

EXCEL CROP CARE LIMITED BHAVNAGAR

❖ Unit Profile :-

Excel Crop Care Ltd, is one of the major producer of Pesticide chemicals in India. It is part of Excel Group of Companies. It has three production units at Bhavnagar, Gajod (Bhuj), and Silvassa in Gujarat State. As mentioned the company is engaged in the business of agrochemicals comprising insecticides, herbicides, fungicides, fumigants and redenticides. With growing Indian economy and the increasing emphasis on improving productivity, excel is also trying to improve productivity by implementation by various energy conservation activities.

The Major Products of Excel Crop Care are given below.

- Insecticides
Endosulfan
Chlorpyrophos
Butene diol
Profenophos
Imidachloprid
- Fungicides
Sulfex 80% WP
Sulfex gold 80% WDG
- Herbicides
Isopropylamine Salt of Glyphosate
Ammonium Salt of Glyphosate
- Redenticides
Zink Phosphide
- Fumigants
Alluminium Phosphide

Total manpower strength of the company is 1200 employee.

Annual turnover of the company for the year 2006-2007 is Rs. 421 Crores. Exports of the company is 25% of turnover. It has also wide distribution network all over India, approximately 40,000 dealer working for excel in India.

Excel is not just at the forefront of great products, but also at the great forefront of community activity, injecting a fresh approach to rural development by viewing the whole rural society as an industrial organization, integrating environmental economics as the base for the process of progress rehabilitation through our associate concern, "Vivekananda Research & Training Institute", Excel has implemented numerous project for the development of rural area.

Excel Crop Care is also working in the field of Bio-engineering, and developed indigenous process for bio-diesel used as a renewable energy source.

PIONEERING LANDMARK OF THE COMPANY

- 1) First in Asia and third in the world to develop and produce Endosulfan.
- 2) First in Asia and second in the world to develop and produce Glyphosate.
- 3) First in the Asia and third in the world to develop and produce Butene diol and other raw material used for Endosulfan.
- 4) Third in Asia to develop and produce aluminum phosphate.

❖ Energy Consumption :-

By implementation of various energy conservation activities, there has been steady decline of specific energy consumption. Last three years data of specific energy consumption are shown in the annexure attached, which notions reduction of energy consumption despite of the increase in connected load.

❖ Energy Conservation commitment and setup.

Excel Crop Care believes that to conserve energy is the duty of every person working in the company right from shop floor to top management, even the smallest contribution for conservation of energy can add directly to company's profit which will be beneficial not only for the company but also for the employee working in the company. Energy conservation at shop floor has to start by operators. For that Excel Crop Care is training employees to create awareness and a sense of responsibility among all employees to conserve energy in their own respective area.

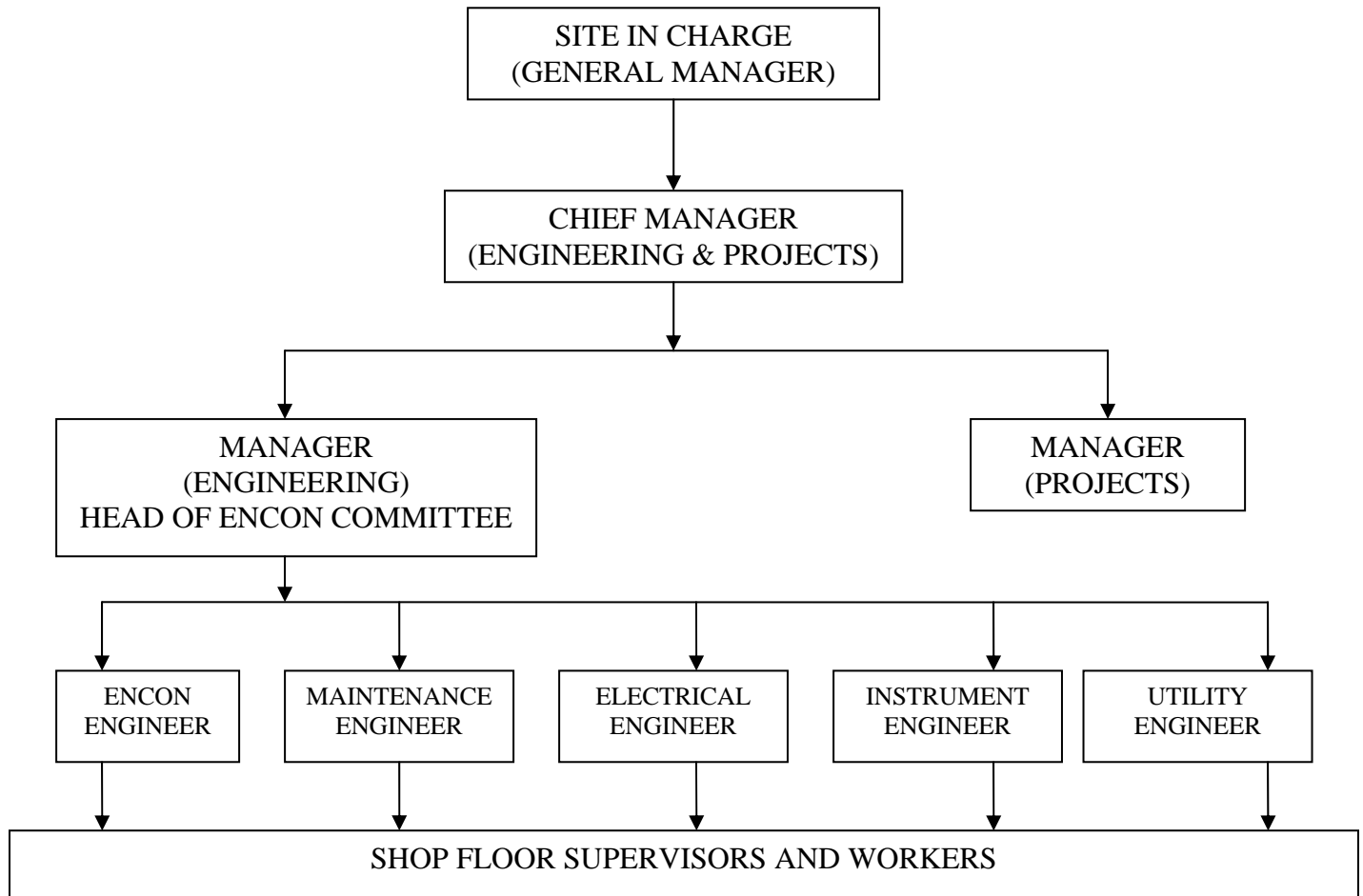
Since last three years Excel is organizing "ENCON MEET" to review it's achieved goals for previous year and target goals for next year. Also Poster and Slogan competition for Energy Saving is conducted every year.

The top management of Excel Crop Care is also very supportive for the Encon related Activities. The President, Vice President , General Manager and Chief Manager of the company actively participates for the Energy Conservation.

The team of Energy Conservation is very young and enthusiastic. The Encon Cell Structure is as follows.



❖ ENCON Cell Structure.



Excel is having great team for Encon activities which is shown above. The Site In charge and Chief Manager of the company is also a part of the team by their valuable support for the implementation of the activities. They also helps Encon Team by providing necessary budgetary and morale support.

The head of the Encon committee is the Manager (engineering), He is also Energy Manager authorized by “BUREAU OF ENERGY EFFICIENCY”. In the down stream of the energy manager there are five engineers working for implementation of the encon activities.

Excel is having Specialize encon engineer who is constantly working and coordinating encon projects and other engineers from maintenance, electrical, instrument and utility who are working in their respective department are also working for implementation of the encon projects.

❖ Energy Conservation Achievement.

During the year 2006 – 07, Excel Crop Care has implemented 19 nos. major projects for saving of electrical energy, 6 nos. major projects for saving of fuel (thermal) energy and 5 nos. of activities for water saving. By these projects the unit got total saving of Rs. 530 lakhs with an investment of 702 lakhs. Therefore the payback period is only 16 months. The description of major projects with photograph is shown below and details of other projects are shown in attached sheet.

1) Energy Efficient Pumps Installation.



Before Activity:-

We had two nos. cooling water circulation pump of 40 HP for our newly commissioned residue incineration plant. Both the pumps were running simultaneously to match the required flow for the plant. After the pump audit conducted by the Encon team, they found that the pump capacity was much higher than the requirement and the delivery valve were throttled to match the required flow. And then it was decided that by installing the energy efficient pump and 100% opening of the delivery valve, we can reduce the pump size and therefore we can save the electrical power.

After Activity:-

Replaced both higher size pumps of 40 HP by energy efficient pumps of 15 HP and opened 100 % of the delivery valve.

Power Saving:-

Power consumption by both the pump before activity	:	58.6 kW
Power consumption by both the pump after activity	:	24.7 kW
Saving of power	:	58.6 – 24.7 kW
	:	33.9 kW
Average running hours of the pump	:	13 Hours per day.
Saving in Rs. (330 days per annum)	:	7,79,510 Rs. Per Annum

2) Energy Efficient Helical Gear Boxes Installation.



Before Activity:-

Earlier we have worm type reduction gear boxes which were highly inefficient. Also there was lots of leakages of gear oil due to three oil seals in the gear box that will also reducing the life of gearbox and making it more inefficient to work. Also the gear boxes were working on belt drive which is also inefficient for the power transmission.

There was lots of maintenance due to the oil leakage and belt drive system.

After Activity:-

Replaced 20 nos. of worm reduction gear boxes by energy efficient helical gear boxes.

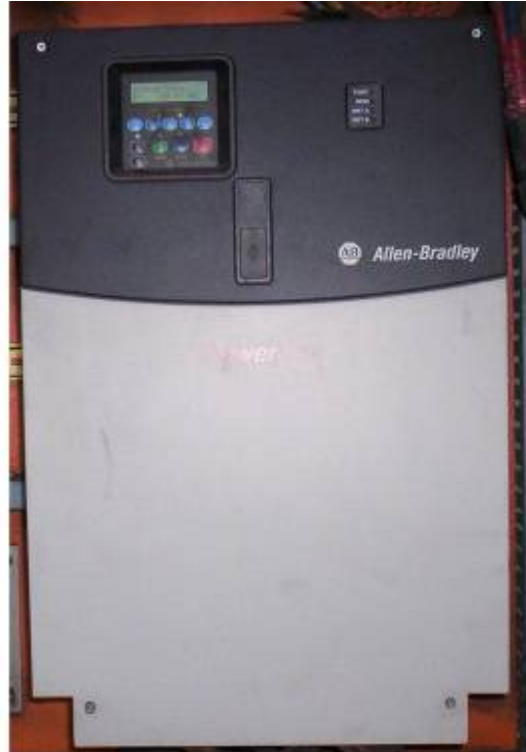
The helical gear boxes are more efficient than worm gear boxes, and there is further reduction in transmission losses as they are directly coupled with motor. Hence, Power saving can be achieved.

In helical gear box there is only one oil seal so leakage is less and due to that inventory required for oil, oil seal, pulleys and V –Belts is also less.

Power Saving:-

Total Power Saving achieved by 20 nos. Gear boxes is	:	5.67 lakhs
Payback period for 20 nos. gear boxes.	:	Approx. 21 Months

3) Variable Frequency Drive Installation.



Before Activity:-

Earlier, the damper of the Induced Draft fan was manually operated to match the required furnace pressure in boiler. When boiler was operating at part load, damper was closed and there was lot of loss of energy across partly closed damper.

Also the smooth operation of the damper was not possible as it was manually operated hence it was affecting the efficiency of the boiler.

After Activity:-

The Variable Frequency drive is installed in the motor of the ID fan. Now control of the required furnace pressure in boiler is done by changing the RPM of the motor. If the pressure required is less then the RPM of the motor will be also less and hence there can be saving of energy at low RPM of

the motor. Also through VFD there will be smooth control of the increasing and decreasing of pressure so the efficiency of the boiler is also increased.

Power Saving:-

Power consumption by both the pump before activity	:	816 kWh per day
Power consumption by both the pump after activity	:	465 kWh per day
Saving of power	:	351 kWh per day
Saving in Rs. (330 days per annum)	:	6.20 lakhs Rs. Per Annum

4) Automatic Voltage Regulator Installation.



Before Activity:-

Earlier, there was problem of Voltage increase especially in the night shift and due to that the lighting system was consuming more power than required. Also there was problem of maintenance and inventory of the lighting fixture due to blowing off the lamp.

After Activity:-

The Automatic Voltage Regulator were installed in the plant lighting system to supply constant voltage to the lighting fixtures and we got power saving out of that. Also found reduction in maintenance and inventory for the lamp.

Power Saving:-

Total Power Saving achieved by 02 nos. AVRs.	:	38,000 Rs. Per annum
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5) Vapor Absorption Machine Installation.



Activity:-

Installed Vapor absorption Machine for the chilled water supply to the plants. The machine works on steam and chills water. By this technology we can get chilled water TR at very low cost as compared to reciprocating or screw compressor.

Power Saving:-

Cost of 1 TR chilled water by screw compressor	:	Rs. 6.00 / TR
Cost of 1 TR chilled water by Vapor absorption Machine	:	Rs. 3.27 / TR
Saving in 1 TR generation.	:	Rs. 2.73 / TR
Approximate generation by VAM per month	:	1230770 TR
Saving per annum (In lakhs)	:	Rs. 33.6

6) Solar Water Heating System Installation.



Activity:-

Installed solar water heating system for the make up of the lignite boiler. The capacity of the solar water heating system is 7000 liters per batch and temperature rise of the water is up to 85⁰C.

Coal Saving:-

Lignite Saving per annum
(delta T = 50 degree and Mass= 10,000 liter) : 47143 kgs

Saving In Rs. : 94,285 Rs. Per annum

7) One No. 0.8 MW Windmill Installation.



Activity:-

Installed 0.8 MW wind mill in the Navada (Jamnagar) in the year 2006 – 2007.

Power Saving:-

Investment in Windmill	:	Rs. 4, 00, 00,000
Power Generated By windmill during the year 2006-07	:	14, 88,586 kWh
Credit achieved in Rs. By the wind mill during 2006 – 07	:	Rs. 71,60,319
Payback Period	:	Approx 5.5 years.

Other Projects implemented during year 2006 - 07.

- 1) 100 nos. Lighting Fixture of 80 Watt HPMV installed in place of 160 Watt MLL fixture.
- 2) Centralized instrument air network installed with energy efficient screw compressors.
- 3) Chilled water jacket drain system installed.
- 4) Electric Heater replaced by steam heaters in the residue plant.
- 5) Replaced chilled water by cooling water in the heat exchanger.
- 6) Reduced steam leakages in the plant and improved boiler efficiency and improved steam fuel ratio by 0.68 compared to last year.
- 7) Lignite Boiler Installed in place of F.O. Boiler as a part of Encon projects.
- 8) Steam condensate recovery system installed in the 23 Nos. of steam trap in the main steam header.
- 9) Automation done in the safety valve of the lignite boiler.
- 10) Condensate pump and condensate recovery system installed in Glphosate Plant.
- 11) Pressure reducing system installed in the pilot plant.

❖ Energy Conservation Plans and Targets.

POWER SAVING

Proposal Description	Investment (In lakhs)	Benefits	Saving per annum	Payback (in Years)
Energy Efficient Helical gearbox installation.	10.5	Reduction in Power by approximate 20 %. And Maintenance cost will be reduced.	7.7	1.36
80 Watt, HPMV lighting Fixture replacement in place of 160 Watt MLL fixture.	4.32	Reduction in power by 80 Watt per fixture.	3.1	1.39
Automatic Voltage Regulator Installation.	1.6	Reduction in power by 15 %	1.5	1.06
Variable Frequency Drive installation in AHU at different plants.	1.2	Reduction in power by 1.5 kw per hour per VFD.	0.6	2
Nos. High Efficiency Ejector supply pump Installation.	8	Reduction in power of 2.5 KW per hr per pump.	6.17	1.30
Lightnin Make energy efficient stirrer system installation.	15	Reduction in power by 50 %.	7.5	2
Replacement of conventional water and steam jet system by rotary vacuum pump.	1	Reduction in power	2	0.5
Variable Frequency Drive installation for cooling water supply pumps.	0.8	Reduction in power	0.8	1
100 KL Soft water storage tank with distribution network to supply soft water to entire utility.	19	Reduction in circulation power by 10 %.	6.78	2.8

FUEL SAVING

Proposal Description	Investment (In lakhs)	Benefits	Saving per annum	Payback (in Years)
Installation of 15 nos. steam On/ Off Valve in vacuum system instead of control Valve.	2.5	To reduce the steam leakages.	0.5	5

WATER SAVING

Proposal Description	Investment (In lakhs)	Benefits	Saving per annum	Payback (in Years)
Installation of Mechanical seal in the 3 nos. pumps in the boiler.	0.3	600 liter per day water saving	0.8	0.4
Installation of Mechanical seal in the 3 nos. pumps in the BD Complex.	0.3	600 liter per day water saving	0.8	0.4
Rainwater Harvesting	6.0	Rain water can be harvested and used for plant use.		

❖ Environment and safety.

Excel Crop Care is committed to preserve all types of environmental and safety related points for its employee.

Environment:-

The unit is having ISO 14001 – 2004 certificate for environment. The company fulfills all requirement regarding various environmental legislations and Environmental protection acts. Company has activated sludge processes based effluent treatment plant with primary, secondary and tertiary treatment. The unit has also installed two stage incineration plant as per guidelines of Central pollution control board. Excel has provided scrubbing system in each plant to control fugitive emission. External environmental audit through third party (Certifying agency) is carried out every year. The unit has plantation in and around the company premises. The company has day to day environment monitoring system and it has taken various initiatives taken to improve environment.

Safety:-

Excel crop care is proud to have excellent safety system for its employee. The unit have OHSAS 18001 certificate. In order to improve the safety system the unit has adopted best operational practices like..

- Work permit system.
- Safety inspection round.
- Safety awareness training.
- Safety equipment checklist.
- Continuous monitoring of working environment.
- Slogan/poster/suggestion competition during safety week (4th to 11th March)

Excel Crop Care has one of the best team for “Industrial Civil Defense” and it is known as ICD units. The team is well equip and well aware for all type of safety and life saving tactics. It is one of the best team in Gujarat state.

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