

ENERGY MANAGEMENT POLICY

We, at United Phosphorus Limited are committed to improve energy efficiency continuously by establishing and implementing effective energy management programs worldwide that support all operations and customer satisfaction while providing a safe and sustainable environment.

To meet above goals we will strive

- To be amongst the lowest specific energy consumer in the industry we operate.
- To maximize the use of renewable fuels and low energy level fuels in our operations.
- Maximization of self generation
- Manage efficiently the utilization of energy resources, upgrade equipments and employ cleaner and more efficient technology.
- Train employees to make UPL the pace setter in the area of energy conservation.
- Carry our Internal & External Audits to identify areas for improvement.
- Enrich our experience on energy conservation by exchange of ideas with other organization.
- Promote awareness among all members of UPL.
- As part of energy conservation we are committed to reduce our energy consumptions by 10% from the present level by 2010.

Company Profile

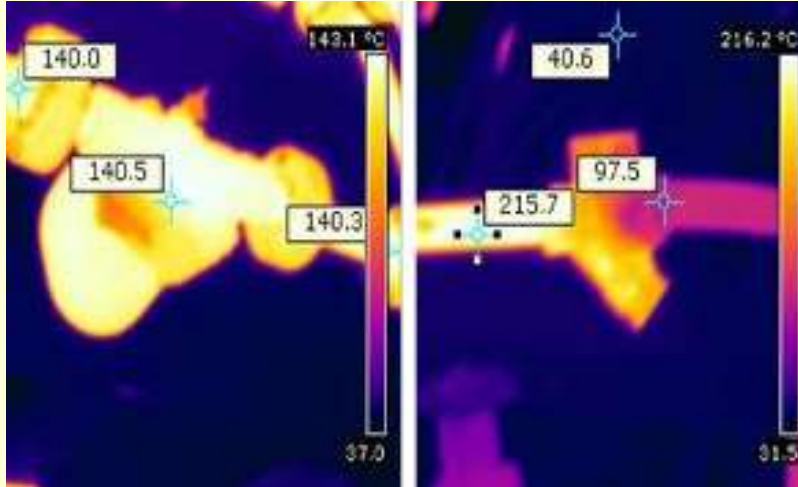
United Phosphorus Limited (UPL) is a global generic crop protection, chemicals and seeds company, headquartered in India (Mumbai). UPL and Advanta, the two companies in our group, are listed on the Indian stock exchange, with a combined market capitalization of approx \$2.5 billion. The revenue of our Company has grown at a CAGR of 26% over the last 5 years. Our fantastic growth is the result of successful backward and forward integration by taking advantage of the consolidation opportunities within the agrochemical industry. Integrating the acquired companies is as challenging as acquiring them and at UPL, we have a dedicated in-house team specializing in this task.

Energy Consumption of UPL Units (at Gujarat)

UPL is having 6 no's of production units including one Captive Power Plant comprising of one GTG of rating 41 MW and one STG of rating 21 MW in Gujarat State. UPL is producing different types of products and the major products are DVACL, MPBAD, Ammonia, Antracol, Monocrotophos (MCP), IKI220, Acephate, Caustic Chlorine (CCP), Mencozeb (MNZ), etc. UPL uses 3 types of energy sources i.e. Electricity, Natural Gas and Furnace oil. Out of these 3, Natural Gas has the highest share (almost 87 % of total energy bill). Total cost of energy bill for last year was Rs. 159.75 Crores, which includes Rs. 136.38 crores for Natural Gas, Rs. 16.34 crores for Electricity, Rs. 2.85 crores for Furnace oil and Rs. 4.24 crores for water. Last year company consumed 895 Lac SM3 of Natural Gas, 26 Lac Liters of Furnace oil, 184.84 Lac KL of water and 2456 Lac kWh of Electricity. Due to sincere efforts in the direction of Energy Conservation by the company there has been significant reduction in the consumption of energy.

Steam trap correction program across UPL

Thermography study



Not Working

Working



Wrongly Installed

Corrected

Totally 851 no's of stem traps (TD3 – 618, Float – 219, Inverted Bucket – 14) installed and 771 traps were audited / studied by Thermography. Replaced not working & not suitable traps with recommended type & size of traps for distribution lines and for process equipments. After implementation specific steam consumption for process reduces drastically and batch time reduces, hence production yield increased. Savings achieved by the above implementations are as follows:

Savings achieved : Intangible

Investment : Rs. 10.0 Lacs

Maintaining power factor nearby unity



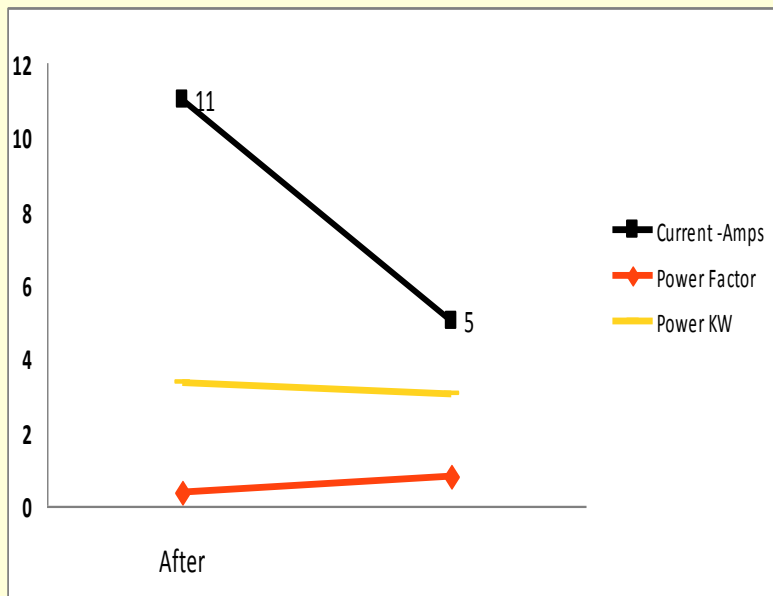
Installed Automatic Power Factor Controller (APFC) for the MCC's and maintaining plant power factor near by unity. Savings achieved by this implementation is as follows:

Rebate for PF : Rs. 60.0 Lacs / annum

Investment : Rs. 40 Lacs

Payback period : 8 months

Delta to Star conversion in Under-loaded Motors



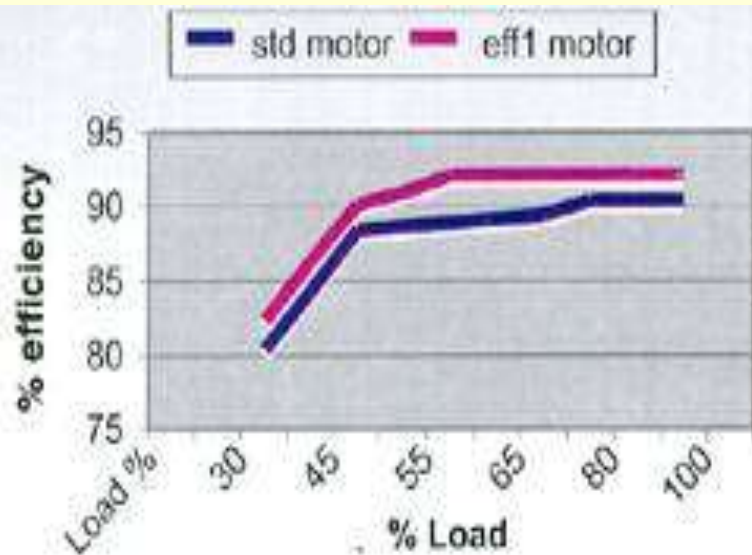
Audited all the motors loading installed in the plants and observed that 11 motors are operating continuously below 40% loading. Converted Star connection to save the energy when the motor is running at below 40% load.

Estimated savings : Rs. 2.41 Lacs / annum

Investment : Nil

Payback period : immediate

Energy Efficient Motors



Replaced old and inefficient motors with Energy efficient (Eff-1) motors. Energy efficient motors having more efficiency comparing to standard motors at all the load conditions.

Total no of motor replaced : 31 no's

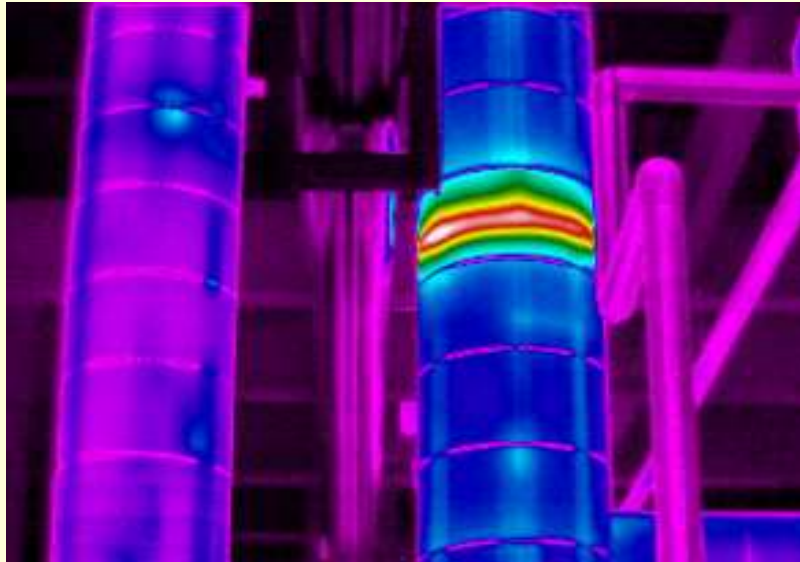
Estimated savings : Rs. 4.0 Lacs / annum

Investment : Rs. 8.0 Lacs

Payback period : 24 months

Insulation

Insulation leakage study with Thermography



Provided new insulation for header lines and reactors for chilled water and brine. Regularly monitoring the insulation condition of chilled water and brine distribution lines by Thermography to avoid leakages and hence avoiding heat loss from the insulation.

Savings achieved : Rs. 47.8 Lacs / annum

Investment : Rs. 13.0 Lacs

Payback period : 3 months

Installed energy efficient feed water pumps for boilers



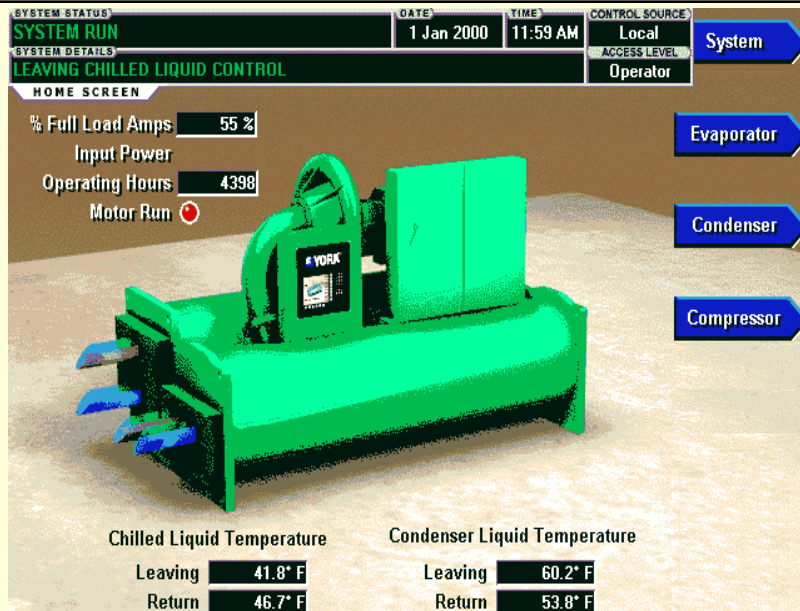
Installed new high efficiency vertical boiler feed pumps in place of old low efficiency pumps. (Total 2 installations)

Savings achieved : Rs. 1.6 Lacs / annum

Investment : Rs. 2.0 Lacs

Payback period : 15 months

Replaced old Reciprocating chiller compressor with York screw chiller



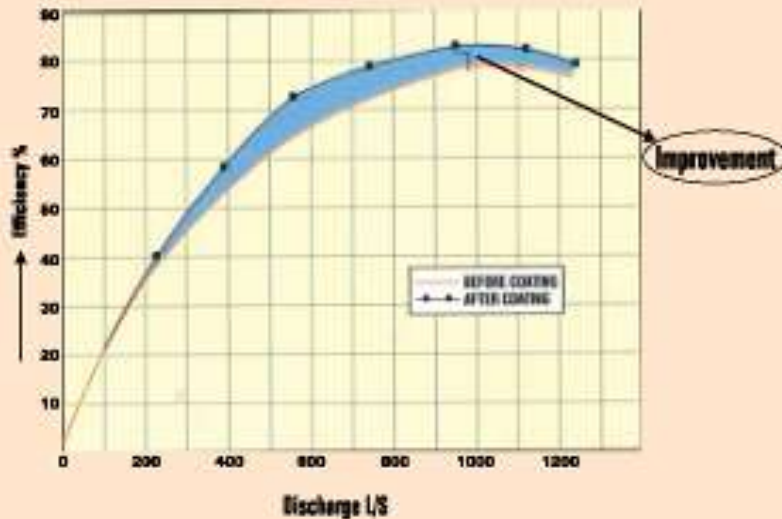
Installed new York screw chiller in place of old reciprocating compressor. Due to variability in loading, Reciprocating goes unloading which is wastage of energy, while Screw compressor modulates with loading and optimizes the power to compression ratio.

Estimated savings : Rs. 40.0 Lacs

Investment : Rs. 55.0 Lacs

Payback Period : 17 months

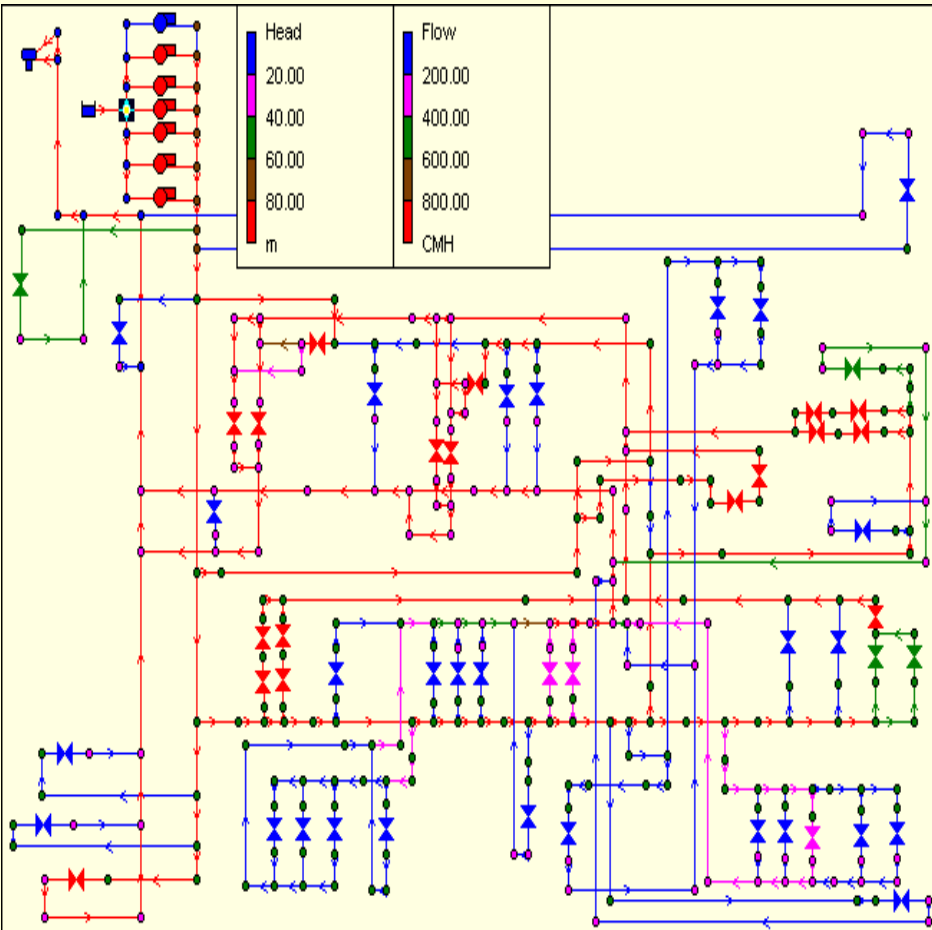
Performance improvement in pumps



Improved pumps efficiency to above designed best efficiency point by providing corracoat-coating to pump impeller and casing. After this coating flow has increased because of smooth surface area and reduces friction losses and reduces power consumption. Thus efficiency of pump increased to 7% more then the designed efficiency.

Details	Before	After
Flow (M ³ /Hr)	450	460
Head (Mtrs)	23	22
Power (KW)	40.3	35.9
Overall Efficiency (%)	70	77
S.E.C (KW / M³)	0.0895	0.0780
Saving in S.E.C	0.0115	
Power savings (KW/ hr)	5.29	
Annual monitory savings (Rs .Lacs)	2.1	
Investment (Rs. Lacs)	0.40	
Payback period (Months)	3 months	

EPANET Study – Ammonia Plant



This internal study revealed the bottlenecks of critical Heat Exchangers where the process rates were restricted. After removing the debottleneck, and H/E cleaning the process feed rate could be increased by 20 – 25 %. This lead to reduction in SPC from 963 KW/ Ton to 763 KW/Ton.

Savings:

Production : 300 Ton / Month

Power savings : 720000 KWH / Annum

Monitory savings : Rs. 43.2 Lacs / Annum

Lighting (Metal Halide in-place of HPMV lamps)



Replaced 250W HPMV street lights with new 125W Metal Halide lamps, which reduces power and improved lux levels.

Total no's changed : 200 (Approximately)

Per lamp savings:

Estimated savings : Rs. 2,750 / annum

Investment : Rs. 1,500 / lamp

Payback period : 7 months

Lighting (LED in-place of GSL lamps)



60W GSL lamps were provided for visual inspection of process inside the reactor and the lights will operate continuously. Installed 7W LED vessel lamp in place of 60W and provided switch with timer control.

Total no's replaced : 150 fittings.

Per lamp savings:

Estimated savings : Rs. 3,200 / annum

Investment : Rs. 3,000 / lamp

Payback period : 11 months

Installation of Evaporative Condenser



Replacement of condenser and CT with Evaporative condenser unit lead us the reduction in SPC. The benefit is on the account of lower cooling water circulation power and lowered condensing temperature compared to CT and condenser unit. Also cost of condenser cleaning and effect of fouling is minimized. Online cleaning is possible here in as water is circulating on the tubes containing Refrigerant.

Savings:

SPC of Before : 1.13 KW/TR

SPC After : 0.87 KW/TR

(only compressor power is considered here)

Power savings : 300643 KWH/Annum

Monitory savings : Rs. 18.03 Lacs / annum

Investment : Rs. 11.00 Lacs

Payback period : 8 Months

Just imagine what affect you and I can cause
if we all take up these simple steps.



Lets save our planet..

If all of us contribute,
we can multiply the affect many times over.



I'm doing my bit. I'm sure you'll join me.
Thanks for your time.