

Raymond Limited

(Textile Division-Jalgaon)

Unit Profile

Raymond Limited (Textile division) under the flagship of **JK Group** (Worsted and woollen Division) is undoubtedly numero Uno in the Indian Textile Industry comprises of four units. **Textile Division-Jalgaon** is situated at M.I.D.C. area, Jalgaon. which became operational in March,1979. Ours unit started with spinning and weaving activities. Our unit has latest internationally available technologies on many machines. We have quality circles for quality improvement. We are following KAIZEN – doing autonomous maintenance on many machines. Ours is an ISO-9001 company.

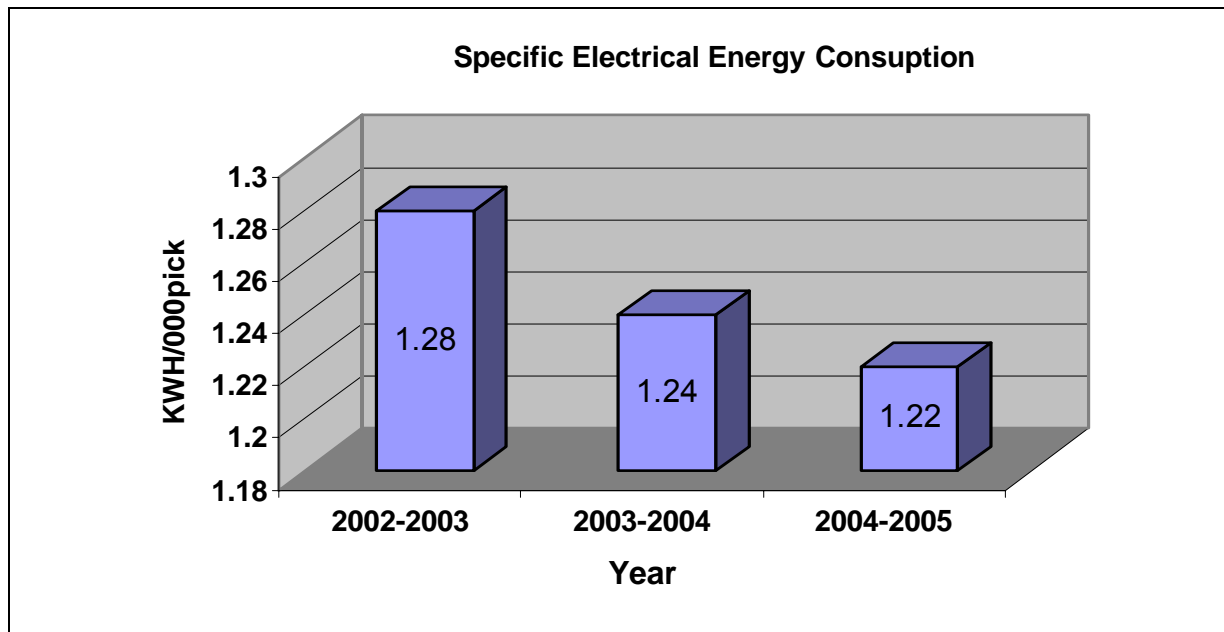
The composite woollen division started its activity at Jalgaon in the year 1986-87. The Woollen division is manufacturing blankets /shawls / blazers / billiard fabric/ Milton fabric in varieties of shades, sizes, colours and blends as per customer requirements. It is a composite unit having latest plant and equipment, various processes like, dyeing, rag-tearing, preparatory, carding, spinning, yarn checking, yarn room, weaving preparatory, weaving, gray mending, dry and wet finishing, finish-perching, folding, warehouse and dispatch to customers. Its raw material is blends of woollen rags, hosiery, nylon, noil etc. We are following KAIZEN – doing autonomous maintenance on many machines.

Total we have eleven quality circles in entire mill. we have received quality circle awards from Nagpur chapter.

We have a team of twenty members for Task Force from various departments to carry out energy saving activities, system improvements and to carry out innovative ideas from different section of the departments. The outskirts area of the factory building, main gate and other available area is decorated with lawns, gardens, flower, trees etc. in order to motivate people and better house keeping and this has improved the total impact of our unit.

The success of our company has improved the quality of life in general. This all round growth is an ongoing process at RAYMOND.

Energy consumption:



(iii) ENERGY CONSERVATION COMMITMENT, POLICY AND SET-UP.

Section & equipment wise specific consumption is regularly monitored to know how much we are consuming & where. For this we are providing metering equipment in each of the utilities and production departments wherever possible to keep close watch on consumption pattern to avoid inefficiencies. In an unending venture to improve energy efficiency & optimization of all resources study and audits are carried out on every energy consuming equipment on its each aspect for conservation of energy. Different training programmes, seminars, are arranged for plant personnel for making them energy conscious.

A clear-cut strategy has been formulated and full-fledged Energy Conservation Cell has been formed at corporate level & at unit level also. The Energy Conservation Cell is being well equipped with measuring instruments like Digital Load Manager, Flue Gas Analyser, Hygro Meter, Digital Energy Meter, Lux Meter Digital calibration meter etc. The implementation of energy conservation scheme through Energy Conservation Cell is given the highest priority. Based on the recommendation made by EC Cell and reviewed by various level committees, the decisions are taken for implementation of energy conservation programmes.

The Energy Conservation Cell at Raymond Ltd., Jalgaon is headed by Sr.Manager – Engineering, who is reporting directly to Works Director, to carry out energy audit and find out potential areas where energy can be saved.

(iv) Energy Conservation Achievement :

Calculation Sheet of Project undertaken during 2004-05: -

- 1) Replacing Old voltas window A.C.s with energy efficient Videocon A.C.**
Presently considered for 12 Nos. of Air Conditioners, which are approx. 10 years old.
So the Comparative Calculations

Old Voltas Air Conditioners	New Energy Efficient Air Conditioners
Current Drawn = 13 A	Current Drawn = 13 A
<u>Power Consumption</u> Kwh= 3VI Cosφ 1000 = 7.56 Kw	<u>Power Consumption</u> Kwh= 3VI Cosφ 1000 = 5.23 Kw
Taking into consideration seasonal conditions, say A/Cs run for 4 hours/day	Taking into consideration seasonal conditions, say A/Cs run for 4 hours/day
A) Energy Consumption = 7.56 Kw x 4 hrs x 300 days x 12 Nos. = 108864 Kwh/Annum.	B) Energy Consumption = 5.23 Kw x 4 hrs x 300 days x 12 Nos. = 75312 Kwh/Annum.

Saving = (A-B) x Rs. 3.50 per Unit
 = (108864 – 75312) x Rs. 3.50 per Unit.
 = 33552 x Rs. 3.50
 = Rs.1, 17,432 / Annum.

2) Replacement of OHTC blower fan with light weight fan in New & Old Spg.

- a) Power Consumed by Heavy Weight
Impeller of O.H.T.C. of Ring Frame M/C = 3.1 Kwh.
- b) Power Consumed by New Light
Weight impeller = 2.70 Kwh.

Saving in Power = (3.1 – 2.70)
 Saving in Power = 0.4 Kwh
 O.H.T.C. runs for 22 hrs per day and there are 8 No. of Such O.H.T.C.

So Saving = 0.4 Kwh x 22 hrs x 358 days x Rs. 3.50 / unit x 8 No.
 = Rs. 88,211 / Annum
 Saving = Rs. 88,000 / Annum.

3) Replacing 65 no. of 20 watt tube lights by 11 watt tube lights in different locations

- a. The Power Consumed by 20 Watt Tube light = 0.02 Kw.

b. The Power Consumed by 11 Watt Tube light = 0.011 Kw.

Power Saving = $(0.02 - 0.011)$ Kw x 24 hrs x 357 days x Rs. 3.50 per unit x 65 No.
= Rs. 17542.98 per Annum.

Saving in Rs. = Rs. 17,000 per Annum.

4) Reduction in power consumption by running 125 HP compressor instead of 150 HP compressor due to various measures taken for reducing compressed air consumption

a. The Power Consumed by 150 HP Compressor = 111.9 Kw.

b. The Power Consumed by 125 HP Compressor = 93.25 Kw.

Power Saving = $(111.9 - 93.25)$ Kw x 19 hrs x 357 days x Rs. 3.50 per unit
= Rs. 442760.325 per Annum.

Saving in Rs. = Rs. 4,41,000 per Annum.

5) Power saving by installing timers on suction motor at Over head cleaner at spinning department.

Dust Collector Motor = 3.7 Kw (5 HP)

Load = 7.5 Amps.

Units Consumed per Day = 88.8 Units.

Stopping Blowers by putting Timers for 5 hrs / day.

Therefore, Units Saved = 18.5 Kwh per Day.

Monthly Saving = 555 Units.

Yearly Saving = 6660 Units.

Therefore Saving per Year = 6660 Kwh x Rs.3.50

Saving in Rs. = Rs. 24,000 per Annum.

6) Reduction in power consumption of A/C plant as compare to last year by installing automatic doors, Return air trench & nozzles cleaning, air curtain modification etc.in 5700 spindle A/C plant.

In order to improve overall efficiency of A/C plant following measures were implemented

- i. Automatic doors are installed at 5 No.of door openings instead Air Curtains to avoid 100% leakages of Cold Air. Which resulted into more unload running of A.C. compressors. Hence reduction in Power consumptions as compared to last year.
- ii. Daily cleaning of Return air trenches, Screen filters in Return air trenches and Supply Air Diffuser help in proper circulation of Return Air, optimum suction pressure and HP of A.C. Compressors are maintained. This reduced load on A.C. Compressors, which resulted in Power Saving.
- iii. Wherever Air Curtains are installed on door openings are modified to increase its air velocity from 13 m/s to 18m/s in order to arrest max. Leakages of cold air.
- iv. Most important cause is awareness created among A.C. plant operators of all three shifts to closely monitor required and achieved temp. and humidity conditions inside dept. and shut off air compressors, return air fans, and spray pumps whenever possible too do so.
- v. As a cumulative effect of all these measures resulted into power saving in A.C. plant as compared to previous year.

By Observing Actual Energy Meter Reading, we observed the Difference in Energy units as compared to Last year which is = 0.94 Lakhs Kwh.

Saving in Rs. = Rs. 3.29 Lakhs per Annum.

7) Installation of SWISS make automiser at 7 no. of air washers of air conditioning and humidification plant. The Conventional Brass Nozzles of 7 No. of Air washers of AC Plant are replaced with 108 No. Of power saving Swiss Automiser

Based on energy meter reading following are the power consumptions spray pumps before & after replacement of Nozzles at different locations.



Sr.No.	Pump Location	Spray Pump Capacity in HP	Power Consumption before replacing nozzles in KWH	Power Consumption after replacing nozzles in KWH	Saving in power	Total pump running hours	Net KWH saving
1	Old Zinser Spray	7.5	7.20	5.27	1.93	24 Hr X 358 Days = 8592	16582.56
2	New Zinser Spray	12.5	10.08	7.68	2.04	24 Hr X 358 Days = 8592 Hrs.	17527.68
3	Zinser TFO No. 1 Spray	10	9.40	7.0	2.40	24 Hr X 358 Days = 8592 Hrs.	20620.80
4	Zinser TFO No. 2 Spray	10	9.60	7.0	2.60	24 Hr. x 120 days = 2880 hrs.	5270.4
5	51 Loom Spray.	7.5	7.10	5.25	1.85	24 Hr X 358 Days = 8592 Hrs.	15895.20
6	5700 Preparatory Spray	7.5	5.26	5.26	0.0	24 Hr X 358 Days = 8592 Hrs.	0.0
7	5700 Ring Frame Spray	7.5	6.19	5.44	0.75	24 Hr X 358 Days = 8592 Hrs.	6444.0

Total Saving in power = 82340.64 Kwh / annum

**Saving in terms of amount = 82340.64 Kwh x 3.50 Rs.
= 288192.24 Rs per annum**

8) Energy efficient water pumps for air conditioning and humidification plant.

There were 11 No. of Monoblock pumps having efficiency around 58%. All these 11 pumps are replaced with Coupled pumps having Efficiency 70% and appropriate capacity in terms of HP. Power consumptions of all pumps was noted by Energy meter before and after replacing of pumps.



Saving in Power Achieved = 109879.2 Kwh/Annum.

Saving in terms of Amount = 109879.2 Kwh x Rs. 3.50
= Rs.384577.2 per Annum.

Investment = 4.25 Lakhs

Return of investment = $\frac{4.25 \text{ Lakhs}}{3.84 \text{ Lakhs}} \times 12 \text{ Months}$.

Return of investment = 13 Months.

9) Reduction in power consumption of A/C plant as compare to last year by installing automatic doors, Return air trench & nozzle cleaning, air curtain modification etc.in Zinser & Sulzer A/C plant.

In order to improve overall efficiency of A/C plant following measures were implemented

1. Automatic doors are installed at 5 No.of door openings instead Air Curtains to avoid 100% leakages of Cold Air. Which resulted into more unload running of A.C. compressors. Hence reduction in Power consumptions as compared to last year.
2. Daily cleaning of Return air trenches, Screen filters in Return air trenches and Supply Air Diffuser help in proper circulation of Return Air, optimum suction pressure and HP of A.C. Compressors are maintained. This reduced load on A.C. Compressors, which resulted in Power Saving.
3. Wherever Air Curtains are installed on door openings are modified to increase its air velocity from 13 m/s to 18m/s in order to arrest max. Leakages of cold air.
4. Most important cause is awareness created among A.C. plant operators of all three shifts to closely monitor required and achieved temp. and humidity conditions inside dept. and shut off air compressors, return air fans, and spray pumps whenever possible too do so.

As a cumulative effect of all these measures resulted into power saving in A.C. plant as compared to previous year.

By Observing Actual Energy Meter Reading, we observed reduction in power consumption as compared to Last year which is = 1.90 Lakhs Kwh.

Saving in Rs. = Rs. 6.66 Lakhs per Annum.

(V) ENERGY CONSERVATION PLAN AND TARGETS

1. To replace heavy weight M.S. Impeller of Zinser R/F machines Jacobi overhead cleaners with light weight Impellers.
2. To replace M.S. Exhaust Fan with F.R. P. Fans at various locations.
3. It is proposed to change "fenner" make special energy saving belts on Two for One Spinning machines
4. Power saving by installing inverter for TFO humidification
5. Power saving by installing inverter for New Sulzer humidification
6. In Air Compressor, the Old Cooling Tower Fan motor of 7.5 HP to replace by New Cooling Tower Fan motor of 3 HP
7. To install smaller size pulley in centrifugal fan to reduce RPM to take gain during winters I.e Nov to Feb. (4 Months)
8. To switch off lights & fans in warping section.
9. To switch off lights & fans in warping section.
10. Replacement of Conventional Indication Lamps with LED Types Lamps.
11. Power saving by installing inverter for 5700 Ringframe machines.
12. Power saving by installing inverter for Textool machine.
13. To keenly monitor day-to-day specific Energy Consumption

(VI) ENVIRONMENT AND SAFETY

We have identified major accident hazards and taken adequate step for Prevention and Control and provided to the persons working on the site; information, training, and equipment including antidotes. We have information safety data sheets. We are encouraging personal to use protective equipment like earplugs, safety goggles, safety shoes etc.

Steps taken for environment up gradation (in 2002– 2005)

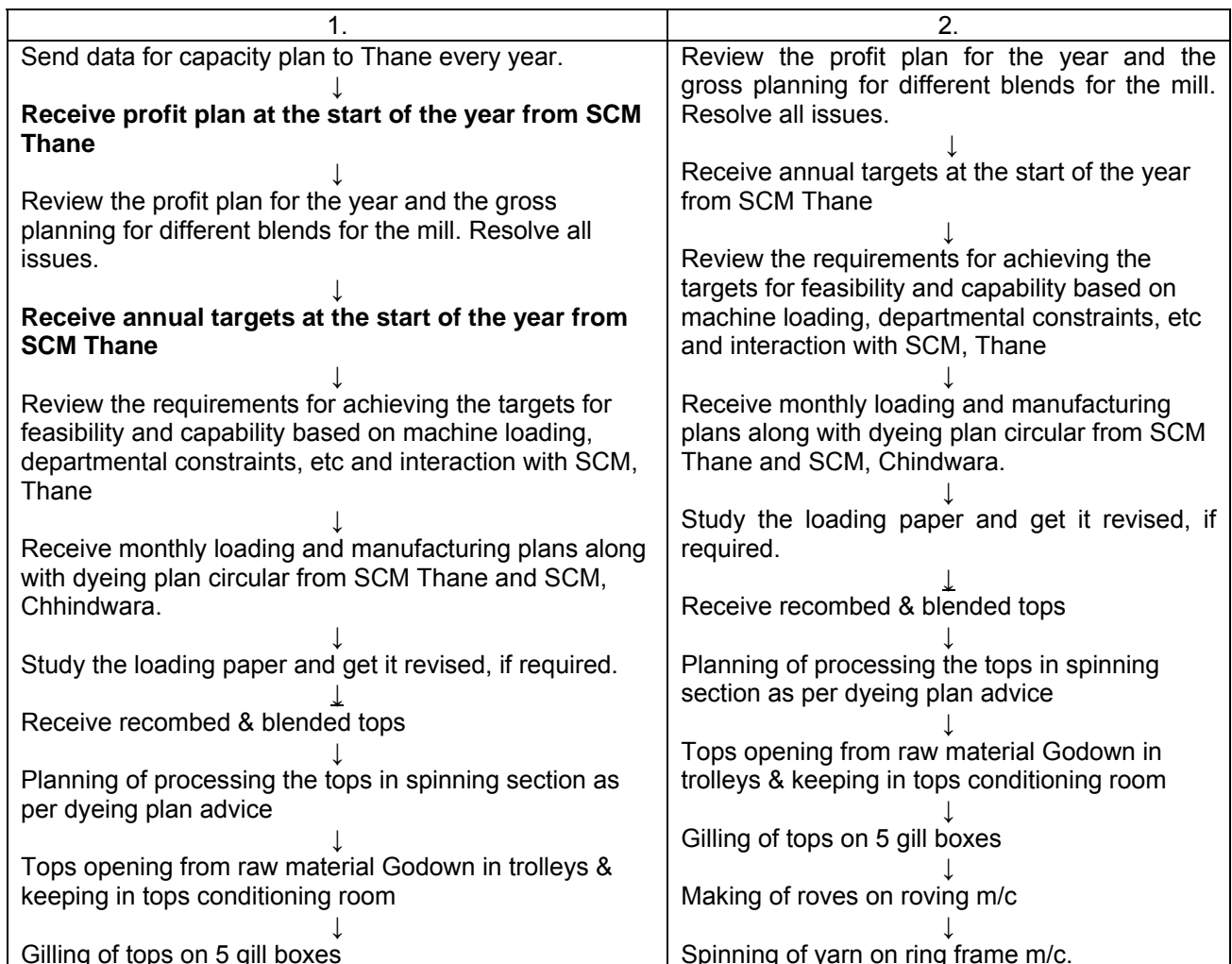
- We have installed various types of guards on production machines, water tanks, and open tanks. All ladders have pipe railings.
- We were treating industrial and domestic effluent by primary, secondary and tertiary treatment. Primary treatment includes lime, ferrous sulfate and flocculants dosing. In secondary treatment, activated sludge process is used as a biological treatment. In tertiary treatment, dual media sand filter and Activated carbon filters are used for S.S., Colour etc. removal.
- In the process, we have eliminated dyes and chemicals which were not Eco-friendly
- We have installed Exhaust Ducting with Exhaust Fan on Mach-coner and Steaming Machine for healthy environment.
- In Raymond Staff Colony we have implemented “Effective Microorganism Technology” for the treatment of Septic Tank and Soak Pit thereby the bad odour is reduced and the treated effluent is re-cycled / reused for gardening.

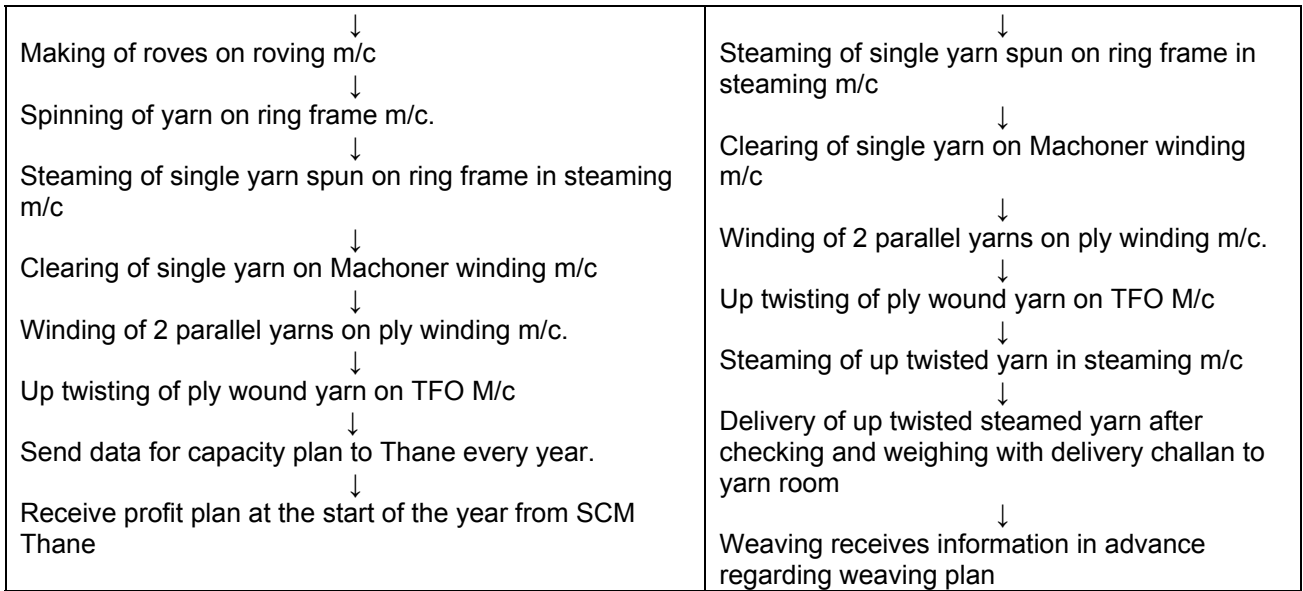
**“ We Firmly Believe in Co-Existence of Man, Machine and Environment”
“Clean Raymond – Green Raymond”**

21. Whether any dispute pertaining to statutory requirement of safety and pollution control is pending with any government Agency. If Yes, give details,

No there is no dispute pertaining to statutory requirement of safety and pollution control is pending with any government agency.

Schematic diagram showing the production process of Grey Fabric.





3	4
<p>Yarn Room arranges yarn according to requirement on trolley</p> <p>↓</p> <p>Yarn on trolley passed on to warping department after checking steams lot, shade etc.</p> <p>↓</p> <p>Warping section (Weaving) receives material from yarn room on instruction of PPD/SCM</p> <p>↓</p> <p>Carry out warping. (This is a preparatory process where yarn get converted in sheet form on beam)</p> <p>↓</p> <p>Healding (Healding is the process of drawing of individual end of warp beam sheet through drop wire, heald wires of heald and dents of reed.)</p> <p>↓</p> <p>Weaving (Sulzer)(Weaving is process where yarn gets converted into fabric.)</p> <p>↓</p> <p>Grey perching (Here fabric is inspected, marked according to piece ticket, tagged with label & finally dispatched for Grey mending)</p> <p>↓</p> <p>Hand over to mending department</p> <p>↓</p> <p>Fabric transported after grey inspection from Weaving Dept to Grey Mending Dept.</p> <p>↓</p>	<p>Yarn room gets warping order from PPD/SCM</p> <p>↓</p> <p>Stacked on wooden platform in Grey Mending / Contract Mending.</p> <p>↓</p> <p>Distribution of fabric to menders, quality-wise and skilled-wise.</p> <p>↓</p> <p>Menders attend defects.</p> <p>↓</p> <p>Mended pieces are brought to checkers tables for checking.</p> <p>↓</p> <p>After checking the mended pieces, it is sent to Grey Mending/Dispatch Section.</p> <p>↓</p> <p>Fabric is dispatched to Thane / Chhindwara as per advice / Programme.</p> <p style="text-align: center;">Mending</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Grey Room</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Loading in truck</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Preparation of dispatch documents</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Dispatch</p>

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 Impeller of O.H.T.C. of Ring Frame M/C = 3.1 Kwh.

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Total Saving in power = 82340.64 Kwh / annum

**Saving in terms of amount = 82340.64 Kwh x 3.50 Rs.
= 288192.24 Rs per annum**

Investment: 1) Cost of Swiss Automiser = Rs.507600 /-
2) Piping & Installation Cost = Rs.42000 /-

Total Investment = Rs. 549600 /-

Return of Investment = $\frac{549600 \times 12}{288192.24}$

= 1.9 x12
= 22.88 Months (Say 23 months)