

Project No	1
Lighting Optimisation IY-Conversion	

Objective :

To optimise the Lighting power consumption in cable Corder & Loom area.

Background :

After threading completion in conversion area the light requirement is only when operator has to check the runability of machine otherwise there is no use of all lights. In normal running condition few tubelights are sufficient. We can switch off rest of lights automatically after threading operation

Description	UOM	Value
Tube Lights	No	796
Power cons/Tube	Watt	28
Power Cons.	KWH/Day	535

Project Details

- a. Design & prepared circuit diagram for auto timer logic system (ATLS)
- b. All cable corder m/c & loom m/c lighting taken on auto timer logic system except emergency lights.
- c. Also cable corder m/c's SLDB cover modified with acrylic sheet door for easier operation .
- d. In this system the lights, which are on ATLS, will be automatically switch-off after preset time of 30 minutes.

Project Summary :

s.n	Description	Uom	Before	After Modification
1	Tubelights	no	796	796
2	Power cons.	KWH/Day	535	266
3	Yearly Saving @330 Days	KWH		88770
4	Yearly Saving	Rs LAC		4
5	Expenses	Rs Lac		0.6
6	Completion Date			July ' 08

Team :

M.S.Chouhan
Sanjeev Gupta
Vipul Galchat

Project No	2
Corrocoating of 2 nos. pump in utility - POY	

Objective :

Corrocoating of 2 nos. of pump in utility for energy saving .

Background :

Normally the impeller of a pump is just with base metal & corrocoating provides some friction coating thereby reducing frictional losses & thus efficiency improvement. Two pumps of following specs were selected for corrocoating.

Description	Pump details	
Application	Chilled water	Cooling water
Working pressure	6.6 kg/cm ²	2.8 kg/cm ²
Flow	6460 gpm	2750 gpm
Pump	A	C

Project Details

- a.) It was decided that we should corrocoate both the pumps A/C and hence Both the pumps were Corrocoated.
- b.) Measured the load of both the pump before and after corrocoating.
- c) We achieved the saving of 96 KWH per day on account of both the pumps.

Project Summary :

s.n	Description	Uom	Before	Modified
A	Chilled water pump			
1	no.of pumps	No	1	1
2	Application		Chilled water	Chilled water
3	Total flow	Gpm	6460	6460
4	Current			
5	R	Amps	130.5	119.8
6	Y	Amps	127.8	120.9
7	B	Amps	131.9	118.0
B	Cooling water pump			
1	no.of pumps	No	1	1
2	Application		Cooling water	Cooling water
3	Total flow	Gpm	2750	2750
4	Current			
5	R	Amps	131.0	124.7
6	Y	Amps	128.8	123.1
7	B	Amps	131.8	126.7
9	Total Saving	Units / day		96.0
	(both pumps)	(taken less saving)		
11	Saving / year	units/year	180 days	17280.0
12	Saving in lacs	Lacs / year		0.78
13	Expenses	Lacs		1.03 lacs
14	Completion Date			April'07

Team :

SS Sharma

R.Danga

S.Singh

Project No	3
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HTM flow optimisation – POY - (POLY)
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Objective :

To optimise the heat transfer media flow for POY & IY Plant.

Background :

Before IY plant two no Pumps were running with 302 impeller. The flow was 650 CMH. Each Installed motor rating was 132 KW. Total running load was 225 KW
Since the requirement of IY plant was 80 CMH, one pump impeller size was raised to 324 mm & it was decided to run one small & one big pump. The running load came to 250 KW. Installed motor rating of bigger Pump was 200 KW.

After IY plant was commissioned the Flow was 730 CMH & the running load of one 302 mm dia pump and one 324 mm Dia pump was 250 KW.

It was thought whether we can do something to further optimise the flow so as to save on power.

User	HTM flow CMH	AT temp Diff C
POY	650	17 °C
IP Plant	80	17 °C
TOTAL	730	

Project Details

a) When only POY plant was operated the supply & return temp of HTM were 317 C/ 300 C. The delta of Temp was 17 C. Both pumps were operated at Diff press of 102 m. From enclosed fig- 1 of pump characteristic curve each pump was operated at 325 CMH resulting in total flow of 650 CMH.

b) Since the IY plant expansion required additional flow of 80 CMH, one pump impeller size was raised to 324 resulting in 110 m head. The combined flow of 324 mm dia impeller pump & 302 mm dia impeller pump was 730 CMH. The temp diff was same that is 17 C.

c) It was thought that if we can raise the supply temp of HTM we can reduce the flow. However the temp difference across the HTM will rise.

d) If we can increase the supply temp by 3 C ie to 320 C from 317 C than at 650 CMH the delta of Temp will rise to 20 C from the present 17 C.

d)So we changed the impeller size to 302 mm from 324 mm so as to get 650 CMH flow instead of 730 CMH flow.

e)Trials were taken & a temp diff of 20 C was established in HTM CKT.

f) Everything was found quite OK & system was commissioned with net saving of 888 KWH / Day.

Project Summary :

s.n	Description	Uom	Before	Modified
1	No of pumps running	No	2	2
			One Big + One small	Both small
2	Head	m	110	102
3	Total flow	M3/Hr	730	650
4	Impeller Dia	mm	324/302	302
5	Pump Efficiency	%	67.00%	74.70%
6	Power cons	KWH / hr	250	213
7	Saving	KWH / hr		37
8	Saving / day	Units/day		888
9	Saving	KWH/Year		311500
	350 Days saving considered.			
10	Saving	Rs Lac/Year		14
11	Expenses	Rs		Nil
12	Completion Date			June' 2007

Team :

ORK Reddy
TJ Parmar
Ssingh
Vakil Singh

Enclosures :

Pump Characteristic curve - Fig -1/2

Project No	4
LTG AHU 1 to 5 (POY ,Spg 2) RH Increased By 10 %	

Objective :

To increase the RH % in LTG AHU (1-5) from 80 to 90 % in two steps.

Background :

PI refer to system P & ID .RH is maintained by heating coil. i.e if RH is more steam firing will increase so as to maintain the RH. This also gives more heating load to the system & consequently consumes more tonnage.If we can run the plant with High RH we can save on refrigeration.

Project Details

System set points were changed in two steps on all 5 AHUs.In first step Rh was raised to 85 % from 80 % whereas temp remained same ie 18 C.In second step Rh % was changed to 90 % & temp of 18 C after Reheating Coil.At 80 % Rh chilled water Valve opening was 61 % & at 90 % Rh ,CHW valve opening came to 33 % This resulted in saving of 300 Units / Day.This is based upon theoretical calculations.

Project Summary :

s.n	Description	Uom	Before	Modified
1	No of AHUs	No	5	5
2	Temp after Pre heat Coil	C	18	18
3	RH Final	%	80	90
4	Chilled water C/V Opening.	%	61.4	33
8	Saving / day	Units/day		300
9	Saving	KWH/Year		109500
	350 Days saving considered.			
10	Saving	Rs Lac/Year		4.92
11	Expenses	Rs		NIL
12	Completion Date			August ' 07

Team :

Sandeep Onkar
S.Sharma
P.Parekh

Enclosures :

System P & ID
Fig 1

Project No 5

Cooling Tower Fan Optimisation -IY-Utility

Objective :

To optimise the cooling Tower Fan running hours for maintaining required temperature of cooling water in winter.

Background :

In winter the operating load on refrigeration is 500 Tr & beside that one air compressor (Press- 3.0 Bar G , 300CMH, 80 KW) runs on the cooling water system. Cooling water temperature has to be maintained between 25 deg. Cent. To 30 There is no control on Temp of CW & temp goes down. If the fans can be switched off when low temp is achieved we can reduce power consumption.

Project Details

a. It was decided to operate both the fans with auto on-off system by controlling temp.

b. Fan no.1 was set to operate between 25 to 28 deg. Cen. And fan no. 2 was set to operate between 27 to 30 deg. Cen.

Project Summary :

s.n	Description	Power cons. KW	Operating hours/day before	Operating Hours/day after
1	Fan no.1	24	20.1	15
2	Fan no.2	24	20.1	15
3	Total	48	40.2	30
7	Saving	KWH/Year		36720
	(Five months)			
8	Saving	Rs Lac/Year		1.65
	Saving(conservative)	Rs Lac/Year		1.5
9	Expenses	Rs		Nil
10	Completion Date			May' 07

Team :

SK Singh
Ajay Dubey
S.Tyagi

Project No	6
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Agitator running hours optimisation – POY (POLY)

Objective :

To optimise the running hours of additive storage preparation tank Agitator and TiO₂ circulation pump .

Background :

1) In TiO₂ preparation system we prepare the emulsion in preparation tanks (02 nos) & then the emulsion is being circulated via Pearlmill & circulation pump.

2) Preparation tanks are equipped with agitators & runs 22 Hrs. It was thought to optimise running of agitators, pearlmill & circulation pumps to save on power. System P & ID is attached.

Project Details

a) Agitator running was optimised to 7 hrs running each against 22 hrs running each for the same quality output.

b) TiO₂ – Circulation pump – through Pearl Mill - Originally TiO₂ circulation pump running for 4 hrs / batch & Now after optimisation of process parameter – pump running hrs. has been reduced to 2 hrs / batch .

Project Summary :

sn	Description	Uom	Before	Modified
A) FOR AGITATORS -				
1	No of agitators	No	2	2
2	Capacity	KW	2.5	2.5
3	Running hours	Hrs	44	28.5
4	Power cons.	KWH/batch	110	71.25
5	Saving / day	Units/ day	0	38.75
6	Saving / Year	Units / year	0	14144
7	Saving / year (Rs.)	Rs. / year	0	70720
B) FOR TIO2 PUMP & PEARL MILL				
1	Capacity	KWH	8.35	8.35
2	Power cons.	KWH/batch	33.4	16.7
3	Saving /Month	Units/ Month	0	417.5
4	Saving / Year	Units / year	0	5010
5	Saving / year (Rs.)	Rs. / year	0	25050
6	Total Saving	Rs Lac/Year		0.96
7	Expenses	Rs		0
8	Completion Date			April '07

Team :

O.R.K.Reddy
Rajeev Singh
Sunil Patel
Ptabhat Ranjan
Navin Chandel

Enclosures :

System P & ID
Fig 1
Fig 2
Fig 3

Project No	7
Switching Off Spg 2 LTG Condensate Transfer Pump .	

Objective :

To stop Spg -2 / LTG AHU condensate transfer pump.

Background :

In SPG 2, There are ahus & condensate is generated in AHUS . This condensate was collected in condensate Tank at 0.00 Mt & was then transferred to VAC/Boiler & WHRB by centrifugal pump.It was thought to transfer this water to boiler feed water tank by gravity to save on power.

Project Details

- a.Available head is 18 M which is sufficient for gravity feed .
- b. It was decided to make a bypass & feed was given to boiler feed water Tank. Refer to P & ID (Fig 1)

Project Summary :

s.n.	Description	Uom	Before	Modified
1	No. of pump	No	1	0
2	KW		2.2	0
3	Savings	KW	0	2.2
4	Savings	KWH/Day	0	52.8
				50
5	Savings	Lac Rs/Year	0	0.82
6	Expenses			Nil
7	Completion Date			April '07

Team :

RK Danga
M Gohel

Enclosures :

System P & ID- Present & Modified (Fig 1 & Fig 2)

Project No		8
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IY SPG & Winding Hall Temp Rise

Objective :

To increase Take Up room temp to 28 C from 25 C.

To increase conversion Hall Temp to 27/28 C from 25/26 C.

Background :

It was thought that if we can increase the operating temp of spg & CC areas it will result in saving refrigeration.

Project Details

a.Increased SPG temp to 28C from 26 C

b.Increased CC Hall temp to 27/ 28C from 26/25 C

The control Valve opening got reduced by 13 % in both areas.

Project Summary :

A saving of Rs 3.0 Lac / annum was achieved based on theoretical & actual units saving.

Total Savings in Units was 180 Units/ Day

Team :

SK Singh

Ajay Dubey

S.Tyagi

Project No	9
Stoppage Of Chilled Water Of Packing AHU (Spg - 1)	

Objective :

To stop the chilled water supply in SPG 1 packing AHU .

Background :

We were maintaining air conditioning in POY packing area & thus consuming refrigeration. We were maintaining 26 C temp in the Hall.
 Since we do not require any Air conditioning for Polyester Yarn in Packing area, We can stop feeding refrigeration & thus save on power.

Description	Details
ChW Flow	10 M3/Hr
Tonnage	13 Tr
Hall Temp	26 C

Project Details

- a. Stopped the Chilled water for packing AHU & kept fans & airwasher running.
- b. We could still achieve 30 C in the Hall.
- c. Saving achieved is 26 TR.

Project Summary :

s.n.	Description	Uom	Before	Modified
1	Chilled Water Flow	CMH	10	
2	Temp Diff across CHW	C	4	
3	Tonnage on System	TR	13	
4	Room Conditions-Temp	C	26	29
5	Saving	TR		13
6	Saving @ 0.6KW/TR	KW		7.8
7	Savings	Units/Day		187
	Further Reduced	Units/Day		160
8	Savings	Lac/Year		2.6
9	Expenses	Rs		Nil
10	Completion Date			May ' 07

Team :

S S Sharma
 R.Danga
 S.Singh

Project No 10

Reduction in LP Air Pressure - IY

Objective :

To reduce LP air pressure from 4.0 Bar G to 3.1 Bar G.

Background :

LP air was getting produced at 4.0 bar G where as requirement at user point for air intermingling is 2.8 Bar G max.

Project Details

The pressure drop across the circuit was normal 0.2 bar G .So it was decided to straight away reduce the generating press of compressor.

Project Summary :

s.n	Description	Uom	Before	Modified
1	No of compressor	No	1	1
2	Press (discharge)	BarG	4	3.1
3	Units consumed	KWH	2750	2050
	Per day			
4	Saving / Year	KWH		255500
5	Annual Savings	Rs Lac		11.5
6	Completion Date			6.08.07

Team :

Rajeev Dubey
SK Singh
Ajay Dubey

Project No	11
Cleaning of pack body by blower instead of MP air.	

Objective :

Cleaning of pack body by blower instead of MP air.

Background :

We were using the MP air to clean the pack body, by using the blower we can save the electrical energy .The opening size is 1/4 " & Air consumption is 100 CFM

Project Details

- a. Blower air cleaning started in place of compressed air at 7 Bar.
- b.This resulted in saving of 100 CFM air at 7 bar for 4 Hrs.
- c. Saving achieved is 80 units.

Project Summary :

s.n.	Description	Uom	Before	Modified
1	Compressed Air Cons	CFM	100	Nil
2	Blower operation	No	nil	1
3	Power cons.	KW	22	0.6
	(@ 0.22 KW / CFM)			
4	Savings	KW	0	21.4
5	Savings	KWH/Day	0	86
	(basis 4 HR Running)			80
6	Savings	Lac Rs/Year	0	1.4
7	Expenses	Lacs		0.05
8	Completion Date			May ' 07

Team :

Sandeep Onkar
S S Sharma
R.Danga
S.Singh

Project No 12

Optimisation heating load of Pre-Pack heating oven.

Objective :

To switch off one PPH Oven & cutter die plate preheating oven (poly) along with & Dowtherm gun.

Background :

We are having 2 nos PPH oven for pre-heating of spinning packs, and for hot dowtherm charging in dowtherm boilers we have one dowtherm gun to maintain temperature of dowtherm. Also we have one preheating oven for cutter die plate and all these heating remains on continuously.

Heating Oven	KW	KWH / DAY Average
PPH oven -1&2	20.4	489.6
Dowtherm m/u boiler	2.7	64.8
Cutter die plate PH Oven	3.15	75
Total kwh	25.77	617.8

Project Details

- After discussion with process (spinning) we stopped one PPH oven as routine pack change can be managed with one PPHO.
- After discussion with process (spinning) we stopped dowtherm gun heating. Whenever dowtherm filling will be required they will start the heating of it.
- After discussion with process (Poly) stopped cutter pre- pack heating oven. whenever dieplate change will be planned PPHO will be started.

Project Summary :

s.n	Description	Uom	Before	Modified
1	PPH Oven 1/2	no	2	1
2	Power Cons/Day	KWH	478	239
3	Dowtherm M/U Heater	no	1	1
4	Power Cons/Day		64.8	15.1
5	Cutter Die plate PH Oven	no	1	1
6	Power Cons/Day	KWH	75	17.5
7	Total Power Cons/Day	KWH	618	271
8	Savings/Day	KWH		346
9	Expenses	Rs		NIL
10	Annual Saving	RS Lac		4.7
11	Completion Date			Feb '08

Team :

Sevak

H.Mistry

M.S.Chouhan

Project No	13
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Lighting Optimization in various area of IY plant

Objective :

To optimize the Lighting power consumption by replacing 36 watt light fitting with 11 watt CFL & and 80 watt lamp with 18 watt lamp.

Background :

For lighting in various areas we have tube lights of rating 36 watt HPMV lamps rating 80 watt .These lights remains on for an average of 18hrs/day.

s.N	Description	UOM	Value
1	Tube Lights	No	54
1a	Rating	Watt	36
1b	Power Cons	KW	1.944
2	Tube Lights	No	75
2a	Rating	Watt	80
2b	Power Cons	KW	6
3	Total	KW	7.94

Project Details

- a. We found that at some places where lighting is required for movement of people only and at these places we don't require high intensity lights.
- b. We replaced 54 nos / 36 watt lights by 11 watt CFL .
- c. We replaced 75 nos / 80 watt lamp by 18 watt .
- d. Also 59 nos light control switch has been provided where light can be switched off when not required.

Project Summary :

s.n	Description	Uom	Before	After
1	Load on Lighting	Watt	7944	1944
2	Saving	KW		6
3	Savings @ 18 hrs	KW		4.5
4	Yearly saving @ 315 days	KWH		34020
5	Yearly saving	Rs Lac/Year		1.53
6	Expenses	Rs Lac		0.72
7	Completion Date			July & Dec-07

Team :

M.S.Chouhan
Vipul Galchat
Vinod Patel

Project No	14
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Chilled water Optimisation -IY-Utility(Summer)

Phase 1

Objective :

To optimise chilled water flow for summer in IY.

Background :

We had been running two chilled water pumps during summer. The peak demand is 1000 TR against installed 1400 TR. (700TR x 2 Nos)

Based upon the above data following is the requirement of Chilled Water during summer.

User	CHW reqd CMH	Remarks
Refrigeration	610	at 1000 TR
Temp diff C	5	Required

Present Temp diff across chiller was 2.8 C at 800 TR. Which is quite low. This indicates very high flow. Same is confirmed by very high diff press of 1.4 Bar across each Chiller against rated 0.7 bar at rated flow 422 cmh at 700TR.

Project Details

- a. Straight away one pump was stopped .
- b. Temp diff came to 3.6 C at 850 TR. Indicating further margins of reduction which is to be taken up in Yr 2008 - 09 as it will need new pump.
- c. Press diff across chiller came down to 0.7 bar. Which is OK for rated capacity of 700 TR per machine, ie if total load is 1400 TR . But in our case load never exceeds 1000TR so there is further scope for reduction in flow.
- d. Total savings reported is 1000 units per day.
- e. Annualised saving basis is 210 days running / year.

Project Summary :

s.n	Description	Uom	Before	Modified
1	No of pumps	No	2	1
2	Diff Press (chiller)	Kg/Cm2	1.4	0.7
3	Temp diff (chiller)	C	2.8	3.6
4	Power cons	KW	120	70
5	Savings	KW		50
6	Savings/Day	KWH		1000
7	Annual Saving	KWH		210000
		RS Lac		9.45
8	Completion Date			July'2007

Team :

SK Singh
Rajeev Rathi
Ajay Dubey
MS Chauhan

Project No	15
Replacement Of 3 Micron Filter By 10 micron Filter in MP air line (POY)	

Objective :

Replacement of 3 micron air filter in MP air line by 10 micron filter to save on power.

Background :

In MP air line 3 micron filter was being provided at the discharge . It was thought to change the filter rating to 10 micron because we dont need 3 micron filter in MP air.

This would result in lesser pressure drop & hence saving in compressed Air cost.

Project Details

We changed the 3 micron filter by 10 micron filter & the press drop came to 0.2 bar against 0.4 bar.The savings in units is 100 units/ Day.

Project Summary :

s.n.	Description	Uom	Before	Modified
1	Filter	No	1	1
2	Rating	Micron	3	10
3	Press Drop	Bar	0.4	0.2
4	Savings	KW	0	4.2
5	Savings	KWH/Day	0	100
6	Savings	Lac Rs/Year	0	1.57
7	Expenses	Lacs		0.15
8	Completion Date			July ' 07

Team :

SS Sharma
R Danga
S Singh

Project No		16	F
Spin Finish Gravity Flow System - SPG 1			

Objective :

To modify spin finish system (Spg – 1 plant) from Centrifugal multistage pumping system to gravity flow system.

Background :

In the present system , Spin finish circulation is through multistage centrifugal movichrome pump up to service tank on individual machine.

Spg- 2 Plant spin finish tank (at 9.00 mtr Elevation) can be utilised to feed spin finish to service tank by modifying piping system .

Project Details

a. Initially M/c No – 51 (12 position) were converted to gravity flow & kept under observation for two months.

b. After satisfactory results from m/c 51 , other m/ces were converted in to gravity flow.

c. After modification , multi stage movihrom pump was stopped.

d. Following is the details of converted m/ces :

M/C Completed : 51,55,56,57,58,59,60

M/C Remaining: 52,53,54,61,62,63

Pump Stopped: 4 Nos.

Project Summary :

s.n	Description	Uom	Before	After
1	No of pumps	No	4	0
2	Head	m	10	9
3	Total flow	M3/Hr	1	As per reqd.
4	Power cons	Kwh	6.4	0
5	Saving	KWH/day	0	153.6
6	Saving	Units/year		56064
7	Saving	Rs Lac/Year		2.8
8	Expenses	Lacs		1
9	Completion Date			July '07

Team :

SANDEEP ONKAR
HEMANT AGRAWAL
PIYUSH PAREKH
S.SURENDER

Project No	17
To Divert Condensate Water To cooling Tower	

Objective :

To Divert condensate water to utility cooling tower .

Background :

Cooling Coil condensate water goes to drain .It has temp of 15 C-20 C.
If we can send this water to cooling water we can save on make up.

Description	Detail
LTG 4 &5 condensate flow	12 M3
Temperature Deg C	18

Project Details

We hooked up the AHUs Coil drain to Cooling Tower. Since AHUs are located at 18.00 M , we did not require any pump for this & condensate feed to C/T is by gravity.

Project Summary :

s.n.	Description	Uom	Before	Modified
1	Return to C/T from Ahu	M3/Day	Nil	13
2	Makeup Water Saving	M3/Day		13
	Cost Of Soft Water	Rs/M3		4.4
3	Savings	Rs/Day		57.2
5	Savings	Lac Rs/Year		0.21
6	Expenses	Lacs		0.02
7	Completion Date			July '07

Team :

S S Sharma
R.Danga
S.Singh

Project No	18
ADDITIONAL FILTER BANK PROVIDED IN SPG 1 INTERLACE LINE	

Objective :

To install additional filter bank in SPG- 1 interlacer line .

Background :

By providing additional filter bank in interlacer line of SPG 1 the diff press can be reduced which will result in power saving.

Present details of existing filter are as follows.:

Description	Detail
Pressure drop across filter	0.75 bar
No of candles	6
Filter Rating	3 micron

Project Details

- Provided 4 nos extra candles in parallel with the existing 3 Micron filter Bank
- Diff . Press came as 0.25 Bar. So gen Press got reduced by 0.5 Bar.

Project Summary :

s.n.	Description	Uom	Before	Modified
1	Compressed Air Cons	CFM	2319	2319
2	Press drop across 3 Micron filter	Bar	0.75	0.25
3	Savings	KW	0	6.9
4	Savings	KWH/Day	0	165
5	Savings	Lac Rs/Year	0	2.71
6	Expenses	Lacs		0.2
7	Completion Date			July '07

Calculation basis

Total Power Cons in spg 1 air interlacer air 11000 KWH/Day (@0.2 Kw/CFM)

Total Air consumption in Spg 1 is 2319 CFM

0.5 Bar reduction in press generated will result in 1.5 % savings (safely assumed)

Team :

HA Rangrej

R.Danga

Project No 19

Increase in Chilled water Supply Temp -IY

Objective :

To increase the CHW supply temp from 7 to 10 C.

Background :

We were operating at 7 C supply CHW temp & we thought that given the conditions of AHUs we can raise the temp of supply water to 10 C.

Project Details

- a. Increased CHW temp in steps of 0.5 C & monitored the Hall conditions simultaneously.
- b. All the conditions were monitored during peak loads also & found to be normal.
- c. The Units of Chiller was noted before & after the change & are as per Fig - 1
- d. Total savings were 640 units/Day in Sept.
- e. For booking purpose we took 550 units/day savings.
Savings were calculated on 7 months running with two chillers & five month with one .

Project Summary :

s.n	Description	Uom	Before	Modified
1	No of Chillers	NO	2	2
2	Temp outlet		7	10
3	Savings	Kwh/Day		550
4	Annual Savings	KWH		158625
5	Annual Savings	Rs Lac		7.14
6	Completion Date			Aug'07

Take 550 units/day for seven month & 275 Units/day for five months.

Team :

Rajeev Rathi

Ajay Dubey

MS Chauhan;

SK singh

Mayur Vaghela

Enclosure :

Reading of units - FIG 1

Project No	20
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Instrument Air Compressor A,B motor Dia. Reduction

Objective :

To run the compressor A & B Compressor on full load by reducing the compressor RPM.

Background :

Both compressors run on & off load consuming more energy. We can reduce the RPM of compressors so that they run on load only & by this way we can reduce idle running time of compressors & thereby can save on energy.

Description	Details
COMPRESSOR A	
Power consumption	97 kwh
Load	on/ off load
Current	204 Amp
COMPRESSOR B	
Power consumption	60 KWH
Load	on/ off load
Current	194 Amp

Project Details

- a. We reduced RPM slowly by installing spare VFD on compressors & finally found that 250 mm pulley would be sufficient on motor instead of present 315 mm.
- b. Replaced the pulleys on both the compressors & removed VFD which was installed for trial.
- c. Now both compressors were running on full load 90 % time.

Project Summary :

s.n	Description	Uom	Before	After
1	COMPRESSOR A			
a	Power consumption	KW	97	87
2	COMPRESSOR B			
a	Power consumption	KW	60	54
3	Total Power	KW	157	141
4	Savings	KW		16
5	Saving	KWH/Day		384
6	Effective Saving	KWH/Day		200
7	Saving	Lac/ Year		3.15
8	Expenses			0.15
9	Completion Date			Aug '07

Team :

S S Sharma
R Danga
S Singh

Reduction in Textile Lab AHU Air Flow-IY**Objective :**

To optimise fan flow of Textile Lab AHU.

Background :

It was reported & observed that flow in AHU is very high & so much so that yarn testing was getting disturbed.

Also we were not able to get 65 % RH in the hall , so it was thought that lower air flow will result in better RH

Project Details

a. We could have adjusted the flow by damper reduction but it would have been inefficient. So we spared on inverter from dryer & slowly reduced the RPM in 5 steps.

b. First step was 50 to 47 HZ , second 45 Hz , third 43 , fourth 42 & last 41 Hz.

c. After stabilisation we replaced the original pullies so as to get the same RPM as with inverter.

This freed the inverter employed for the above.

d. Although we thought that RH % will come down at least by 1-2 % . But this did not happen and conditions remained same . The control valve opening(CHW) increased by 15 %

e. Savings were 26280 units/ year.

Project Summary :

s.n	Description	Uom	Before	Modified
1	Pulley size			
	driver	mm	125	100
	driven	mm	120	120
2	Power Cons	KW	6	3
3	Conditions			
	Temp	C	25	25
	Rh	%	66	66
4	Savings	KWH		26280
	per annum			
5	Annual savings	Rs Lac		1.2
8	Completion Date			Oct' 07

Team :

Rajeev Rathi
SK Singh
Ajay Dubey
MS Chauhan;
Mayur Vaghela

Project No 22

ETP Surface Aerator 3 - Angle Optimisation

Objective :

To optimise the blade angle of aerator.

Background :

By optimising blade angle of Aerator we can reduce power consumption

Project Details

Blade angles were adjusted by 2 degree without effecting performance.

Project Summary :

Saving achieved is 21 Units/ Day.

Saaving is 0.33 RsLac/ Annum

Team :

S S SHARMA

R.DANGA

S.SINGH

Project No	23
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Reduction in DG Power Generation Frequency.
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Objective :

To reduce frequency of DG Power generation from 50 Hz to 49.3 Hz

Background :

Normally the power equipments are designed with frequency of 50 Hz & power Generation source also generates power at 50 Hz.

If the existing equipments can run at lower frequency , the load on equipments come down in the same ratios(for equipments not running on Inverters) & thereby total load comes down.

Project Details

- a. We decided to reduce the frequency in steps of 0.1 Hz & simultaneously kept watch on equipments & units.
- b. Final frequency established was 49.3 Hz.
- c. To study the effect on motors running on 49.3 hz vs 50 hz , consultant was hired & a consensus opinion was formed where it was decided that there will not be any negative effect on equipments.
- d. The total savings in units / Day is 1800 units I.e a total saving of Rs 30 Lacs/ year.

Project Summary :

For calculating the savings we adopted Two approaches :

- a. Seeing direct load reduction on DG on frequency reduction from 50 Hz to 49.3 Hz.

Freq	Load	Savings	
		KW	Units/Day
50	7.9		
49.3	7.66	240	5760

The above experiment was repeated & found that in % terms load reduction is same.

b. Big HT & LT motors loads were checked on 50 Hz & 49.3 Hz & found that on reciprocating m/c,s the reduction in load is 3.27 % , on chillers 1 % & on pumps it is 4 %.

Overall reduction in inductive load is 3.6 % (average of all motors)
 datas are attached (sheet 1)

S.N	Item	UOM	Value
1	Reduction in Inductive load	%	3.6%
2	Average Induction Load (% of Total Load)	%	65%
3	Running Load on DG	MW	6.95
4	Inductive Load on DG	MW	4.5
5	Savings on Inductive load		162
6	Average Induction Load Saving (average taken as		130
7	Savings in units / day	Units/day	3120
8	Final savings taken (conservative)	Units/day	1850
9	Savings	Rs Lac/Yr	30
10	Completion Date		Aug'07

Team :

MR Dhimer
 Satrughan Singh
 R Rajput
 MS Chauhan
 S Sharma
 ORK Reddy

Enclosure :

Sheet 1 (Units Data of Motors)

L.T & H.T Motor Operating Parameters measured at Different System Frequency

SR No	TAG NO	Equipment description	Measured Parameter		Savings KW	% Savings
			At 50 HZ KW	At 49.3 HZ KW		
1	3804K02-C	Air Compressor – C	305	295	10	3.278688525
2	3804K02-E	Air Compressor – E	305	296	9	2.950819672
3	1435P03	Glycol Circulation Pump	16.8	16.2	0.6	3.571428571
4	1435P04	Glycol Circulation Pump	18.3	17.6	0.7	3.825136612
5	1455P01	Product Feed Pump	11.2	10.8	0.4	3.571428571
6	1495D01	Dryer	16.3	15.8	0.5	3.067484663
7	1475p05	Vacuum Pump	17	16.3	0.7	4.117647059
8	3801-P01-A	Chilled Water Pump -A	84.3	81.6	2.7	3.202846975
9	1425P01	HTM Circulation Pump	70.9	68.1	2.8	3.94922426
10	4102P03	Soft Water Make up Pump	10.6	10.2	0.4	3.773584906
11	1425P01	HTM Circulation Pump	70.9	68.1	2.8	3.94922426
12	3802-U01-B01	Supply Air Fan-B	35.6	34.2	1.4	3.93258427
Avg.					3.60	

Project No	24
Inverter Installation -On FD Fan (Boiler C)	

Objective :

To install the inverter on FD fan of Boiler C

Background :

FD fan air control was from discharge damper for modulation mode along with the fuel nozzle. We can reduce discharge press. By opening the the damper 100 % and can convert the fan control from damper throttle to rpm control by controlling the press . This way we can reduce the energy consumed by fan.

Description	FD FAN Details
Running KW	11.2

Project Details

- a. Installed The inverter on fan.
- b. Changed the controls & took the control on press control to control Fan RPM.

Project Summary :

s.n	Description	Uom	Before	Modified
1	no.of Fans	No	1	1
2	Air Press	mmwc	650	400
	after damper.			
3	Power	KW	11.2	7
4	Saving	KW		4.2
5	Saving	Units/day		100
6	Saving (250 days)	Rslac/Year		1.12
7	Investment	Lac		0.75
8	Completed			Aug ' 07

Team :

H Rangrej R.Danga
 VV Ghori SSingh

Cooling Water Optimisation -IY-Utility(Summer)

Objective :

To optimise the cooling water flow requirement for Utility equipment for Summer.

Background :

In summer the peak operating load on refrigeration is 1000 Tr & beside that one air compressor (Press- 3.0 Bar G , 80 KW) runs on the cooling water system . Cooling water press is 3.1/3.2 Bar G at pump outlet & approx at atm. at Pump Suction.Total pumping power during summer is 137 KW. Based upon above Data the total flow requirement of cooling water is 1000 CMH.

User	Water reqd CMH	Remarks
Refrigeration	880	at 1000 TR
Compressor	70	80 KW
TOTAL	960	

Project Details

- a. Refer to pump characteristic curve (Fig - 2) that each pump was operated at 32 mt head & was operating at 500 CMH.The impeller dia was 330 mm.
- b.Press drop across chiller cooler was0.55/0.60 Bar G where as total system drop was 31 mlc.The pipe sizes were OK but return C/Tower valve was highly throttled. PI refer fig-
This valve was opened & system pressure came down to 20 m.
- c.Again from charcterstic curve (Fig- 2) at 20 m head pump delivery is 1050 CMH. which is more than the requirement & slightly higher than the previous flow. Further the pump at this point will be operating at 83 % efficiency where as it was operating at 68 % efficiency earlier.
- d.It was decided to operate the plant with one pump.Other parameters like temp diff across tower, chiller & chiller load was found to be same.
- e.Final difficulty was that motor was taking 135 A against FLC of 130 A. PF was Checked & was found 0.85. Capacitor banks were installed to raise PF to 0.95 after that current came down to 120/121 A.

Project Summary :

s.n	Description	Uom	Before	Modified
1	No of pumps	No	2	1
2	Head	m	31	20
3	Total flow	M3/Hr	1000	1050
4	Impeller Dia	mm	330	
5	Pump Efficiency	%	68	83
6	Power cons	KW	137	74
7	Saving	KWH/Year		317000
	(seven month)			
8	Saving	Rs Lac/Year		14.17
9	Expenses	Rs		Nil
10	Completion Date			20.08.07

Team :

Rajeev Rathi
SK Singh
Ajay Dubey
MS Chauhan
Mayur Vaghela

Enclosures :

System Diagram - Fig -1
Pump Characteristic curve - Fig -2

Project No	26
Optimisation of lighting – POY	

Objective :

To optimise the Lighting in POY

Background :

Replacement of lamps (of HPMV & HPSV by CFL lamps in POY.
Switching of Tube Light & Street Light in various areas of POY Plant.

Project Details

- a. Control Switches provided in various area like Spinning , Packing , Draw Warper , Canteen of POY plant.
- b. 23 Watts CF lamps replaced in place of 250 & 125 Watt HPMV & HPSV lamps.
- c. “Switched Off” 1 * 36 Watt Tube lights , 250 & 125 Watt HPMV , 70 Watts HPSV lamps in Utility , Boiler ,WTP, Ware House and Street light.

Project Summary :

S.N.	Description	Savings
	(AREA)	
1	POY	
2	Saving units / day	106
3	Saving in Rs. / day	106 x 4.5 = 477
	Saving in Rs. / annum	477 x 300 = 143100
3	Expenses	2 Lac
4	Completion Date	Aug '07

Team :

R.RAJPUT
SANDEEP ONKAR
S S MOURYA
P PAREKH

Project No 27

Optimisation of Process cooling water pump motor

Objective :

To replace the motor of Process CW Pump by 30 KW motor.

Background :

Process cooling water pump motor was running at 65 % load.

It was thought that we can save power by replacing lower rating motor.

Motor rating	Power KW
45 kw , 1475 rpm	29.5

Project Details

- It was decided to replace the 45 KW motor by 30 KW motor.
- Motor load increased to 88 % against 65 %.
- Net saving on Load was 3.0 KW.

Project Summary :

s.n	Description	UOM	Before	After Modification
1	Pumps	No	1	1
2	Motor Rating	KW	45	30
3	Motor Loading	%	65	88
5	Power Cons.	KW	29.5	26.5
4	Saving	KW		3
5	Yearly Saving (@ 300 day)	KWH		21600
6	Yearly Saving	RS LAC		0.97
7	Expenses	RS LAC		0.54
8	Completion Date			Jan ' 08

Team :

Rajeev Rathi
M.S.Chouhan
S.K.Singh

Project No	28
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Cooling Water Optimisation -IY-Utility(Winter)

Objective :

To optimise the cooling water flow requirement for Utility equipment for winter.

Background :

During winter average refrigeration load is 610 Tr & beside that LP compressor load is 60 KW.

One pump runs at 28 m head & 75 KW load.

Based upon the above data following is the requirement of cooling water during winter :

User	Water reqd CMH	Remarks
Refrigeration	530	at 600 TR
Compressor	70	80 KW
TOTAL	600	

Average Operation at 600 TR during winter.

Project Details

- a. Refer to pump characteristic curve (Fig - 1) that pump was operated at 25 mt head & was operating at 850 CMH. The impeller dia was 330 mm.
- b. Again from characteristic curve (Fig- 1) it was decided to cur the impeller to 280 mm. System press drop at 18 m was quite workable after throttling return valve slightly. At 18 m head & at 280 mm dia impeller flow was coming 725 CMH which is more than sufficient for our purpose.
- c. Though the pump efficiency dropped to 82 % from 86 % but still it was thought that it is better to trim the impeller rather going for the new pump.
- d. Operating load of chiller was found same in both the conditions.
- e. Press drop across chiller Cooler was 0.9 Bar previously which came down to 0.55/0.6 Bar due to decreased flow.
- f. Machine Motor loading & current was same i.e 70 % of FLC. Fan loading was same.

Project Summary :

s.n	Description	Uom	Before	Modified
1	No of pumps	No	1	1
2	Head	m	25	18
3	Total flow	M3/Hr	850	600
4	Impeller Dia	mm	330	280
5	Pump Efficiency	%	86	82
6	Power cons	KW	75	44
7	Saving	KWH/Year		115320
	(Five month)			
8	Saving	Rs Lac/Year		5.2
9	Expenses	Rs		Nil
10	Completion Date			Dec '07

Team :

Rajeev Rathi
SK Singh
Ajay Dubey
MS Chauhan

Enclosures :

Pump Characteristic curve - Fig -1

Project No	29
Generating HP Air From MP Air By Booster Compressor	

Objective :

Generation of HP air by boosting MP air with the help of existing booster air compressor.

Background :

We were generating MP air at 7 bar g & HP air at 10 Bar G. Both the circuits are independent & in both the cuts idle running of compressor takes place. Further , in existing circuit we have two stage compression in HP & MP air both type of circuit. If we could boost HP air from MP air we can add one stage as booster & the idle running of compressor will be limited to one cut only. So there was scope of power reduction.

Description	Details
HP COMP F or G	
Power consumption	2992 KWH/Day
MP COMP I & A/B	
Power consumption	7062 KWH/Day
Total	10054 KWH/Day

Project Details

- a.Booster air compressor was started for boosting Air in HP Circuit. (10 Bar)
- b.Total base load was transferred on compressor No I. Total requirement for MP air was met by - I , whereas remaining capacity of I was used to feed the air to booster.
- c.Finally all the compressed air requirement of HP + MP was met by compressor no - I & Booster compressor.
- d.Total units saved was 1464 Units/ Day.

Project Summary :

Sr No.	Description	Uom	Before	After
1	COMPRESSOR F or G			
2	Power consumption	KWH/Day	2992	
3	COMPRESSOR I/ A&B			
4	Power consumption	KWH/Day	7062	
5	TOTAL POWER	KWH/Day	10054	
6	Compressor I			
7	Power consumption	KWH/Day		8079
8	Booster Compressor			
9	Power consumption	KWH/Day		511
10	TOTAL POWER	KWH/Day		8590
11	Saving	KWH/Day		1464
12	Saving	Lacs Rs/Year		23.63
13	Completion Date			April '07

Team :

H Rangrej
S S SHARMA
R.DANGA
S.SINGH

Project No	30
Removal Of 0.01 mic. Filters From Interlacer Air System (POY spg-1,2.)	

Objective :

To remove 0.01 Micron final air filters from POY Air interlacing.

Background :

By removing of 0.01 micron filters from interlacer air filter for POY spg-1,2 we can reduce the press diff across the filter & reduce the generating the press & thereby reduce the power.

Only thing is that yarn quality should not suffer.

Description	Uom	Diff Press
POY 1 , 3 Micron Filter	1	0.75 Bar
POY2 , 3 Micron Filter	1	0.75 Bar

Project Details

a.It was decided that we should take the Data from other industries also & found that no body is using such high filtration.People were found to be using at the best 3 , micron filter.

b.It was decided to go for removal of 3 micron filter & since we already had 3 micron filter working in series with 0.01 mic. Filter , it was not required to install additional filter of 3 micron. Scheme was implemented in POY 1 & 2 Both.

Project Summary :

s.n.	Description	Uom	Before	Modified
1	Compressed Air Cons	CFM	2319	2319
2	Press drop across 0.01 Micron filter	Bar	0.75	0
3	Savings	KWH/Day	0	200
4	Savings	Lac Rs/Year	0	3
5	Expenses	Lacs		NIL
6	Completion Date			Sept '07

Team :

Sandeep Onkar
S S Sharma
R.Danga

Project No | 31

Reducing Heat Loss in D/W 1 & 2

Objective :

To Reduce the heat loss in draw warper machine heating tank

Background :

In draw warper machine no. 1 & 2 and total 03 nos. tanks / machine are used for heating of draw rollers. Total 05 nos. rollers are heated by means of hot oil circulation with the help of Gear pump. Average set point of these 3 service tanks is 90 °c to 92 °c . These service tank are not insulated. This leads to heating loss. We could save on power by insulating these tanks.

Description	M/c no.1	M/c no. 2
no. of tanks	3	3
Avg. set point	90 to 92	90 to 92
no. of heating rollers	5	5
Surface Temp of Tank Before Insulation	85	85
Surface Temp of Tank After Insulation	55	55

All Temps are in Degree Centigrade.

Project Details

- a. These Tanks were insulated.
- b. Total KW reading of Electrical Heater was taken before & after the insulation.
- c. Saving achieved is 80 units / Day

Project Summary :

s.n	Description	Uom	Before	Modified
1	No of m/c	No	2	2
2	no. of tanks	no.	6	6
3	Avg temp of tank	° C	90/92	90/92
4	Avg. consumption/ ton	Units	24	20
5	Avg. production/day/Mc	Tons	4	4
6	Units saved/day/mc	Units		10
7	Total Units saved / day	Units		80
8	Saving (250 Days)	Rs Lac/Year		0.9
9	Expenses	Rs		4000
10	Completion Date			Nov-07

Team :

TJ Parmar
Umesh Singh
Panchal.

Project No	32	
Installation Of FRP Impeller In LTG 6		

Objective :

To replace alluminium impeller by FRP impeller in LTG AHU 6 .

Background :

FRP impeller offer better efficiency due to better blade profiles . We can save power by replacing alluminium impeller to FRP impeller .

Project Details

- a. Replaced the alluminium impeller of 38.5 Kgs wt by FRP impeller 20.6 Kgs.
- b. Checked the fan flow before & after the change by recording the velocities across the various points on fan flow crossection.
- c. Checked the power consumption before & after impeller change . Achieved savings of 72 Units/ Day

Project Summary :

s.n.	Description	Uom	Before	Modified
1	No. of fan	Nos	1	1
2	Fan Type		Axial	Axial
3	Fan Dia	mm	1600	1600
4	Blade angle	degree	20	16
5	Suction area	M2	4.15	4.15
6	Air Velocity	M/S	5.4	6
7	Power Cons	KW	15.6	12.6
8	Savings	KW	0	3
9	Savings	KWH/Day	0	72
10	Savings	Lac Rs/Year	0	0.86
	265 Day Basis			
11	Expenses	Lacs		0.5
12	Completion Date			Jan ' 08

Team :

S S Sharma
R.Danga
S.Singh

Project No	33
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Chilled water Optimisation -IY-Utility(Winter)

Objective :

To optimise chilled water flow for Winter in IY.

Background :

We have been running one chilled pumps during winter . The peak demand is 700 TR in winter & average is 550/ 600 Tr

Based upon the above data following is the requirement of cooling water during winter :

User	CHW reqd CMH	Remarks
Refrigeration	420	at 700 TR
Temp diff C	5	Required

Present Temp diff across chiller was chiller was 4.1 C at 700 TR. Which is quite low. This indicates very high flow. Same is confirmed by very high diff press of 1.2 Bar across single Chiller against rated 0.7 bar at rated flow 420 cmh at 700TR.

Project Details

- a. We had one pump available with following details : Head 28 MLC & Flow 460 CMH.
- b. Since above flow is sufficient for our purpose & head is also high & more than sufficient for our purpose we decided to try out this pump.
- c. This required ckt modifications in chilled water ckt. Same was carried out & old/ new
- d. The press diff across chiller came down to 0.8 Bar. This is perfectly OK for 700 Tr requirement.
- e. The actual operating of Pump head came to 18 m against rated 28m . This gives us a flow of 440 CMH.

f.Characterstic curve is enclosed for Booster pump (Fig -1)

g. Total saving achieved is 37 KW.Savings calculated on five months running basis.

Project Summary :

s.n	Description	Uom	Before	Modified
1	No of pumps	No	1	1
2	Diff Press (chiller)	Kg/Cm2	1.2	0.8
3	Temp diff (chiller)	C	4.1	4.9
4	Power cons	KW	72	35
5	Savings	KW		37
6	Savings/Day	KWH		900
7	Annual Saving	KWH		135000
		RS Lac		6
8	Completion Date			Nov' 2007

one chiller.

Team :

SK Singh
Ajay Dubey
MS Chauhan
Mayur Vaghela

ENCL :

Characterstic Curve - Fig 1

Project No	34
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Use of 13 Mtr Room Air for LTG AHU 4,5 instead of Fresh Air
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Objective :

To use inside air from 13 M level instead of fresh Air in LTG AHU 4/5.

Background :

The enthalpy of fresh air in summer is higher than the room enthalpy. So we can use inside air instead of fresh air to save on refrigeration load.

Project Details

Circuit of conditioning was modified so as to run on inside air in place of fresh Air.

Project Summary :

Actual saving could not be measured as saving was small so calculated theoretical savings based on enthalpy & mass of air handled.

Savings are 150 Units / Day For 150 Days

Saving in Lac Rs/ Year is 1.0 Lac/ Year.

Team :

Hrangrej

MJ Gohel

Project No	35
Stopping CHW Pump (DRR Scrapper Condenser)	

Objective :

To Stop the Chilled Water Booster Pump of DRR scrapper.

Background :

DRR scrapper condenser is fed by CHW circuit for cooling. One booster pump takes chilled water from main Chilled water circuit & boosts it to condenser. It was thought that since we have enough pressure in main ChW header we can stop the booster Pump.

Description	Pump
No. of pump	1
Running KW	12

Project Details

- a. Piping was modified to by pass the pump.
- b. Condenser was directly connected to main supply & return header of CHW.
- c. After commissioning we found sufficient flow & no deterioration of condenser performance.

Project Summary :

s.n	Description	Uom	Before	After
1	Pump	No	1	0
2	Motor	KW/Hr	12	0
3	Saving	KWH/Day	0	288
4	Saving	Lac Rs/Year	0	4.73
5	Saving corrected to lower side	Lac Rs/Year	0	4.5
6	Completed on			Oct'07

Team :

S S SHARMA
R.DANGA
S.SINGH

Project No	36
Press Reduction In Aspirator Line(SPG - 1)	

Objective :

To reduce pressure in Aspirator Line from 6.8 Bar to 5.0 Bar .

Background :

We were using 6.8 Bar press in aspirator line. But we thought we do not need such high press for this job.

If we can reduce this press . , we can save power. of circuit.

Project Details

a. Took trial on one machine at 5.0 bar.

b. Observed for one month & found satisfactory.

c. Installed common PRV for all lines & reduced the pressure in header.

d. Though compressor pressure was 6.8 bar but reduction in aspirator resulted in lower air consumption due to lower pressure.

Project Summary :

Sr No.	Description	Uom	Before	After
1	Air Consumption /Pos at 6.8	M3/Hr	15.4	
2	Air Consumption /Pos at 5.0 Bar	M3/Hr		13.2
3	Saving (Air Cons/ Pos)	M3/Hr		2.2
4	Saving (Air Cons/ 37 Pos)	M3/Hr		81.4
5	Power Saving	KW		8.1
6	Saving (@ 6 Hrs/ Day)	KWH/Day		48.6
7	Saving	Lacs Rs/Year		0.80
8	Completion Date			March '08

Team :

VV Ghorl
S S SHARMA
SONkar

Project No	37
Stopping Ring Main Pump - Steam Boiler C	

Objective :

To stop ring main pump of steam boiler C .

Background :

Ring main pump is used for feeding FO to main pump where as we think it is not required.

Discription	Pump details
No. Of pump	1
Power consumption	1kwh

Project Details

Stopped the Pump.No negative impact.

Project Summary :

s.n	Description	Uom	Before	After
1	no.of pumps	No	1	1
2	Savings	KWH/Day	0	24
3	Saving	Rs/Year	0	0.35
4	Completion date			Oct' 07

Team :

S S SHARMA
MJ Gohel

Project No 38

Reduction in Nitrogen Pressure and Consumption – POY

Objective :

To reduce the nitrogen pressure and consumption.

Background :

The nitrogen compressor was running 316 hr / Month and the generating pressure was also 8.5 bar.

Reduction in nitrogen consumption will result in saving compressed air also & thereby will reduce energy consumption.

Project Details :

a. PTA conveying system was modified by providing logics in such a way that venting is minimised.

b.Total leakages arresting in compressor and others in the plant.

Project Summary :

s.n	Description	Uom	Before	Modified
1	N2 Compressor running	Hrs/Month	316	254
2	N2 Saving	CMH/Day		300
3	Savings/Day	Rs/Day		540
4	Saving due to running hrs	RS Lac/yr		1.94
5	N2 pressure	Bar	8.5	7.5
6	Savings	Kwh/Day	0	10
7	Saving due to press. reduction	RS Lac/yr		0.16
8	Total Saving (7+10)	RS Lac/yr		2.1
9	Completion Date			March '08

Team :

S.S.SHARMA
V.V.GHORI
ORKREDDY
DANGA

Project No	39
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Reduction Quench Air Fan Pressure -IY

Objective :

To reduce the Quench Air pressure by opening throttled dampers.

Background :

We have two quench air AHUs & each AHU cater two spg lines. We were maintaining air press in duct as 800 mm WC.

The system schematic is as per Fig 1.

The Damper D opening was 25 %- 30 % on both spg lines .Hence it was felt that there is scope of press reduction in Duct.

The Fan of AHU 1 was operating at 32 HZ & was consuming 10.8 KW ,where as AHU-2 was operating at 31.2 HZ & was consuming 9.8 KW.

Project Details

a. The pressure before damper , after damper & air vel on quench screen were measured & are follows :

Press before Damper	800 pa
Press after Damper	120 pa
Quench Air Vel	0.5 M/S

b. We decided to open the damper slowly after decreasing the Duct press before the damper.

c. This was done in very slow manner & in steps .

d. Following are the readings : (AHU- 2)

STEP	Press before D	Velocity Screen	Power	Freqn
	Pa	M/S	KW	Hz
Step 0	800	0.5	9.3	31.4
Step 1	750	0.5	9.8	31
Step 2	700	0.5	8	29.1
Step 3	600	0.5	7.5	28.2
Step 4	500	0.5	6.3	27.6
Step 5	400	0.5	5.5	24

Project Summary :

s.n	Description	Uom	Before	Modified
1	Air Press Before Damper.	Pa	800	400
2	Air Press after Damper.	Pa	120	120
3	Quench Air Vel on Screen	M/S	0.5	0.5
4	Power Cons (Fan 1 + Fan 2)	KW	20.6	13
5	Savings	KWH/Day		180
6	Savings (annual)	KWH		65700
7	Saving (annual)	Rs		295650
6	Completion Date			Jan'08

Team :

Rajeev Rathi
SK Singh
Ajay Dubey
MS Chauhan;

Mayur Vaghela

Bkannan
Mukesh Vasani

ENCL :

System Schematic - Fig 1

Project No 40

Speed Optimisation In CC - IY Plant

Objective :

To find out the most optimum speeds for Cable Corder so as to achieve lowest possible KWH / KG.

Background :

We have been operating the CC m/c at 9500 RPM due to stiffness problems of M/S Birla Tire , where as some capacity remains unutilised.

We are getting 1.05 KWH / KG on these machines.

It was thought to optimise the speeds to get best KWH/ KG as there is serious relationship between speed & power consumption.

Project Details

- a. Referred to manufacturer data on speed & power relationships.
(FIG - 1 Enclosed)
- b. Found out that for 1680 Den as the speed changes KWH/ KG changes drastically mainly due to higher power consumed by machine , whereas the increase in production is not in the same ratio.
- c. For eg KG/KWH is 0.64 at 7000 RPM spindle speed. Where as it shoots up to 1.02 at 9500 RPM.
- d. It clearly shows that if you have the capacity to run the machines at higher speeds. It not only saves on power but also in the maintenance cost.

Project Summary :

s.n	Description	Uom	Before	Modified
5	CC Speeds	RPM	9500	8500
6	Unit / Kg	KWH / KG	1.06	0.88
7	Average Production	KG/ DAY	20000	20000
	Power Consumed	KWH / Day	21200	17600
7	Saving	KWH / Day		3600
	Saving	KWH / Yr		1314000
8	Saving	Rs Lac/Year		59.13
9	Expenses	Rs		Nil
10	Completion Date			Oct' 07

Team :

Heeramth CV Reddy.
SD Ingle MS Chauhan
Thakur

Enclosure : Fig 1

Project No

41

Optimisation of lighting – DRAW WAPER**Objective :**

To optimise the Lighting in DRAW WAPER

Background :

In Draw Warper , Six nos Tube lights are installed in each M/C for Stretching unit lighting and ON / OFF switches were in LDB which was far away from M/C. Light remained on all the time whether M/C was running or not.

Project Details

A) Total six nos 1 x 36 Watt tube fixtures are installed for stretching unit lighting

B) Control switch provided nearer to operating panel of M/C.

C) Tube lights can be “switched off” when M/C was “ON”.

D) Saving calculated on 12 Hrs / Day

Project Summary :

S.N	Description	UOM	Value
1	No. of tube lights (Switched Off)	No	24
2	Average consumption.	Watt/Hr	864
3	Average consumption (@ 12 Hr/Day)	KWH/Day	10.3
4	Average consumption	Units/Year	3759
6	Expenses	Rs	2000
5	Savings	Rs Lac/Year	0.17
7	Completion date		Dec' 07

Team :

H.sati

R.Rajput

Rohal

Project No	42
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Soft water Optimisation in Dryer area -IY-Poly

Objective :

To optimise soft water consumption in dryer area.

Background :

The soft water is consumed dryer in Vacuum pump and in cooling of dowtherm circulation pump. Fresh soft water from overhead tank at 18mtrs goes into all four vacuum pump and all four dowtherm pumps and then it goes to cooling tower and cooling tower overflows due to excess return water.

Description	Vacuum pump	Dowtherm pump
Flow in LPH/Pump	575	100
Total M3/ Day(4 Pumps)	55.2	9.6

Project Details

a. The soft water discharged by Vacuum pump was too high as compared to dowtherm pump.

b. So we decided to work on vacuum pump soft water and took it in close

c. We supplied cooling water to vacuum pump from timber cooling tower and took it back to timber cooling tower. This also reduced the ETP load.

d. Piping modification done .

Project Summary :

s.n	Description	Uom	Before	Modified
1	Soft water consumption	M3/day	64.8	9.6
2	Soft Water Qty Drained	M3/day	64.8	9.6
3	Saving of S/Water	M3/day		55.2
4	Saving	Rs Lac/Year		1
5	Expenses	Rs		0.02
6	Completion Date			Dec' 07

Team :

Rajeev Rathi
 SK Singh
 Ajay Dubey
 Ranjan Vashitha

Project No 43

Reduction in Nitrogen Consumption - IY

Objective :

To optimize nitrogen consumption.

Background :

We have been consuming Nitrogen at a rate of 1300 CMH/ Day till Oct - 07. Since Nitrogen consumption reflects leakages & blow off , it effects the chips quality if the leakages are near to the chips. Further higher consumption leads to higher compressed air consumption as nitrogen is being generated from compressed air.

So a saving in Nitrogen Consumption will Lead to lower Compressed air consumption thus saving the Power.

However the prime aim of this project was to improvement in chips quality by identifying points of leakages & arresting the.

Project Details

- a. Complete system was broken in two , One is from Dryer to Bunkers & second from Main Bunkers to machine silos.
- b. In primary total 18 leakages were found and arrested & in secondary system 24 leaks were found & arrested.
- c. Further the bleed points were provided with orifice & the make up was reduced to in the same proportion.
- d. We could achieve 770 CMH/ Day consumption in Feb 08.

Project Summary :

s.n	Description	Uom	Before	Modified
1	N2 Consumption	CMH/Day	1300	770
2	N2 Saving	CMH/Day		530
6	Savings/Day	KWH		300
7	Annual Saving	RS Lac		5
8	Completion Date			Feb '08

Team :

SK Singh B kannan CV Reddy
Ajay Dubey S Johari Sevak
Rajeev Rathi

Optimisation CC AHU- IY**Objective :**

To optimise fan flow of CC AHU.

Background :

We have three fans running for 3 AHUs for CC & flow of each fan is 80000 CMH.

AHU no 4 has 4 nos CC on it, 5 & 6 nos AHUS have 3 nos CC each.

Hall conditions are 30 C Temp & 55 % RH.

The power consumption of 130 KW .

Project Details

- a.It was thought that since we are already running AHU- 4 with 4 No CC , can we increase it to 5 no CC , so that plant can run on two AHUs with 5 no CC.
- b.The Supply & Return temps were 30 C & 33.5 C with hall rh 55 %. Since we were thinking for low air qty so it was anticipated that we will have to supply air at low temp (approx 28 C) to get the same return Temp.
- c.Further we had a doubt whether cooling coil of two AHUs will take additional load of third AHUs.
- d.The Supply & Return of all AHUs were made common.
- e. Also it was thought that we should take the spindle motor temps before & after the change .
- f. Fan of one AHU was stopped & hall temp & Rh was set as 28 C & 55 % Rh.
- g.The Temp & RH at all the predefined location of sensors of all three AHUs were found same ie 28 C & 55 % RH. Return temp was 33.5 C
- e.Average Motor temp was C before change & C after the change.(Fig - 1)
- f. Schematic is as per Fig -2 .

Project Summary :

s.n	Description	Uom	Before	Modified
1	No of Fans	Nos	3	2
2	Flow	CMH	240000	170000
3	Hall Temp	C	30	28
4	Return Temp	C	32	31.5
5	RH	%	55	55
6	Motor Temp	C		
	(average)	%		
7	Power Cons	KW	130	97
8	Savings	KW		33
9	Savings/Day	KWH		778
10	Annual Saving	KWH		284000
		RS Lac		12.8
11	Completion Date			Feb' 08

Team :

Rajeev Rathi
SK Singh
Ajay Dubey
MS Chauhan
Mayur Vaghela

Enclosure :

1.Motor temp readings.	FIG	1
2.Schematic.	FIG	2

Project No	45
Optimisation of lighting – UTY	

Objective :

To optimise the Lighting in UTILITY

Background :

Replacement of Metal Halide lamps in place of HPMV lamps in Utility block POY

Project Details

In Utility block 35 nos. 250 W HPMV Lamp fixtures are installed. Out of 35 , total 22 nos are in working. We replaced 16 nos 150 W Metal Halide Lamp with fixtures in place of 250 Watt HPMV lamps at various location of utility block and remaining six nos switched off permanently.

s.n	Description	Uom	Before	Modified
1	Bulb Rating	Watt	250	250/100
2	Qty 250 Watt	No	22	6
3	Qty 100 Watt	No	0	16
4	Power Cons	Kwh/Year	20490	6985
5	Saving	Kwh/Year	0	13505
8	Saving	Rs Lac/Year		0.61
9	Expenses	Rs Lac		0.99
10	Completion Date			Jan '08

Team :

R.RAJPUT
S.SHARMA
ASHISH PAREKH
S.SINGH

Project No	46
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Power Optimisation In Nitrogen Plant -IY

Objective :

To optimise the power consumption in nitrogen plant in IY- Utility.

Background :

For smooth and continuous operation of spinning and poly plant continuous supply of pure and dry nitrogen is essential. For this we were keeping stand by ammonia cracker(furnace) at 850 deg.Cen. And for this electrical heater is being used to maintain the temperature.

Equipment	Temp. deg.Cen.	Power kWh/day
Nitrogen purifier (Furnace) Standby	850	65
Cost Lac /Yr		1

Project Details

- a. It was decided to switch off the Purifier and start to observe that how much time it takes in getting the temperature from ambient to 850deg. Cen.
- b. We found that within 4.5 to 5 hours the furnace gets temperature of 850 deg.C from ambient temperature.
- c. We switched-off the standby furnace.

Project Summary :

s.n	Description	Uom	Before	Modified
1	No of furnace	No	2	1
2	Power cons	KW	245	180
3	Saving	KWH/Year		23725
4	Saving	Rs Lac/Year		1.06
5	Expenses	Rs		Nil
6	Completion Date			Feb' 08

Team :

Rajeev Rathi
SK Singh
Ajay Dubey
Mayur Vaghela

Project No 47

Trimming Impeller Of Dryer Cooling Water Pump

Objective :

To Optimise diameter Dryer Cooling water Pump.

Background :

Dryer cooling water pump was always overloaded & its discharge valve was throttled to reduce the load.

It was thought that if we can trim the impeller we will be able to open the valve fully & will save on power also.

Project Details

- a. Impeller Dia was trimmed in three steps from 262 mm to 228 mm.
- b. Discharge valve was fully opened.
- c. After valve pressure before & after trimming remained same i.e 1.0 Bar.

Project Summary :

s.n	Description	Uom	Before	Modified
1	Impeller Dia	mm	262	228
2	Power cons	KW	13	9.8
3	Saving	KWH/Day		72
4	Saving	Rs Lac/Year		1.18
5	Expenses	Rs		nil
6	Completion Date			March '08

Team :

Rajeev Rathi
SK Singh
Ajay Dubey

Project No	48
Impeller Trimming Of LTG AHU 6,7 Air Washer Pump.	

Objective :

Trimming of impeller of LTG AHU 6 & 7 for energy saving.

Background :

The control valve of air washer pump was throttled & it was thought that by trimming the impeller we can save electrical energy.

Description	AHU Details			
	AHU LTG 6		AHU LTG 7	
	Before air washer	After air washer	Before air washer	After air washer
DBT C	26.5	17.5	26.8	17
WBT C	16.5	16.5	16.5	16.5
CV Opening %	60%	60%	60%	60%
Impeller Dia mm	172	172	172	172
Power KW	22.7		17.9	

Project Details

- a. Started trimming the impeller of LT 6 & watched opening of CV.
- b. Final impeller dia was 160 mm & CV opening came 95 - 100 %
- c. Checked the WBT diff before the impeller trimming & after trimming & was found to be same . Before change we achieved 17.5/ 16.5 C DBT / WBT against supply air condntions of 26.5/16.5 C DBT/WBT.
- d. After impeller Trimming we achieved 17/16.5 C Db/WB against supply of 26.8/16.5 C DB/WB.
- e. Saving achieved in LTG 6 was 117 units/Day
- f. Same scheme was implemented on LTG -7 & savings in LTG -7 was 70 Units/Day

Project Summary :

s.n	Description	Uom	Before	Modified
A	LTG 6			
1	no.of pumps	No	1	1
2	DBT	C	17.5	17
3	WBT	C	16.5	16.5
4	Impeller Dia	mm	170	160
5	Disch. Valve Opening.	%	60	95
6	Power	KW	22.7	17.8
7	Saving	KW		4.9
B	LTG 7			
1	no.of pumps	No	1	1
2	DBT	C	17.2	17
3	WBT	C	16.5	16.5
4	Impeller Dia	mm	171	150
5	Disch. Valve Opening.	%	60	93
6	Power	KW	17.9	15
7	Saving	KW		2.9
8	Total Saving	KW		7.8
9	Total Saving	Units / day		187.2
	(both pumps)			
10	Saving / year	units/year		68328
11	Saving in lacs	Lacs / year		3.07
12	Expenses	Lacs		NIL
13	Completion Date			Feb ' 08

W/B 16.5 C
Supply Air

WB 16.5 C
Supply Air

Team :

S S Sharma
R.Danga
S.Singh