

API Manufacturing Facility at Aurangabad

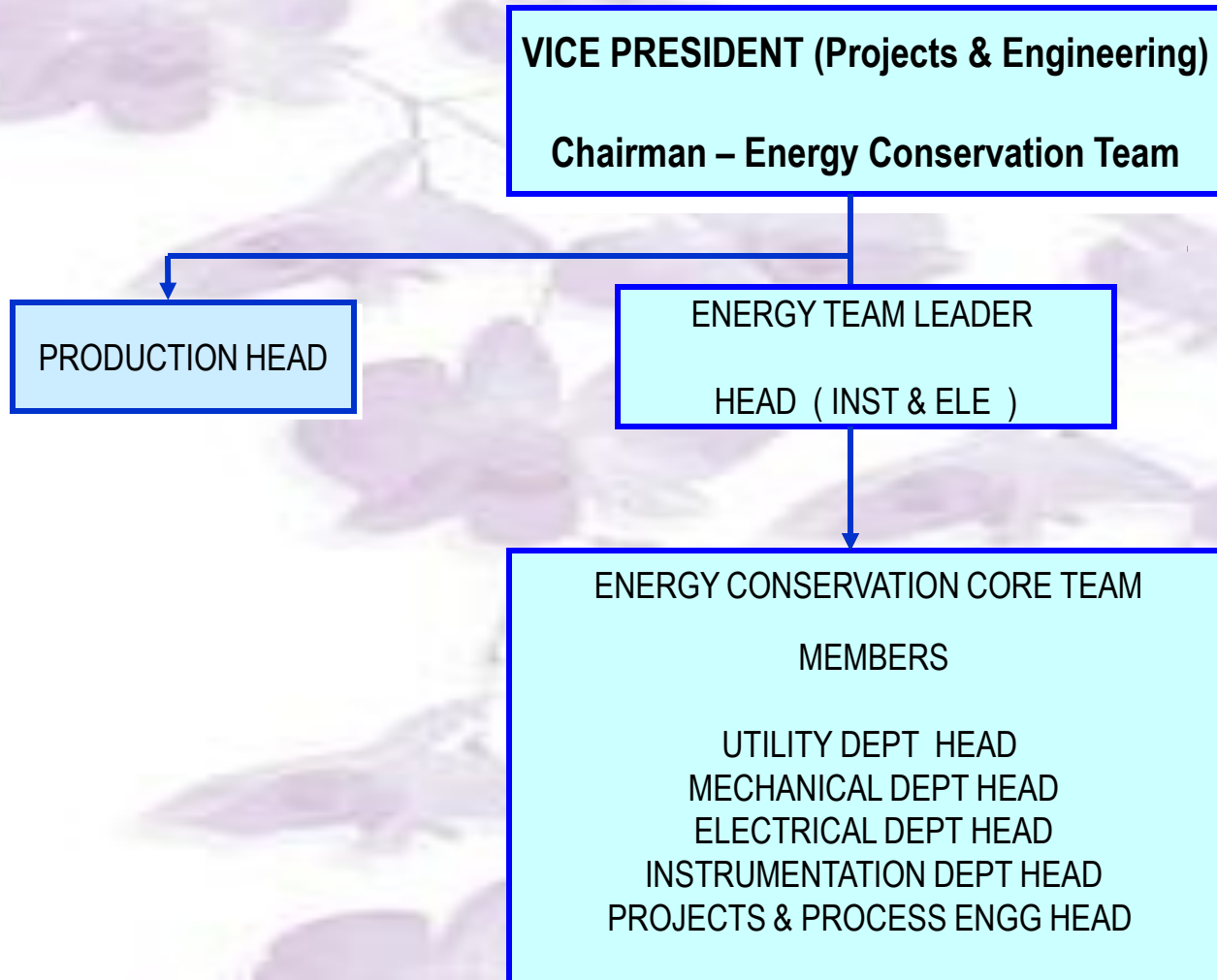


Export Oriented Unit (EOU)

- ❖ *Orchid Chemicals & Pharmaceuticals Limited, is an integrated pharmaceutical company. It is the largest Cephalosporins manufacturer and exporter.*
- ❖ *Commercial operations commenced in 1994 in Alathur, and in 2000 in Aurangabad*
- ❖ *Orchid's manufacturing facilities are 'Zero-Discharge' facilities with state of Art Manufacturing units.*
- ❖ *Regulatory Approvals & Accreditations*
 - ❖ *MHRA – Approved (Jan '07)*
 - ❖ *USFDA - Approved (July 2007)*



ENERGY CONSERVATION TEAM



ENERGY CONSERVATION OBJECTIVE

- ❖ At orchid we are committed towards Lowest Specific Energy Consumption by effective utilization of all energy resources and elimination of wastages.
- ❖ To achieve this we shall adopt diligent and effective work practices and continuously upgrade our business processes and technology with high standard energy efficient equipments.
- ❖ Accordingly we shall establish and incorporate an energy conscious working culture with involvement and participation of employees at all levels.

ENERGY CONSUMPTION

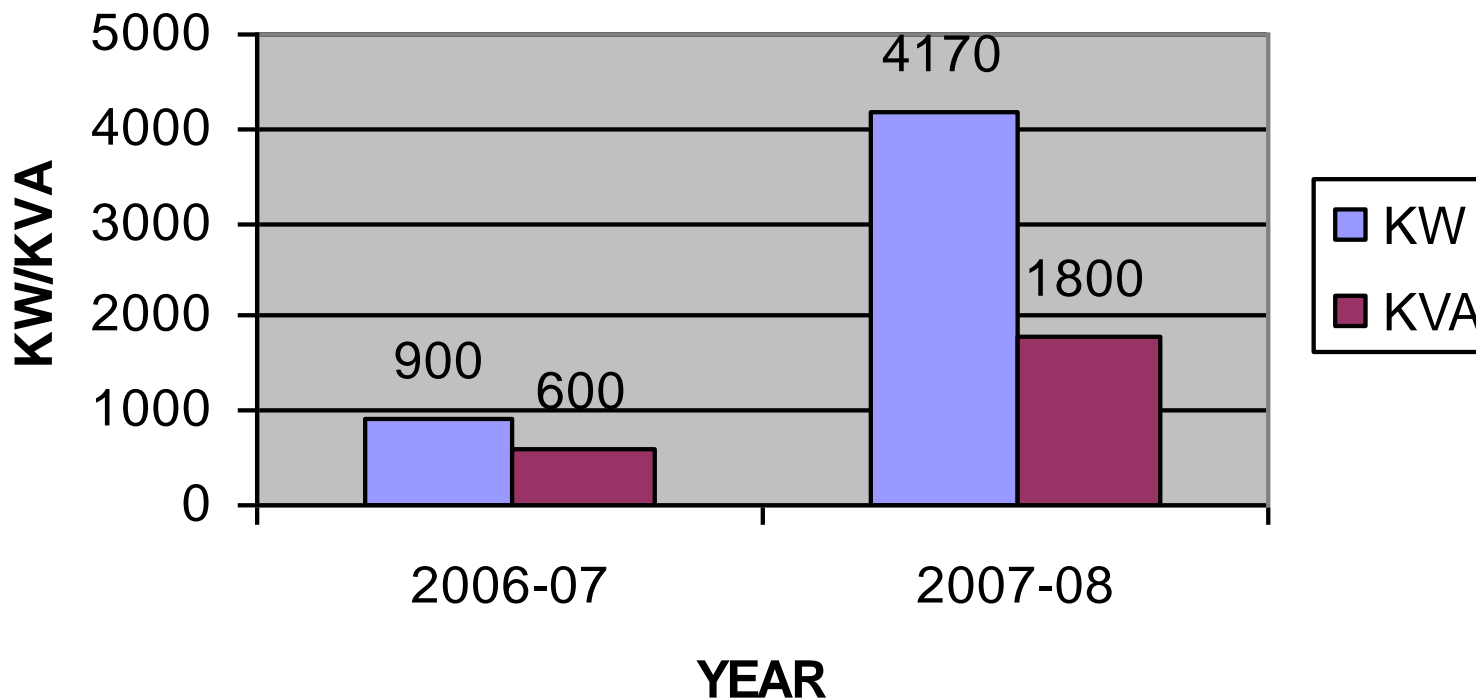
❖ We are reducing Energy Consumption through Regular Audits, Technology Innovation, Energy Efficiency Improvement Projects, R&D and Economical energy Substitute in spite of ascending rate of expansions & projects.

❖ Since we are in the business of life saving drugs & manufactures multiple products by various routes we are not able to give Specific Power Consumption for our products.

DESCRIPTION	UNITS	2005-2006	2006-2007	2007-2008
ELECTRICAL ENERGY	Kwh/ T	89164	104683	143780
THERMAL ENERGY	M Kcal/T	124.9	149	155
TOTAL ENERGY BILL	Rs in Lakh	444.44	575.84	1099.62

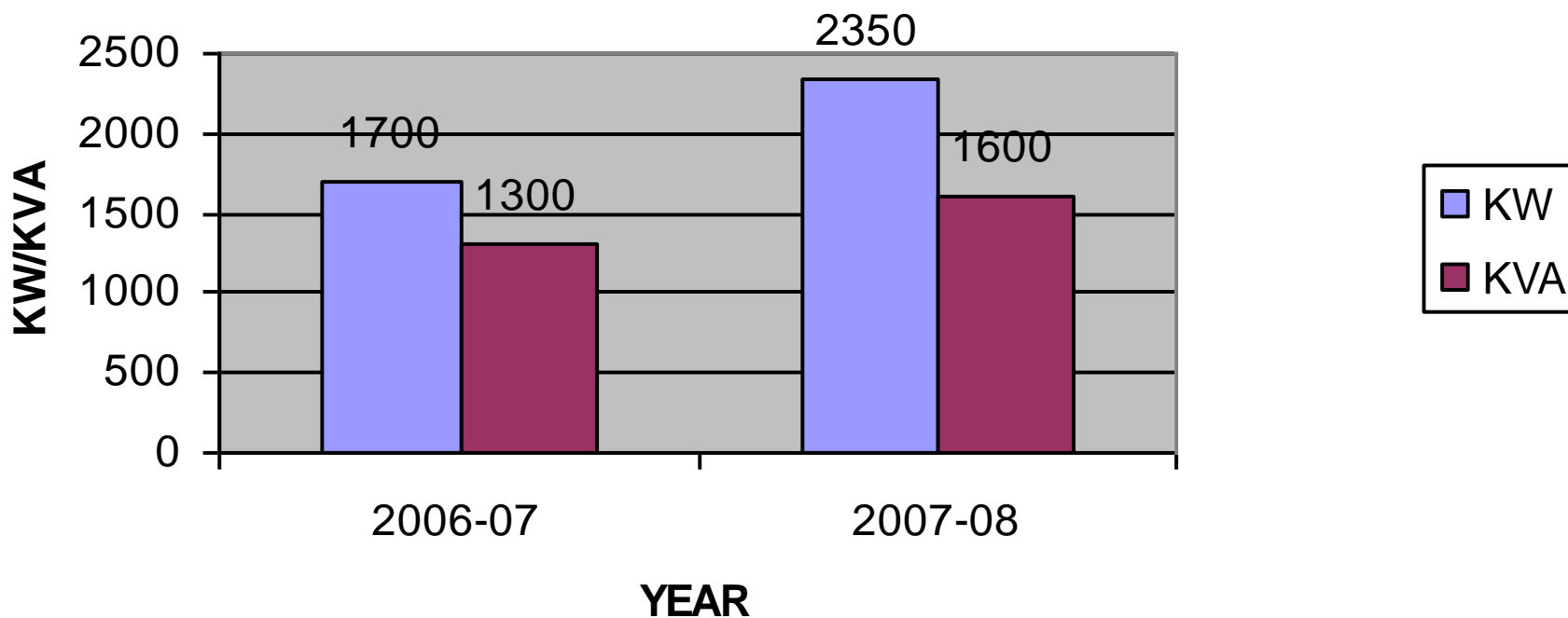
ENERGY CONSUMPTION DATA L – 8 PART

CONNECTED LOAD & MD

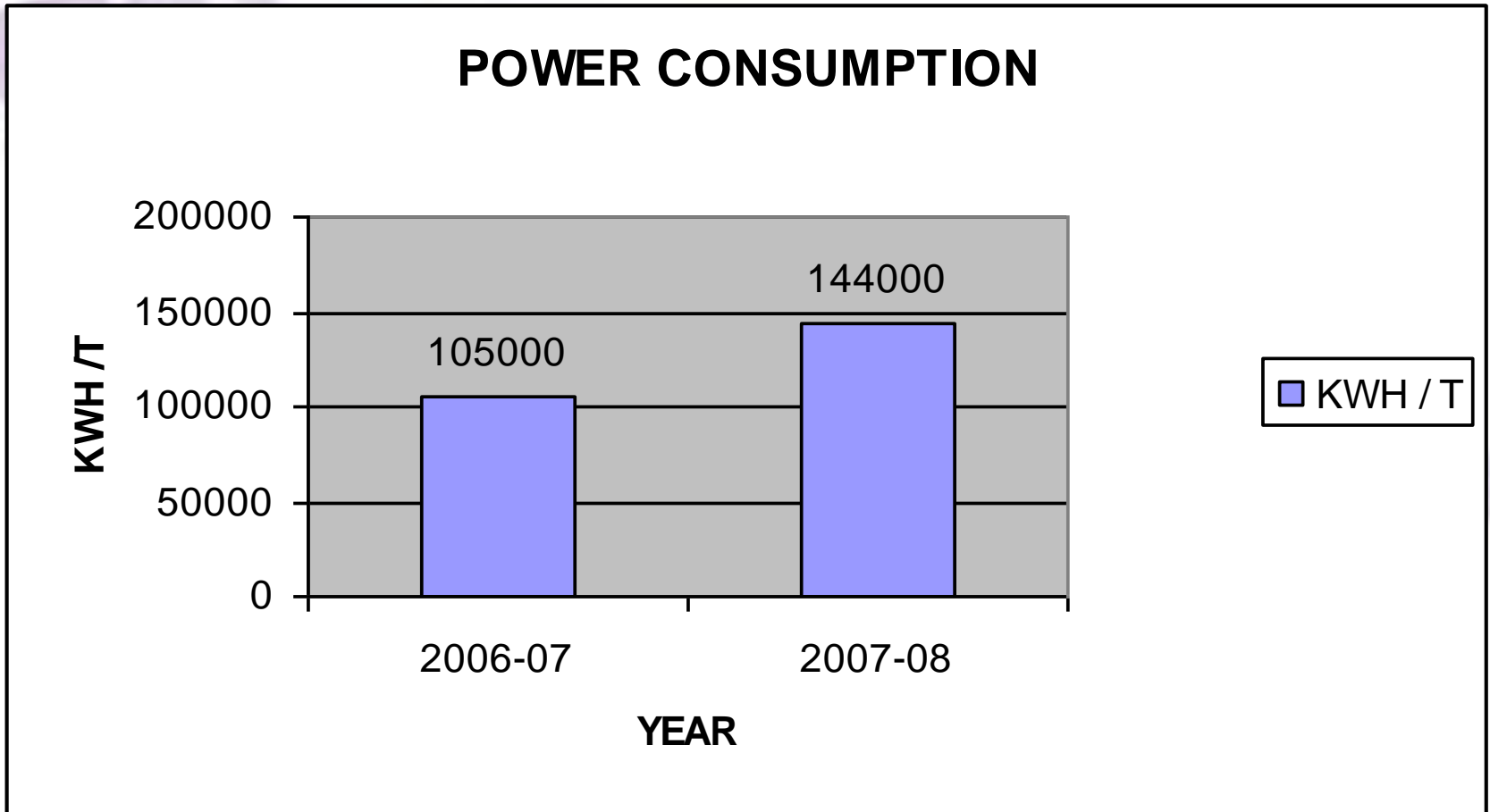


ENERGY CONSUMPTION DATA L-9

CONNECTED LOAD & MD

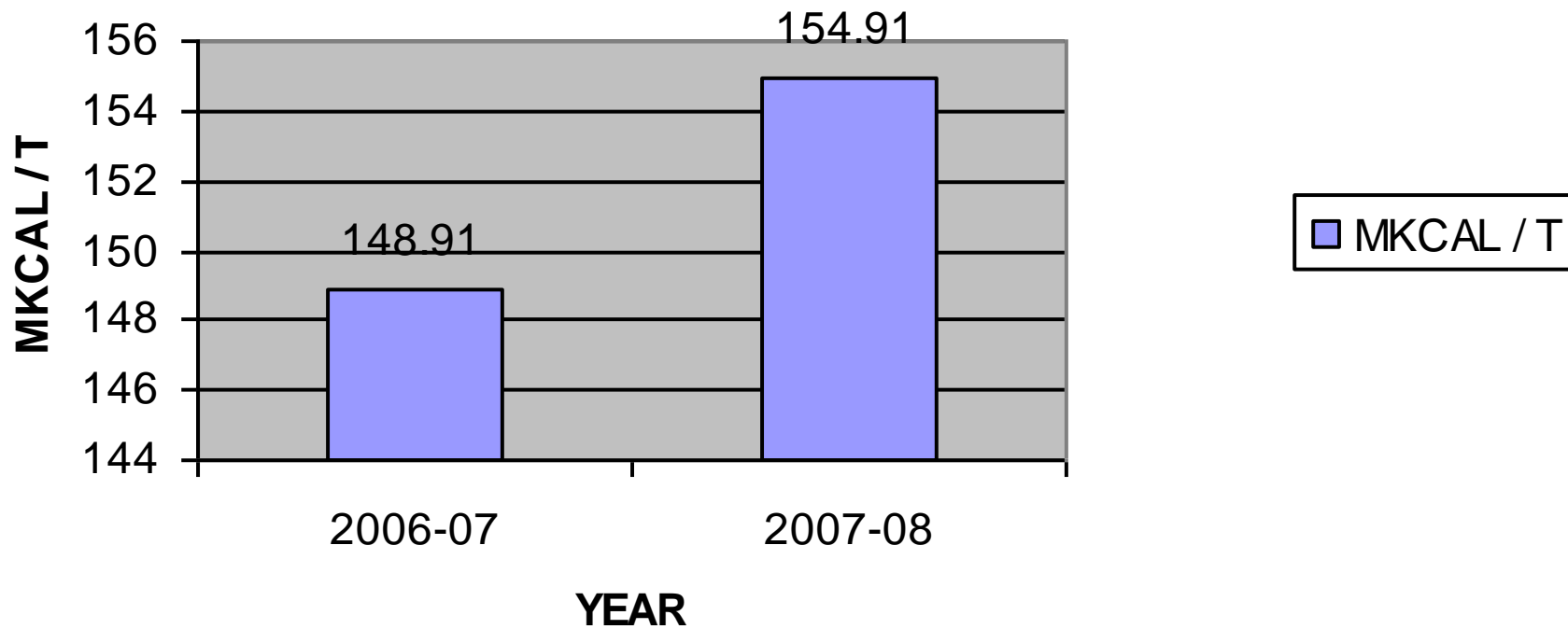


TOTAL ELECTRICAL ENERGY CONSUMPTION DATA



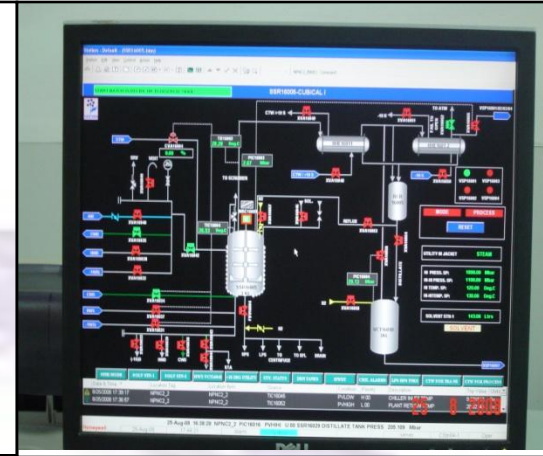
TOTAL THERMAL ENERGY CONSUMPTION DATA

STEAM CONSUMPTION



A : Reactor Automation

❖ **Reactors Operations which were in manual system is taken into Automation through DCS. Reactors with Utilities like Air, - 10 Deg, - 40 Deg, + 10 Deg, Nitrogen is controlled by accurate desired parameters. Also some of reactors are equipped with VFD for further**



1. Optimization of Compressed Air pressure

- ❖ **Initial System was Manual Control & Air was given Manually for 10 Min consuming 1.767 M3 Air.**
- ❖ **By Automation ,only 0.176 M3 air required resulted Savings of 1.5 M3 per Utility Change observed.**
- ❖ **No of Utility Changes is 3 Per Day & no of Reactor Installed with this Facility : 134 Nos.**
- ❖ **Net Air Saving is 603 M3 /Day**
- ❖ **Annual Electrical unit Saving : 41740 Units (Rs 1.92 Lac)**

2. -10 Deg Utility Observation :

- ❖ **Manual Control was used for Temperature control of Reactor**
- ❖ **Auto control facilitate Precise control.**
- ❖ **Brine Plant Running Hours reduced by 10 Min /Reactor/Day.**
- ❖ **TR saved by Precise control of Reactor temperature is 3 TR/Reactor/Day .**
- ❖ **Total Number of Reactor Installed : 107 Nos**
- ❖ **Annual Saving in TR : 112350 TR**
- ❖ **Annual Electrical Power Saving : 185652 Units. (Rs 8.54 Lac)**

3. - 40 Deg Utility Observation :

- ❖ **Manual Control was used for Temperature control of Reactor.**
- ❖ **Auto control facilitate Precise control.**
- ❖ **Brine Plant Running Hours reduced by 10 Min /Reactor/Day.**
- ❖ **TR saved by Precise control of Reactor temperature is 5 TR/Reactor/Day .**
- ❖ **Total Number of Reactor Installed : 40 Nos**
- ❖ **Annual Saving in TR : 60000 TR**
- ❖ **Annual Electrical power Saving : 313043 Units.(Rs 14.4 Lac)**

4 . Condenser Utility :

a) Utility Pump Observation :

- ❖ **Due to Automation Utility Pump Running Hours reduced from 24 hrs to 8 hrs.**
- ❖ **Avg. Power Consumption of Utility Pump is 0.27 KW/Condenser/Hr.**
- ❖ **Number of Condensers : 130 Nos.**
- ❖ **Annual Electrical Saving 196560 Units. (Rs 9 Lac)**

b) - 10 Deg Utility Observation :

- ❖ **Due to Automation Utility Pump Running Hours reduced from 24 hrs to 8 hrs.**
- ❖ **TR saved is 0.5 TR/HR.**
- ❖ **Number of Condensers : 65 Nos.**
- ❖ **Total Saving in TR is 520 TR / Day**
- ❖ **Annual Saving is 301086 Units .(Rs 13.85 Lac.)**

c) + 10 Deg Utility observation :

- ❖ **Due to Automation Utility Pump Running Hours reduced from 24 hrs to 8 hrs.**
- ❖ **TR saved is 0.5 TR/HR.**
- ❖ **Number of Condensers : 65 Nos.**
- ❖ **Total Saving in TR is 520 TR / Day**
- ❖ **Annual Saving is 169130 Units. (Rs 7.78 Lac)**

e) Reactor Motor VFD Installation :

- ❖ **VFD is installed in Reactors to control the RPM of Agitator as per Process requirement**
- ❖ **To optimize the Electrical power Consumption.**
- ❖ **No of VFD Installed on Reactors are 53 Nos**
- ❖ **Power Consumption without VFD is 328 KW/Hr.**
- ❖ **Power Consumption Per batch of 8 Hrs is 2584 Units /Day.**
- ❖ **40 % Power Saving observed by VFD .**
- ❖ **Annual Electrical power Saving : 361750 Units (Rs 16.64 Lac)**

MAIN PROJECTS 2007 - 08

➤ *Nitrogen Blanketing for Centrifuges*

Nitrogen Blanketing of Centrifuges done to avoid loss of Nitrogen during the Process through Automation controlled by DCS. This is resulted in reduction of Nitrogen for the process which is resulted in reduction of Power Consumptions of Air Compressors.



- ❖ **Nitrogen was escaping to atmosphere through open vent while doing inertisation of Centrifuge.**
- ❖ **Nitrogen consumption was 40 M3 /Day.**
- ❖ **Nitrogen Blanketing is done by using PRV & BPRV.**
- ❖ **39.39 M3/Day Saving is achieved in Nitrogen.**
- ❖ **Number of Centrifuges : 19 Nos.**
- ❖ **Annual Electrical Unit Saving : 300434 Units. (Rs 13.81 Lac)**

➤ *Installation of Dry Screw Type Vacuum Pumps*

Dry Screw Type Vacuum pumps are installed instead of conventional Oil or Water Ring Type Pumps to save the Electrical Energy. No of Installed Dry Screw Type Vacuum Pump is 18 Nos.



- ❖ **Power Consumption of Water Ring Vacuum Pump was 15 KW.**
- ❖ **Dry Type Screw Pump Power Consumption is 11 KW .**
- ❖ **Total Number of pump Installed : 18 Nos**
- ❖ **Annual Power Saving : 466560 Units (Rs 21.46 Lac)**

MAIN PROJECTS 2007 - 08

➤ *Peeler Centrifuges*

Peeler Centrifuge is installed instead of conventional Centrifuge which has an advantage of High Centrifugal Force Value as compared to conventional. These Centrifuges are controlled through VFD for optimum utilization of Electrical Power. These centrifuge have high filtration efficiency and 20 % Power Saving.

Annual Power Saving 30240 Units . (Rs 1.4Lac)



➤ *Horizontal Scrubber*

Six Numbers Horizontal Scrubber is installed instead of conventional type Scrubber which has given 35 % Power saving over conventional type Scrubber.

Annual Power Saving 388486 Units .(17.87 Lac)



MAIN PROJECTS 2007 - 08

➤ Installation of AOD Pump instead of Electrical Driven Pump

AOD Pumps Operating on Air is used instead of Electrical Motor Driven pumps to save Electrical Power.

Annual Power Saving 49751 Units. (Rs. 2.28 Lac)



➤ Automation of HVAC & Installation of Plug Type Fan Blower

HVAC Blowers are Plug type Instead of belt driven which has given 10 % saving in Electrical Power. Also Utilities connected to HVAC are Controlled through Controlled Valves for the Optimization of Utilities. Blowers are also run through VFD to control the required Process parameters with Optimum Utilization of Power. Total 13 Nos Blowers Installed .

Annual Power Saving 139398 Units . (Rs 6.41 Lac)

➤ Installed Inline Type gear boxes on Reactors

New Inline helical Type gear Boxes Provided on Reactors instead of conventional worm Wheel type gear Boxes. These gearboxes have efficiency > 90 % as compared to <72 % efficiency of conventional Gearboxes.

Annual Power Saving 338800 Units . (Rs 15.58)