the decisions taken in the safety committee are implemented in a time bound manner.

An housekeeping Inspection committee is functioning to keep better housekeeping standards in the Plants and its surroundings. The committee visits the plants at regular intervals and assesses the standards by awarding marks to each area. The results are informed to all employees to create general awareness.

In order to make the organization an accident free one, the departments where no accidents occurred and the departments where accidents are less than the previous year are well appreciated.

As a part of accident prevention programmes safety work permits are made mandatory for carrying out maintenance jobs in plants. Three types of safety work permits are in vogue in the organization, namely Hot work permits, Vessel Entry permits and Cold work permits.

Ours is an organization come under the definition of Major hazard Industries. A detailed On-site Emergency Plan is prepared and submitted to statutory authorities. Based on this mock drills are done to face any eventualities like fire or toxic release.

Environment Control

FACT-CD is committed to the protection of Environment by prevention of pollution and continual improvement in the Environmental performance. The company has installed several projects for the prevention of pollution like Effluent Treatment Plant, Sewage treatment Plant, Ammonia Stripper , Fumes scrubber in NPK plant, Start up scrubber in Sulphuric acid plant, Attack scrubber and General scrubber in Phosphoric Acid plant, Green belt development etc.

We are regularly monitoring the pollutants in stack as well as in effluent and we are operating as per guide lines from Kerala State Pollution control Board.

The company has successfully installed the Environment Management System and got the certification of **ISO 14001** in January 2000 from M/S DNV, Netherlands and again re-certified in February 2003 and the certificate is valid until January 2006.

As per the Environment Management Programme following efforts were undertaken and ongoing efforts are continued as per the Environmental Policy:

1. Minimization of waste
2. Conservation of resources
3. Recycling and re-use
4. Use of Environment friendly Technology.

Process

NP Plant is designed to produce 485000 MT of NP 20:20 annually in two streams. The plant was designed by Davy Power Gas, Inc., USA., and employs the well known TVA granulation process.

Ammonia (both as vapour and as liquid), Phosphoric acid (54% P₂O₅ in case of DAP & 26% in case of NP) and Sulphuric acid are fed into a reactor in controlled quantities so that the Ammonia P₂O₅ mole ratio is maintained between 1.30 and 1.40.

The resulting slurry in the reactor is pumped by the reactor slurry pump to the rotary granulator where it is discharged into a rolling bed of recycle material. Ammonia vapour is also added here and a mole ratio of 1.70 to 1.80 is maintained in the granulator. The overflow of wet granulated material from the granulator goes into a rotary dryer where it is dried by direct contact with a co-current hot air stream. A conveyor distributes the dryer discharge to a set of screens which splits the dried granulated material into three streams - the product size, the over size and the fines. The fines directly go to the recycle while the oversize joins it after size reduction in chain mill crushers. These along with dust recovered from the cooler and dryer cyclones go back to the granulator as recycle. The product size material is sent to a cooler where there is a provision for cooling the product in a counter current stream of air. The cooled product then goes through a coater where there is a provision to coat it with China clay if required. From the coater the finished product goes either directly to the Bagging Section or to the Bulk storage where alone three weeks production can be stored at controlled humidity.

There is a fume and dust recovery system which utilizes part of the phosphoric acid feed for recovering ammonia and the dust from the vent gases. This part of the phosphoric acid feed is first utilized to scrub the fumes from the granulator and reactor in the fume scrubber system. It leaves these scrubber systems as a continuous purge from the circulating liquor and goes into the reactor to provide along with the directly fed part the required phosphoric acid for the process.

MODIFICATIONS IN THE INSTRUMENT AIR DISTRIBUTION SYSTEM

The instrument air requirements of various plants in FACT – Cochin Division Phase-2 were being met from the individual instrument Air (IA) systems located in the respective plants. For Ammonia, Urea and Bagging plants in Phase-1 the total requirement was met from a single large H.T Khosla compressor located in Ammonia plant.

Consequent to the shut down of Ammonia and Urea plants in Phase-1 in February 2003, H.T khosla compressor was remaining idle and the plant preservation air requirements were met from the PSA air compressor of smaller capacity. On studying the various IA systems, it was found feasible to meet the entire IA requirements of various plants from the H.T. Khosla compressor located in the Ammonia plant and all the other individual compressors could be stopped. A scheme was drawn up and the project was implemented by February 2004. Redundant lines were used as far as possible to implement the project at the minimum cost.

On implementation it was observed that the instrument air from H.T.Khosla was sufficient to meet the total instrument air requirement envisaged. The annual savings from reduced power consumption is around Rs. 4.95 lakhs.

Investment	:	Rs. 2 lakhs
Total power requirement with all individual IA compressors on line	:	142.3 kW
Power requirement with HT Khosla alone one line	:	125.4 kW
Savings in power	:	16.9 kW
Annual savings in energy	:	133.8 Mwh
Annual savings @Rs.3.7 per kWh	:	Rs.4.95 lakhs