

Abhishek Industries Ltd, Barnala

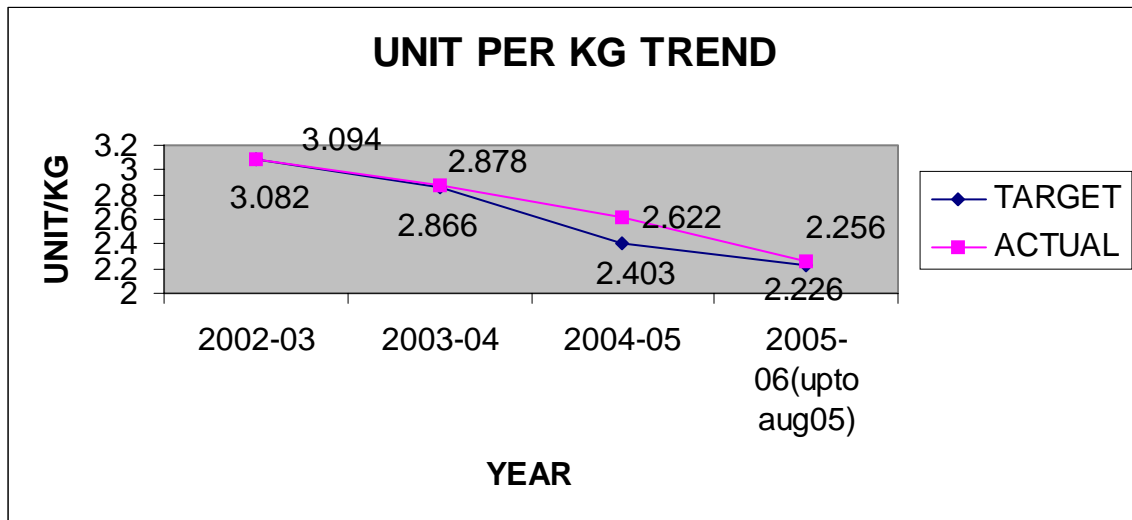
(i) Unit Profile

Here, at spinning division of Abhishek Industries Ltd (Yarn), we have three numbers of Yarn manufacturing units. Yarn of various counts is manufactured here. Unit 1 and Unit 2 are for ring-spinning with combined no. of spindles being 75000. Unit No 3 is for Open-end spinning where 1280 open-end rotors are installed. The connected load of the unit is 12900 Kw.

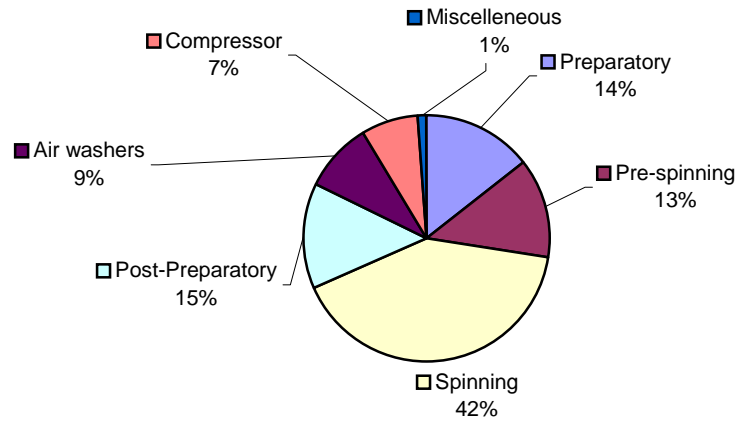
(ii) Energy Consumption

Include information on total energy consumption (i.e. coal, oil, gas, electricity and money value). Information on energy consumption in terms of percentage of manufacturing cost should also be presented. Also, it should highlight the specific energy consumption for the period 2002-2003, 2003-2004 & 2004-2005. Good Computer Graphic Presentation related to Specific Energy Consumption may also be incorporated.

The complex is being fed through 66KV power supply from the SEB through Independent feeder. Here the energy cost is nearly 76% of the manufacturing cost. The manufacturing cost means power, fuel, stores & spares, machinery repairs, oil & lube cost. The specific energy consumption for the years is given below:



Power consumption departmentwise break-up



PROCESS FLOW CHART OF CARDED AND COMBED PROCESS

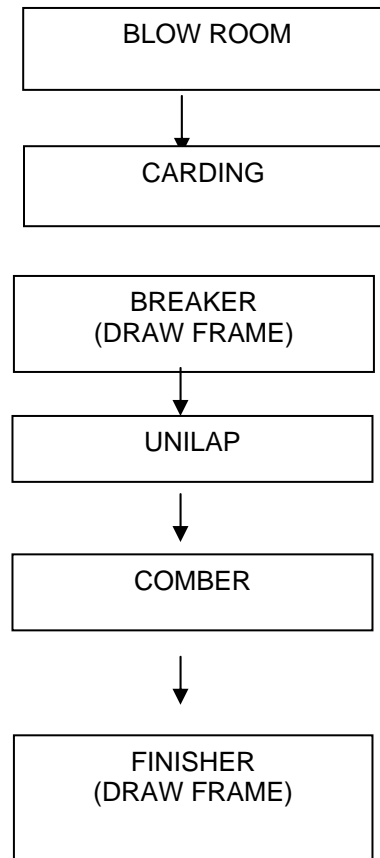
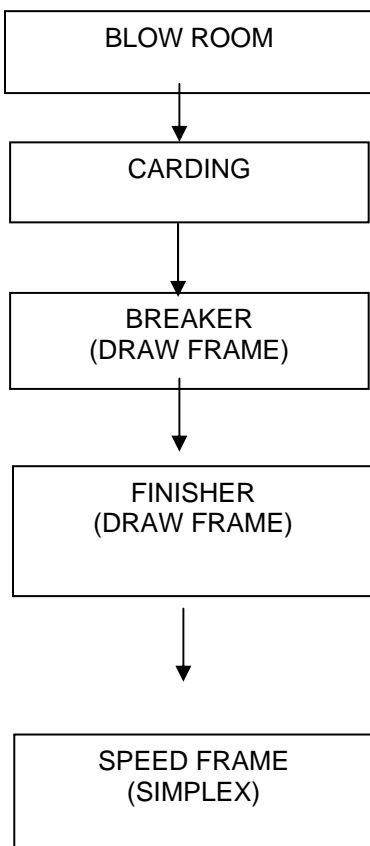
PROCESS FLOW CHART OF CARDED AND COMBED PROCESS

1020992
1121904

1020992
1121904

CARDED PROCESS

COMBED PROCESS



	Intermittant in Unit 1.			
	TOTAL	8348	12949835	1857000

ENERGY CONSERVATION DRIVE 2003-2004				
Srno	Activity	Saving units per day	Yearly Saving in Rs.	Budget Required in Rs.
1	Installation of VFD (9 nos.) in H- Plant.	900	1320894	837000
2	Saving through modification in compressed air distribution system.	100	146766	After addition of new compressor
3	Automatic Regulation of Autoconer machines- 4 nos.	220	322,885	400000
4	Stopping of 7.5 KW fan of Cvt 3	144	216086	PROCESS IMPROVEMENT
5	Seprating one compressor for preprattory	50	75030	50000
6	Stoppining of Axial flow fan in blow room 4 KW	70	105042	PROCESS IMPROVEMENT
7	Optimizing the working pressure of ring frame m/cs at 7kg	50	40100	PROCESS IMPROVEMENT
8	Stopping of suction fan of S/F through modification	70	77192.5	10000
9	Reduction of width of Spindle tape from 12 mm to 10 mm for 5 machines.	60	81804	PROCESS IMPROVEMENT
10	Modification in Wate collection system of Unit-2 by installing waste compactor.	150	204510	500000
11	Conversion of Delta to Star connections.	115	178394	
12	Energy efficient synthetic lubricants were used , eg spindle oil etc.	50	50000	PROCESS IMPROVEMENT
	Total Saving	1979	2818703.25	1697000

ENERGY CONSERVATION DRIVE 2002-2003

1	Overhauling of all non performing Texmaco ring frame of Unit-1 for improving productivity with saving in power.	50	6015	72180	process modification
2	Load study of G5/1 and LR Ring frame machines for assessing the non performing machines and corrective action.	125	15038	180450	process modification
3	Optimising the pneumafil suction of ring frame machines in Unit 2, depending on the count pattern.	150	18045	216540	process modification
5	Replacement of oil in the Ring frame machines with Servo 12.	100	12030	144360	10000
6	Optimisation of Compressor working.	250	30075	360900	process modification
7	Optimisation of air balancing in H- plant	1000	120300	1443600	process modification
9	Elimination of motors in Blow room by modification	230	27669	332028	process modification
10	Texmaco Draw frames were replaced by DO 6.	152	19380	232560	MODERNIZATION IN MACHINERY
	Total Saving	2057	229172	2982618	process modification

ENERGY CONSERVATION DRIVE 2004-2005

	Measure	Savings Units/day	Saving in Rs/year	Investment
1	In both the units automatic bale pluckers were installed instead of MBO's	386	598783	MODERNIZATION IN MACHINERY
2	Two vario cleans were spared in both the units with modifications in the lines.	375	581719	MODERNIZATION IN MACHINERY
3	Two filters were stopped by modification of exhaust air distribution .	633	981941	MODERNIZATION IN MACHINERY
4	Waste condensers were replaced by energy efficient compactors.	500	775625	MODERNIZATION IN MACHINERY
5	Ring Frame Impellers were replaced with energy efficient one of small size	104	161330	PROCESS IMPROVEMENT
6	Removal of 3 nos. condensers by installing waste compactor.	120	186150	300000
7	Installation of additional Fresh Air and Return Air Dampers in H Plants to increase free flow of air at reduced power	2000	3102500	PROCESS IMPROVEMENT
8	Increase in the Filtration Area to reduce energy cost.	2500	3878125	PROCESS IMPROVEMENT
9	Power Factor was improved near to load.	150	232688	75000
10	Energy efficient Tube Lights and electronic chokes were installed.	300	465375	600000
11	Hollow Shafts were used in Ring frame section inorder to save the power.	100	155125	100000
12	Use of Flat Belts in place of V Belts in winding section	180	279225	32000
13	Making the Cotton Lickrine waste removal from a Continuous Process to Intermittant in Unit 1.	1000	1551250	750000
		8348	12949835	1857000

1 In both the units automatic bale pluckers were installed instead of MBO's

Better opening and mixing of the raw material leading to better quality. Most gentle way to pluck the fibre tufts with minimum fibre rupture. Better removal of contamination due to small tuft size. Also manpower is saved as the manual feeding of process lines is automated

RUNNING LOAD(KW) OF MBOs 9*2 18KW
 RUNNING LOAD(KW) OF UNIFLOCK 10*1 10KW

SAVING IN A DAY(KWH) 18--10 8KW
 SAVING PER UNIFLOCK 193UNITS/DAY
 TOTAL SAVINGS(ONE EACH IN UNIT 1 & UNIT 2) 386UNITS/DAY

YEARLY SAVINGS 598782.5Rs



MBO(COTTON MIXING BALE OPENER) WAS INSTALLED

2 Two vario cleans were spared in both the units with modifications in the lines.

Initially these machines were only 50% utilized, with this modification both the process lines are clubbed together leading to 99% utilisation of each one and one no. of Vario Clean spared in each unit 1 &2

SAVING IN RUNNING KW IN EACH VARIO CLEAN	7.81KW
TOTAL SAVING PER VARIO CLEAN IN A DAY	187.5UNITS/DAY
TOTAL SAVINGS (ON 2 NOS)	375UNITS/DAY
YEARLY SAVINGS	581718.8RS



TWO LINES RUNNING WITH ONE NO. VARIO CLEAN IN UNIT NO2

3 Two filters were stopped by modification of exhaust air distribution .

To stopped two nos. filters , by diverting some of continuous exhaust points to H-plants(air washers) and increasing the utilisation of other working filters.The total saving from this project is 189990 units per month . Further this will also help in making air balancing inside the plant.

SAVING BY STOPPING 2 NO. OF FILTERS	633UNITS/DAY
ANNUAL SAVINGS KWH	231045KWH
ANNUAL SAVINGS RS Rs	981941.25RS

4 **Waste condensers were replaced by energy efficient compactors.**

Ejected waste is in very compact state leading to very easy handling of the same. Saving of transportation and man power cost is also there

TOTAL SAVINGS	500UNITS/DAY
YEARLY SAVINGS	775625RS



WASTE CONDENSORS

6 **Ring Frame Impellers were replaced by HIGHLY EFFICIENT WASTE COMPACTORS WHICH PRODUCE COMPACT WASTE**

The original impellers on the Ring Frame Machines of LR6/s were of 490mm dia.

Without impacting the suction,the diameter of the impeller was reduced from 490mm to 460mm

There was a saving of 35 uints/day on every machine on which the trial was taken(3 nos)

So, net savings per day	35*3	=	104	units/day
So, yearly savings			161019.8	Rs

Removal of 3 nos. condensers by installing waste compactor.

7

Ejected waste is in very compact state leading to very easy handling of the same. Saving of transportation and man power cost

RUNNING LOAD OF CONDENSOR	KW	5.66	KW
RUNNING LOAD OF COMPACTOR	KW	4	KW
TOTAL SAVINGS PER REPLACEMENT OF CONDENSOR WITH COMPACTOR		40	UNITS/DAY
TOTAL SAVINGS UNITS/DAY(IN 3 NOS.)	= 40*3	120	UNITS/DAY
TOTAL YEARLY SAVINGS	= 18615000	RS	

8 Installation of additional Fresh Air and Return Air Dampers in H Plants to increase free flow of air at reduced power

Optimize the system resistance by modifyiing the supply air diffusers by increasing their effective area and installing new S.A and R.A.dampers.	Units/day	1100
Optimize the FAD area to reduce the system resistance and hence improve the fan efficiency .		900



ADDITIONAL FRESH AIR DAMPERS FABRICATED INHOUSE FOR IMPROVING FAN EFFICIENCY

9. Increase in the Filtration Area to reduce energy cost.	
	Units/day
Optimizing the system resistance of Rotary Air filter to improve the fan efficiency by increasing the effective area of rotary filter mesh from 22% to 50% to improve the fan efficiency in R.A H-plant Unit 2	500
Optimize the system resistance before the exhaust air filter and improve the fan efficiency by	
In Return Air H-Plants Unit 1-Replacing the non-rotary (static) acylindrical filters(effective area is less than 15%) with V-filter	700
In Return Air -Plants(UNIT2)-Optimizing the system resistance and improve the fan efficiency by increasing the exhaust air damper area by 30sq.ft	1300
Total Units	2500



ROTARY FILTER MESH WITH SMALLER EFFECTIVE AREA

11. Power Factor was improved near to load.

For mimimizing the line losses, capacitors were installed at the PCC end.

And so our power factor appreciated from 0.90 to 0.93

This way we were able to minimize the losses

NET SAVINGS PER DAY IN LINE LOSSES= 150 units/day
TOTAL YEARLY SAVINGS = 232687.5Rs

12. Energy efficient Tube Lights and electronic chokes were installed.

For saving of power and longer life, electronic chokes were installed instead of conventional copper chokes

	Nos	Landed price in Rs.
Electronic Choke 1*32 watt + GE polylux lamp	650	495
Electronic Choke 2*32 watt + GE polylux Lamp	300	765
Total	950	551250
Saving per Rod in Watt	12	
Total saving in KWH per day	346	
Total saving in Rs. per day	1331	
Pay back in Years	1.14	

13. Hollow Shafts were used in Ring frame section in order to save the power.

For the purpose of lesser friction and low energy consumption, hollow shaft were installed instead of the solid shaft. This was done on the Ring Frame Machines whose main motor is of 40KW.

5 No of Solid shafts have been replaced with hollow shaft.

Saving per hollow shaft installed= 20units/day

Total saving=20*5=100units/day

Total yearly savings=155125 Rs

14. Use of Flat Belts in place of V Belts in winding section

For minimizing the friction and also lesser power consumption, V-type belts were replaced by flat belts in the Winding Machines.

Saving per flat belt installed=36units/day

No of flat belts installed=5nos

Total saving=36*5=180units/day

Total yearly saving=279225 Rs



EARLIER INSTALLED V-BELTS ON MAIN SUCTION MOTOR ON WINDING MACHINES

15. Making the Cotton Lickrine waste removal from a Continuous Process to Intermittant in Unit 1.

Existing System-

Presently Lickrine waste of LC 300 A cards is being removed continuously . Fan of 55 kw is being used to suck the waste from the cards.Also motors are installed to drive primary and secondary filters.Total (5.5+7.5+.55+1.5+1.5+55=71.5) of 71.5 kw load is installed..

Proposed System-

Lickrine waste removal will be made intermittant i.e. waste will be removed at a particular time following a sequence . Pneumatic operated valve will be installed at each card which will be operated for a particular time period through automatic electrical panel.Also Cvt waste will be handeled by installing compactor.The equipment required for new system-

- 1) Ducting (Approx) 50 meter , dia 220 mm
- 2) Electrical Panel suitable for 15 card, Axiflow waste, GBR waste, RSK
- 3) Pneumatic damper 7 pc
- 4) Solenoide valve 22 pc
- 5) Compactors 2 nos
- 6) Electrical cables
- 7) Spark Detector -2 nos.
- 8) Divertor -2 nos.

The approx. cost of the material is as below-

Ducting - 1.0 Lac

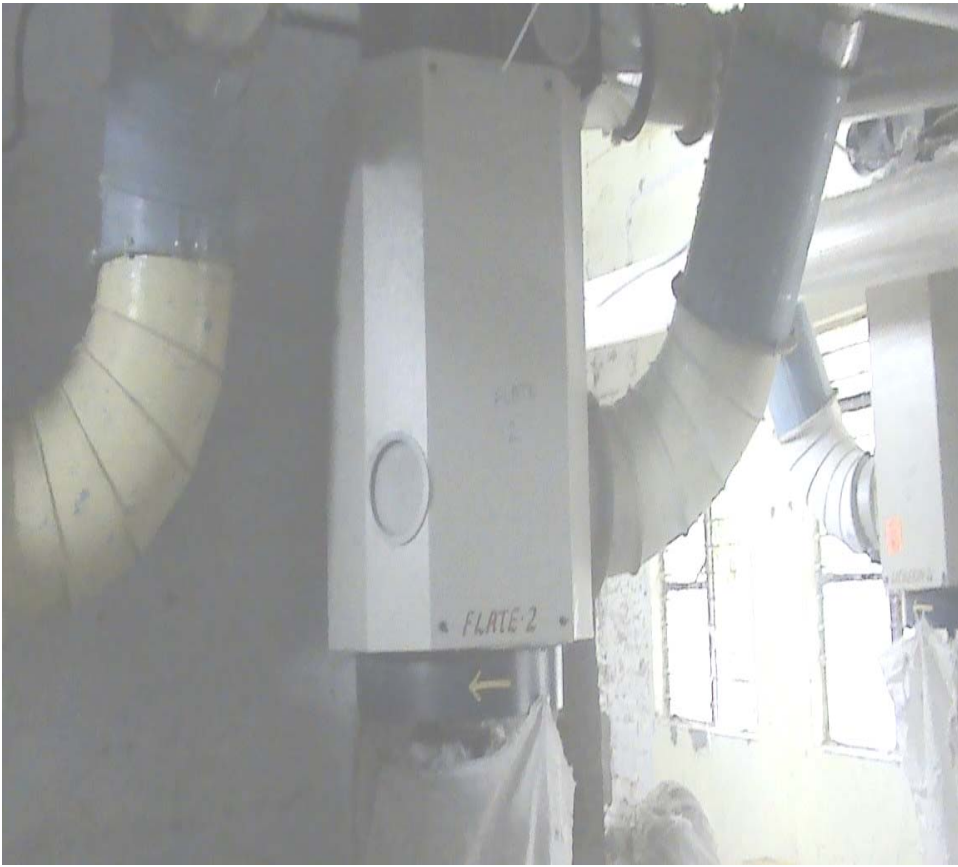
Compactor -2.5 Lac

Electrical Panel+ Solenoid valve + Cables- 2.0 Lac

Spark Detector+ Divertor - 2.0 lac

Saving 1000 units per day I.e. 14 lac per annum

Pay back approx. 6 month



17 Please provide information on annual energy savings achieved as a ratio of annual sales turnover as per the following table:

Year	Annual Energy Savings achieved in (Ref. S.No. 16)	Annual Sales Turnover (Ref. S.No. 6(a))	Annual Savings achieved/ Annual Sales Turnover (i) / (ii) x 100
2002 - 2003	29.8	16299.4305	0.183
2003 - 2004	28.18	19985.11245	0.141
2004 - 2005	129	22155.29754	0.582

18 Please list energy conservation measures planned for the future, investment planned & expected savings

Energy Conservation Initiatives 2005 -06- Engineering				
SR.NO	Detail of Initiative	Expected Saving Units per day	Saving w.e.f.	Saving for the year (up to March 06) in Rs.
1	Installation of energy efficient fans of Air washers.	960	120 unit from 15 th Sept . And balance from 1st . Jan.	428400
2	H- plants modifications (replacing of brass nozzels with poly carbonate , PVC risers etc.)	100	1st of Nov.05	76500
3	Installing Electronic chokes with High Lumens Lamp.	250	1st of Dec.05	127500
4	Instalation of compactors for Blow room waste in Unit 2	200	1st of Oct.05	153000
5	Installation of Flat Pulleys on Autoconer	600	1st of Oct.05	459000
6	Improvement in Power factor of the system to 0.95	50	1st of Oct.05	263250
7	Energy audits and other Misc. Jobs.	250	1st of Oct.05	191250
8	Reduction in compressed air	700	1st of Nov.05	446250
9	Installation of Energy Efficient compressor.	540	1st. Of Feb06	135405
TOTAL		3650		2280555

19 **Energy Efficiency Targets**
Has your unit fixed specific energy consumption targets for the year 2004-05 (Yes / No)
If yes, please submit the details as under

Yes.

19(a) **Specific Energy Consumption planned targets and achieved during 2004-05**

Specific energy consumption or use actual units			
Planned target for 2004-05	Actual achieved in 2004-05	% Reduction (+) or	Money saved

(a) (Base figure of 2003-04)		(b)		Increase (-) $(a-b) \times 100$		during 2004-05
*kWh/ kg	*MkCal/ tonne	*kWh/ kg	*Mkcal/ tonne	*Electrical	*Thermal	Rs. Lakhs
2.94		2.622		10.8163		272.9297892

*or use appropriate units

19(b) Specific Energy Consumption Planned Target for the year 2005-06 & 2006-07
Please list specific energy consumption (energy consumption per unit of production) targets for the next 3 years

Year	Electrical*	Thermal*	Reduction over the year 2004-05	
			Electrical%	Thermal%
2004-05 (Base year)	2.622		-	-
2005-06	2.226		15.10%	
2006 - 07	2.062		21.36%	

*Specify actual units

Anticipated money savings at the end of 2006-07 = Rs.80 lakhs/ year