

Narmada Chematur Petrochemicals Limited Bharuch

Unit Profile

Narmada Chematur Petrochemicals Limited, Joint Indo-Swedish Venture of Gujarat Narmada Valley Fertilizer Limited (GNFC) and Chematur Engineering AB, Sweden, set up in 1992 and an ISO-9001: 2000, ISO-14001 & OHSAS-18001 company is a only producer of Toluene Di-isocyanate (TDI) in SAARC region and is having the largest single stream plant for Aniline in India.

Technology of production of Toluene Diisocyanate is very complex technology and it requires very special trained manpower for operation of Plant. However, still NCPL could stabilize the plant in very short span of one year with the help of fresh engineering graduates and diplomas and with support for each modification, Suggestion scheme in work practices and these have really improved working.

The company has two major plants, namely Aniline Plant –Capacity –20,000MTPA and Toluene DI-Isocyanate (TDI) plant –capacity 10,000MTPA. Aniline plant is in operation since Feb –95 and TDI Plant is in operation since July –97. Company has been Awarded for “Best Environment Management System and Awareness Award under large scale category” on 5th June 2000 by society of Environment Auditors and consultants.

The company had achieved National Energy Conservation Award in Year 2000.

Energy Consumption

The Unit is energy intensive. The primary energy inputs are in form of Electrical Power, LDO/C9, Natural Gas and CO Waste Gas. It has installed 6.7 MW power plant with turbine from M/s. Alstom, with steam generation from flue gas. The Annual Energy Cost as % of Manufacturing Cost is 12.967 % in 03-04 year as compare to 18.739 % in 2002-2003 Year.

Energy Conservation commitment, Policy, set up

Energy conservation is being major concern of Company. Managing Director & top Management give very high degree of attention for implementation of energy savings proposals. This is also being one of the cost reduction sources for the company. To achieve goal in Energy Conservation, a team – Energy Committee (Air Committee & Power Committee) has been formed, headed by Chief Manager –Electrical & Instrument and comprising of experienced engineers from various fields. This team meets once in 15 days for review of Energy consumption of plants. Energy consumption of plant includes consumption of various raw materials, utility like Steam, Power, Natural Gas, LDO / C-9. Energy Consumption patterns are being reviewed by Process department, Technical services, Dept. head and corporate head on daily & monthly basis, various innovative ideas like Use of non-conventional sources of energy are also explored.

Various Modifications has been carried out as suggested by concerned department after HAZOP study. As a result there is steady decline on the energy consumption for the TDI & Aniline Products.

Specific Energy Consumption for TDI :

Year	Specific Power Consumption KWh/ MT	Specific Thermal Energy Consumption Mkcal/MT
2001-2002	2905	131.45
2002-2003	2436	113.11
2003-2004	2248.02	100.527

Specific Energy Consumption for Aniline:

Year	Specific Power Consumption KWh/ MT	Specific Thermal Energy Consumption Mkcal/MT
2001-2002	361	17.86
2002-2003	300.14	15.22
2003-2004	317.16	15.91

The major measures implemented during 2003-2004 are as below:

1. Stoppage of One Air Compressor
- 2.. Replacement of Halogen light fitting by metal halide light feeting at Main Gate.
3. Installation of Energy Saver of 350 KW in Complex
4. Replacing the belt of Blower with Flat belt type (2 No.)
5. Running of NG Compressor on 50 % Load for 10 hrs a day due to High pressure NG available from GNFC Rest of time.

Due to Implementation of Various energy conservation measures in 2003-2004 , the company has been able to save 5.84 Lacks kwh of electrical power.Total Saving of Rs. 41.75 lacks.

In addition to that in the year 2001-2002 we have started to utilize our Waste TDI Tar powder as a fuel which in turn the conservation of fuel like LDO & NG drastically and going towards Zero use of LDO & NG in Incinerator Plant in the next coming year.

Energy Conservation Plant and Targets

The following energy conservation projects are already under implementation / active consideration of the company.

1. Stoppage of NG Compressor in totality with termination of M/s. GGCL NG.
2. Stoppage of one more air compressor resulting in Power saving.
3. Development of Pt/Pd Catalyst in our site itself and stopping of importing it. (Saving of Rs.70 lacks against investment of Rs.30 lacks)
4. Moisture removal from MTD Plant Spent Catalyst from 85 % to 40 % at our site in drying oven and saving of Incineration Cost. (Saving Rs. 30 Lacks per annum against Rs.6 lacks investment)
5. Exploring the possibilities of utilization of energy sources like Solar, Wind.

Environment & Safety

As NCPL is OHSAS 18001 & ISO 14001 , it is very much concern about Safety and Environment. There is total commitment of top management for safety and environment. In case of pollution abatement and pollution control, new technologies with inhouse R& D are applied.

We have installed no. of sniffers for various gases in TDI plant to identify the leakage of any hazardous gases & their ranges are in ppm level. We have installed no. of CABA (Compressed Air Breathing Air Sets) sets & Air line masks for person safety.

We have developed On-Site & Off site plan & at regular interval we are carrying out Mock Drill. We have installed expensive 'Systematic Approach for Emergency Response'(SAFER) System to know the scenario at the time of Emergency/leakage. All the modification in NCPL is reviewed by HAZOP team Also we are planning for Advanced Process Control (APC) for the Plants.

I) Replacement of Halogen light fitting by metal halide light fitting at Main Gate

Background of the Project & Observation made: Initially there were 4 Nos. of 500 W halogen light for each Main gate boarding. Total 2 KW Power was consumed per board. So, we have thought about some replacement of it for Energy saving purpose. Then we have replaced with 7 number of 70 MHD type light fitting for each board.

Technical & Financial Analysis & Impact of implementation:

Then after installation of MHD type light fitting total power consumption is reduced by 2.2.KWH compare to halogen light fitting. After the implementation of the project total saving is Rs.0.15 Lacks per Annum.

II) Installation of Energy Saver in Central Air Condition in Complex

Background of the Project & Observation made: Initially we don't have Energy Saver in the Central A.C.So, After referring Quotation in Magazine about these energy saver in Central A.C., we have floted inquiry to many parties regarding installation of Energy saver in our Complex.

Technical & Financial Analysis & Impact of implementation:

After installation of these energy savers in the Air Condition of our complex as per financial analysis, total saving per annum is Rs.13.7 Lacks against investment of only Rs.1.82 Lacks.

The above saving figure is the Impact of Implementation.

III) Replacing the belt of Blower with Flate belt type (2 No.)

Background of the Project & Observation made: Initially we were using V type weige belt in the blower used in TDI Plant.Then we have come across the technology of Flat belt in the blowers. We have thought of replacement of it.

Technical & Financial Analysis & Impact of implementation:

After replacement of two No. of V-type weige belt to two No. of Flat belt types,we have made financial analysis . We came to know that 9600 kw per Annum saving of Electric power equals Saving of Rs.0.35 Lacks against investment of Rs.0.27 Lacks.

It has really impact on the Electrical Power saving.

IV) Running of NG Compressor on 50 % load for 10 hrs a day due to High pressure NG available from GNFC Rest of time:

Background of the Project & Observation made: Initially we were using NG purchased from M/s.(Gujarat Gas Corporation Limited) GGCL Ltd.only. This NG We were using after coppingressing it through NG Compressor. Then after we have explored the possibility of using NG available from our Parent Company M/S. (Gujarat Narmada Valley Fertilizer Limited) GNFC Ltd.So, We have started to use NG available from M/s.GNFC .The NG available from GNFC is having 32 Barg Pressure. So, there is no need to compress these gas at our site.So, we have reduced our Compressor running hours & load. Ultimately Saving of Electrical Power.

Technical & Financial Analysis & Impact of implementation:

The Investment of the project is approx. 2.95 lacks. The power saving is 52 KW Per Annum & Rs.16 Lacks in terms of Monitory saving. This has big impact on power saving. Now, we are going to terminate the contract of M/s. GGCL for NG .So, we will fully save the Power cost of NG Compressor at our site.

V) Stoppage of One Air Compersor

Background of the Project & Observation made: Initially we were operating two Air Compressor For Breathing Air purpose & Plant Air Purpose in the TDI Plant & Package unit. Then we have jointly decided to stop One Air Compressor for Power saving purpose. It was very difficult, but we have optimized the consumption of Nitrogen at various location in the plant & Process group could achieved the operation of Inert Gas plant at lower load & at optimum condtion with inhouse HAZOP team. Ultimately resulting in to Power saving.

Technical & Financial Analysis & Impact of implementation:

The Investment of the project is Zero. The power saving is 3.5 lacks KWH per year equals to Rs.11 Lacks saving per annum. So, the impact of implementation on Power saving due to Optimization of the Process.