

## **Mahavir Spinning Mills Limited: Hoshiarpur**

### **UNIT PROFILE**

MAHAVIR SPINNING MILLS LIMITED (MSML), A UNIT OF VARDHMAN GROUP OF COMPANIES WAS ESTABLISHED IN THE YEAR 1973. THIS IS A MULTILLOCATION AND MULTI PRODUCT MANUFACTURING UNIT. THE UNIT PRODUCES 16 TONNES OF SEWING THREAD PER DAY & HAS 58200 YARN SPINDLES INSTALLED ON DATE AT HOSHIARPUR LOCATION. THE HOSHIARPUR UNIT IS ONE OF THE TOP MOST LEADING SPINNING AND SEWING THREAD - MANUFACTURING SET UPS AND THE LARGEST IN THE COUNTRY UNDER ONE ROOF OF ITS KIND. THE UNIT FOLLOWS A DYNAMIC APPROACH & CONTINUOUS IMPROVEMENT UPON ITS OPERATION THROUGH TECHNOLOGY UPGRADATION, INNOVATING APPROACH THROUGH TQM AND IS ALREADY HOLDER OF QUALITY SYSTEMS CERTIFICATE (FROM BIS FROM THE YEAR 1994 ONWARDS) MAHAVIR SPINNING MILLS ,HOSHIARPUR MEETS ITS POWER REQUIREMENT, TO THE TUNE OF 90 % WITH CAPTIVE POWER PLANT. THE UNIT, VWRY CONSCIENTIOUSLY, FOLLOWS A HIGHLY SYSTEMATIC AND STRUCTURED APPROACH TO ENVIRONMENTAL MANAGEMENT AND IS FULLY COMMITTED AND DEDICATED FOR EXCELLANCY IN THIS DIRECTION.

MSML IS A PROFIT MAKING COMPANY AND AT PRESENT TURNOVER OF THE COMPANY DURING THE YEAR 2003-2004 IS RS. 19120.55 LAKHS.

### **ENERGY CONSUMPTION:**

ENERGY IS BASIC TO PRODUCTION AND ITS EFFICIENT USE CONTRIBUTES TO ENHANCED PRODUCTIVITY.ENERGY CONSERVATION EFFORTS HAVE HELPED OPTIMAL UTILISATION UNDER CONDITION OF SCARCITY AND RISING COSTS .THE TOTAL ENERGY CONSUMPTION IN TERMS OF ELECTRICITY, RICE HUSK, STEAM COAL AND DIESEL USED FOR THE PROCESS IS AS FOLLOWS:

YEAR	ELECTRICITY (LAKH KWH)	RICE HUSK (MT)	STEAM COAL (MT)	DIESEL (KL)	MONEY VALUE (RS LAKHS)
2001-2002	513.79	9161.12	NIL	94.61	1576.56
2002-2003	519.68	8658.56	NIL	80.65	1710.88
2003-2004	503.10	7186.81	NIL	85.11	1655.48

YEAR	MANUFACTURING COST (RS LAKHS)	TOTAL ENERGY COST (RS LAKHS)	ENERGY AS %AGE OF TOTA MANUFACTURING COST ( B/A ) X 100L
2001-2002	11405.94	1576.56	13.82
2002-2003	11528.05	1710.88	14.83
2003-2004	11424.98	1655.48	14.49

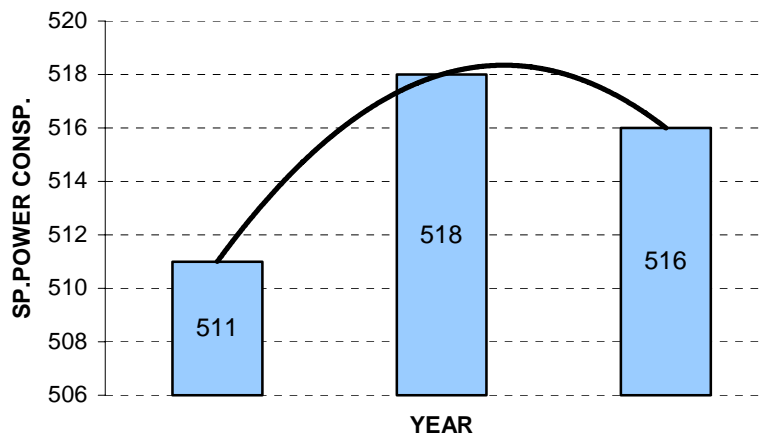
**NOTE: MANUFACTURING COST IS EXCLUDING SELLING, EXCISE & FINANCIAL COST.**

THE SPECIFIC ENERGY CONSUMPTION FIGURES FOR THE PERIOD 2001-2002 TO 2003-2004

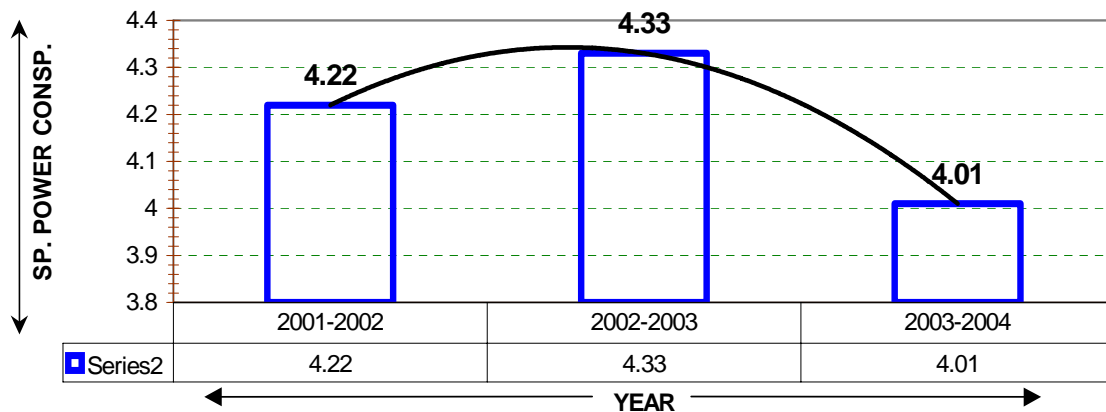
YEAR	PRODUCT	SPECIFIC ENERGY CONSUMPTION	
		ELECTRICAL ENERGY	THERMAL ENERGY MKCAL/TONNE
2001-2002	COTTON YARN SEWING THREAD	511kWh/1000 Spindle 4.22 KWH /KG	NIL 7.2
2002-2003	COTTON YARN SEWING THREAD	518 KWH /1000 SPINDLE SHIFT 4.33 KWH /KG	NIL 6.4
2003-2004	COTTON YARN SEWING THREAD	516 KWH /1000 SPINDLE SHIFT 4.01 KWH /KG	NIL 5.3

- THE SPECIFIC ELECTRICAL & THERMAL ENERGY OF SEWING THREAD FOR YEAR 2001-2002 IS HIGH DUE TO RUNNING OF NEW AUTOMATIC WINDING MACH CONER MACHINES FOR BETTER QUALITY AS COMPARED TO CONVENTIONAL WINDING M/CS & ALSO DUE TO LESS PERCENTAGE CAPACITY UTILISATION OF SEWING THREAD.

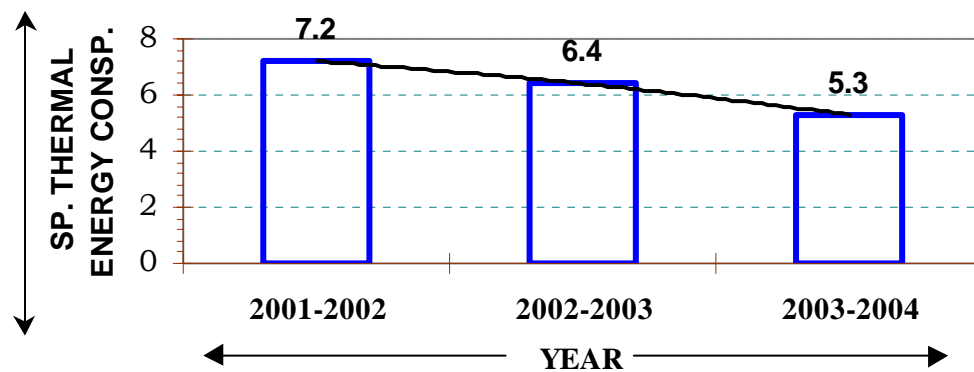
**SPECIFIC POWER CONSUMPTION OF COTTON YARN IN KWH / 1000 SPINDLES**



**SPECIFIC POWER CONSUMPTION OF SEWING THREAD IN KWH / KG.**



## SPECEFIC THERMAL ENERGY CONSUMPTION IN MKCAL / TONNE



### ENERGY CONSERVATION COMMITMENT . POLICY & SET UP

ENERGY CONSERVATION RECEIVES PARAMOUNT IMPORTANCE AT MAHAVIR SPINNING MILLS LIMITED. IN VIEW OF INCREASING PRICE OF ENERGY , DEPLETING NATURAL RESOURCES, THE UNIT IS HIGHLY COMMITTED TOWARDS ENERGY SAVING PROGRAMME. THE CONSISTENT EFFORTS ARE INVESTED FOR ACHIEVING OPTIMUM ENERGY CONSUMPTION THROUGH.

- CONTINUAL IMPROVEMENT IN ENERGY PERFORMANCE THROUGH PERFECT WORKING OF MACHINES & CONTINUOUS UPGRADATION OF THE SYSTEM.
- ADOPTION OF INNOVATIVE TECHNOLOGIES . ENERGY SAVING DEVICE , SHARING KNOWLEDGE WITH SCHOLAR ENERGY AUDITORS & LEARNING THROUGH VENDERS.
- THE RECOMMENDATIONS OF THE UNIT ARE ADVISORY AND ENGINEERING ( A SENIOR LEVEL QUALIFIED EXPERT IN THE CARPORARE OFFICE FOR ASSISTING AND GUIDING DIFFERENT UNITS IN THE GROUP ) AND PUT UP TO CAPITAL EXPENDITURE COMMITTEE FOR ITS FINAL RECOMMENDATION TO THE CHAIRMEN'S OFFICE FOR SANCTION.
- TRAINING AND INVOLVEMENT OF ALL EMPLOYEES FOR CREATING ENERGY AWARENESS.
- REDUCTION IN ENERGY LOSSES.

THERE IS HIGH LEVEL OF COMMITMENT FROM TOP MANAGEMENT FOR ENERGY CONSERVATION ACTIVITIES WITH FULL SUPPORT. THIS COMMITMENT IS BACKED BY A CLEAR CUT POLICY ,ACTION PLAN IMPLEMENTATION , CONTINUOUS MONITORING SYSTEM AND ALLOCATION OF NECESSARY MATERIAL & HUMAN RESOURCES.

MSML BELIEVES THAT “ **ENERGY SAVED IS ENERGY PRODUCED** “ SO NO EFFORT IS SPARED TO ACHIEVE HIGHEST LEVELS OF EFFICIENCY IN MANAGING & CONSERVING THE ENERGY RESOURCES. BOTH FINANCIAL AND HUMAN RESOURCES COUPLED WITH TECHNOLOGICAL UPGRADATION ARE PROVIDED FOR THE PURPOSE.

THE ECC ( ENERGY CONSERVATION CELL ) AT MSML BY CHIEF MANAGER ( ENGG.) & SENIOR EXECUTIVES FROM ALL AREA OF ENGINEERING, PRODUCTION, MAINTENANCE , UTILITY , ,R&D ETC. BASED ON VARIOUS ENERGY DATAS COLLECTED BY ECC, A REPORT ON ENERGY PERFORMANCE OF THE PLANT IS

PREPARED ON MONTHLY & YEARLY BASIS IS REVIEWED AT VARIOUS LEVELS OF MANAGEMENT AS PER DETAILS GIVEN BELOW

- DAILY REVIEW IN ENGG. MEETING, WHERE WEAK AREAS ARE IDENTIFIED & ATTENDED BY GROUP OF ENGINEERS.
- MONTHLY REVIEW BY ECC. TO EXAMINE THE STATUS OF ONGOING ENERGY CONSERVATION PROJECTS & DEVISING (IF REQD.) THE TARGET OF ENERGY CONSERVATION .
- YEARLY REVIEW WITH SIMILAR COMMITTEE OF ONE GROUP FOR SETTING UP ENERGY TARGETS FOR NEXT CONSECUTIVE YEAR
- MONTHLY REVIEW BY CHAIRMAN (ECC) AT APEX LEVEL MEETING WITH THE UNIT HEAD.

BASED ON RECOMMENDATION MADE BY THE ECC & CAPITAL PROJECTS COMMITTEE, THE DECISION COULD BE TAKEN FOR IMPLEMENTATION OF ENERGY CONSERVATION PROGRAMME IN MEDIUM & LONG TERM BASIS. MODIFICATION & RETROFITTING OF ENERGY EFFICIENT EQUIPMENT IN DIFFERENT AREAS WOULD BE IMPLEMENTED BY RESPECTIVE DEPTT. HEADS UNDER THE CLOSE CO-ORDINATION WITH ECC.

### **ENERGY CONSERVATION ACHIEVEMENTS**

DURING THE YEAR 2001-2002 THE UNIT HAS SUCCESSFULLY IMPLEMENTED FOLLOWING ELECTRICAL & THERMAL ENERGY CONSERVATION STEPS & ACHIEVED ENORMOUS SAVING

1. INSTALLATION OF **W.H.R. BOILER** FOR PRODUCING 3 TONS /HOUR STEAM FOR PROCESS REQUIREMENTS. THE SAME USES THE SENSIBLE HEAT OF EXHAUST GASES OF WARTSILA D.G SETS TO HEAT WATER UPTO IT'S BOILING POINT & HENCE PRODUCES STEAM AT REQUIRED PRESSURE.
2. INSTALLATION OF **HYDROPHORE SYSTEM** FOR RAW WATER ,SOFT WATER & DRINKING WATER SUPPLY AT WATER SOFTENING PLANT, HYDROPHORE SYSTEM IS A CENTRALISED WATER SUPPLY SYSTEM WHICH MAINTAINS THE WATER & AIR COLUMN IN A DESIGNED CAPACITY PRESSURE VESSEL.
3. INSTALLATION OF **AUTOMATIC BLOWDOWN SYSTEM** AT CVL BOILER. DUE TO CONTINUOUS EVAPORATION OF WATER IN BOILER ,T.D.C OF BOILER SHOULD BE MAINTAINED WITHIN THE LIMITS AS SPECIFIED .THE OPTIMUM LEVEL OF T.D.S IS DECIDED BY THE AUTOMATIC BLOWDOWN WHICH CONSTANTLY ONLINE MONITORS THE TDS LEVEL & ALLOWS BLOWDOWN ACCORDINGLY HENCE RESULTS IN REDUCTION IN WASTAGE OF PRECIOUS HOT D.M WATER.
4. ENERGY SAVING BY REPLACING CONVENTIONAL ALUMINIUM FANS WITH **ENERGY EFFICIENT FRP FANS**. AT VARIOUS AIRWASHERS & COOLING TOWERS OF POWER PLANT. NOW A DAYS WITH THE ADVENT OF NEW TECHNOLOGY & INNOVATIONS MANY VENDORS HAVE COME UP WITH ENERGY EFFICIENT FRP FANS FOR HUMIDIFICATION AND AS WELL AS COOLING TOWER THESE FANS ARE DESIGNED IN SUCH A MANNER THAT THE ENERGY CONSUMPTION IS QUITE LESS AS COMPARED TO CONVENTIONAL ALUMINIUM FANS & FOR THE SAME C.F.M & PRESSURE HEAD REQUIRED.

5. INSTALLATION OF **ENERGY EFFICIENT SCREW COMPRESSORS** IN PLACE OF RECIPROCATING COMPRESSORS .THEIR POWER REQUIRED TO COMPRESS THE AIR IS IN THE RATIO OF 0.22 KWH PER CFM WITH SCREW COMPRESSOR AS COMPARED TO 0.3 KWH/CFM OF RECIPROCATING COMPRESSORS. THIS LEADS OF QUANTUM OF ENERGY SAVING BY USING SCREW COMPRESSOR INSTEAD OF RECIPROCATING COMPRESSOR BASED ON HIGH PERFORMANCE & LESS LOSSES.
6. RECOVERY OF **FLASH STEAM GENERATED** FROM CONDENSATE .IN OUR UNIT CONDENSATE IS RECOVERED IN ORDER TO INCREASE TEMP. OF FEED WATER . DURING THE PROCESS OF CONDENSATE RECOVERY FLASH STEAM IS GENERATED THE SAME SINCE HAS HIGH THERMAL CONTENT IS UTILISED WITH HELP OF HEAT EXCHANGERS FOR HEATING FURTHER D.M WATER FED IN THE CVL & WASTE HEAT RECOVERY BOILER. BY DOING SO WE ARE ABLE TO SAVE GOOD THERMAL HEAT ENERGY & THUS ACHIEVED SAVING IN FUEL.
7. THE UNIT HAS MADE AN INVESTMENT OF RS 34.11 LAKHS & SAVED ENERGY SAVING OF WORTH RS. 25.75 LAKHS FOR THE YEAR 2003 - 2004. THE SPECIFIC POWER CONSUMPTION FIGURE ARE IMPROVING CONSTANTLY FOR LAST THREE YEARS BY CONTINUOUS EFFORTS PUT IN BY THE MANAGEMENT & STAFF.

#### **ENERGY CONSERVATION PLAN & TARGETS.**

ENERGY CONSERVATION SCHEMES ARE ALREADY UNDER IMPELEMENTATION & ACTIVITIES ARE PLANNED FOR NEAR FUTURE.SOME OF THESE ARE HIGHLIGHTED BELOW.

1. TO SAVE ELECTRICAL ENERGY BY USING LIGHTWEIGHT PNEUMAFIL FANS IN PLACE OF CONVENTIONAL FANS. IN G5-1 RING FRAME M/C.
2. TO CHANGE ELECTRICAL HEATING TO STEAM HEATING OF F.O AT WARTSILA POWER PLANT.
3. TO AUTOMISE THE THERMAX BOILER BY INSTALLING VFD FOR I.D FAN,F.D FAN & PA FANS.
4. TO SAVE ELECTRICAL ENERGY BY PROVIDING SUPER ENERGY EFFICIENT MOTORS OF MIS SIEMENS MAKE IN G-5-1 RING FRAME M/C.
5. TO SAVE ENERGY BY UTILISING HEAT OF HT WATER OF 10MVA POWER PLANT FOR PREHEATING PROCESS WATER FOR ASSED MERCERIZED YARN UNIT
6. PROVIDING TWIN LOBE BLOWER /DIFFUSED AIR SYSTEM IN PLACE OF FLOATING AREATORS IN EFFLUENT TREATMENT PLANT AIREATION CHAMBER

## **ENVIRONMENT & SAFETY**

MSML STRONGLY BELIEVES THAT RESOURCE CONSERVATION & POLLUTION PREVENTION GO HAND IN HAND. WITH DWINDLING RESOURCES ,IT IS IMPERATIVE TO CONSERVE THEM .KEEPING THIS IN VIEW ,IT HAS BEEN A CONSTANT ENDEAVOUR OF THE UNIT TO UPGRADE THE PRODUCTION PROCESS BY CARRYING OUT MAXIMUM RECYCLING OF INPUTS, SO THAT MINIMUM POLLUTANTS ARE GENERATED WHICH COULD BE TREATED EFFECTIVELY.

THE UNIT HAS TAKEN SEVERAL STEPS TO CONTROL AIR POLLUTION .THE UNIT HAS PROCURED SUSPENDED PARTICULATES MATTER (SPM) MEASURING INSTRUMENTS.FOR CONTROLLING BOILER EMISSIONS & PROCESS ENVIRONMENT , THE SPM DETECTING INSTRUMENTS HELPS US TO PROVIDE A CLEAN & HEALTHY ENVIRONMENT WITHIN THE PROCESS HALLS ALSO.

MSML HAS INSTALLED FULL FLEDGED EFFLUENT TREATMENT PLANT TREATING EFFLUENT WATER FROM PROCESS WITH HELP OF PRIMARY,SECONDARY & TERTIARY TREATMENT AND ENSURES ITS PROPER FUNCTIONING ROUND THE CLOCK & ALSO WITH A TARGET TO MEET STIPULATED STANDARDS LAID DOWN BY POLLUTION CONTROL BOARD COMMITTED TO SAFETY , HEALTH & ENVIRONMENT .THE UNIT HAS FULL FLEDGED CHIEF SAFETY . OFFICER. THE SHE COMMITTEE IS HEADED BY THE CHIEF MANAGER(ENGG) & SUB HEADED BY CHIEF SAFETY OFFICER. THE COMMITTEE COMPRISES OF HOD S OF VARIOUS SECTIONS (MTC,ENGG,.PRODUCTION ,I.R, HR.D ETC.) THE SAFETY TEAM MONITORS VARIOUS OPERATIONS IN THE PLANT & PROVIDES ADEQUATE SOLUTIONS FOR THE SAFE WORKING ,SAFETY PERMIT SYSTEMS, EMERGENCY PLANS , MOCK DRILLS FOR FIREFIGHTING,SAFETY TRAINING ETC. ARE PART OF WORK CULTURE AT THE UNIT . DUE TO THE ABOVE CONTINUOUS EFFORTS ,MSML HAS BAGGED THE **NATIONAL SAFETY AWARD** FROM THE GOVT. OF INDIA FOR THE **6<sup>TH</sup> CONSECUTIVE YEAR** , AS A BEST INDUSTRY WITH REGARD TO MAINTAIN SAFETY & NO ACCIDENTS.

**NOTE: THE BALANCE SHEET OF MAHAVIR SPINNING MILL LTD IS PREPARED TAKING INTO CONSIDERATION ALL THE MANUFACTURING UNITS,AS SUCH THE BALANCE SHEET FIGURES WILL NOT TALLY WITH THE FIGURES PROVIDED BY US IN THIS REPORT WHICH IS EXCLUSIVELY PREPARED FOR THE SPINNING/SEWING THREAD UNIT OF MAHAVIR SPINNING MILLS LIMITED ,HOSHIARPUR**

## MAHAVIR SPINNING MILLS LIMITED: HOSHIARPUR "ENERGY MANAGEMENT POLICY"

We, at Mahavir Spinning Mills Limited (a flagship Company of Vardhman Group of Industries) engaged in the Manufacturing of Yarns and Sewing Threads of all kinds, have a very dynamic and strong philosophy, which is summed up as "**ALL AROUND CONTINUOUS IMPROVEMENT**". Under the philosophy, the energy Management aspect is on top priority and forms an essential and integral part of the business. Apart from helping the organisation in controlling the costs of input to become competitive, it is seriously aimed at a great contribution to the nation because of the shortage / constraint of Energy for an overall growth and prosperity. The mission as stated by our Corporate Office ( Apex Management Body ) is to become the most energy efficient operational set-up. The approach to Energy Management is pursued through well structured system, which would broadly cover the following

To create knowledge on Electrical / thermal energy and enable the organisation to open up avenues

for conserving energy.

To continuously work on Energy Conservation projects.

Training of employees at all levels to create an environment of energy awareness.

Involvement of employees at all levels through a systematic approach.

The scientific measurement of progress / improvements achieved and to share the organisation for further continuous motivation.

### **MANAGEMENT'S ROLE**

The management is committed to the following:-

To render support in totality,

Subscribing relevant journals / magazines,.

Sending representatives to various seminar on Energy Conservation,

- Arranging Energy Audits by experts,,
- Participating in different Energy Conservation contests,
- Deputing personnel for in-depth training to various program on machines / equipments,
- Arranging inter units visits for discussion & sharing experiences,
- Implementing suggestion schemes to promote participation down the level,

## **EMPLOYEE'S ROLE**

- We expect and accordingly train all our employees for the following :-
- To enthusiastically participate in Energy Conservation Drive,
  - To undergo training for acquiring knowledge / skills for effective contributions.

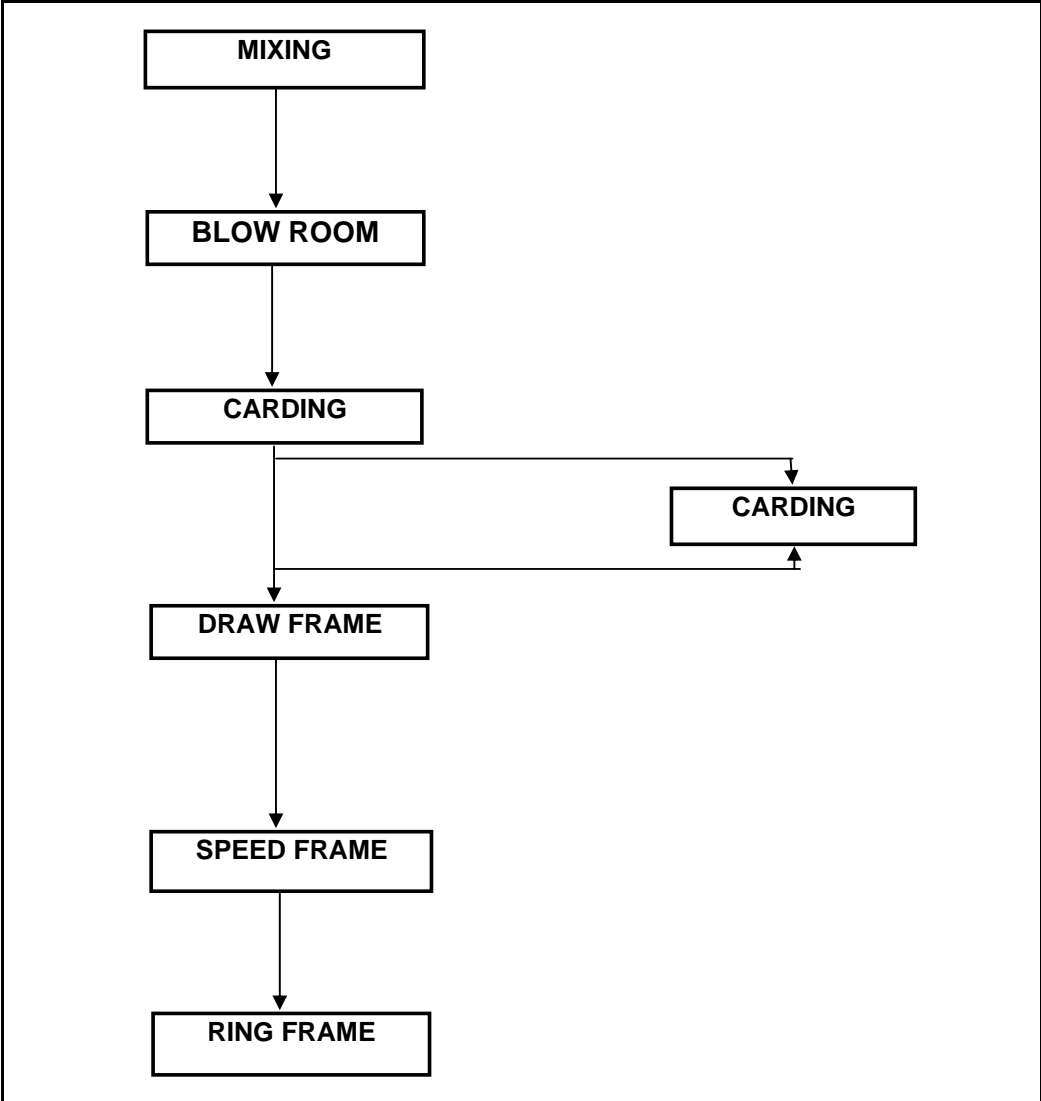
## **CONCLUSIONS**

Implementation of identified proposals would be given top priority and would be done step by step.

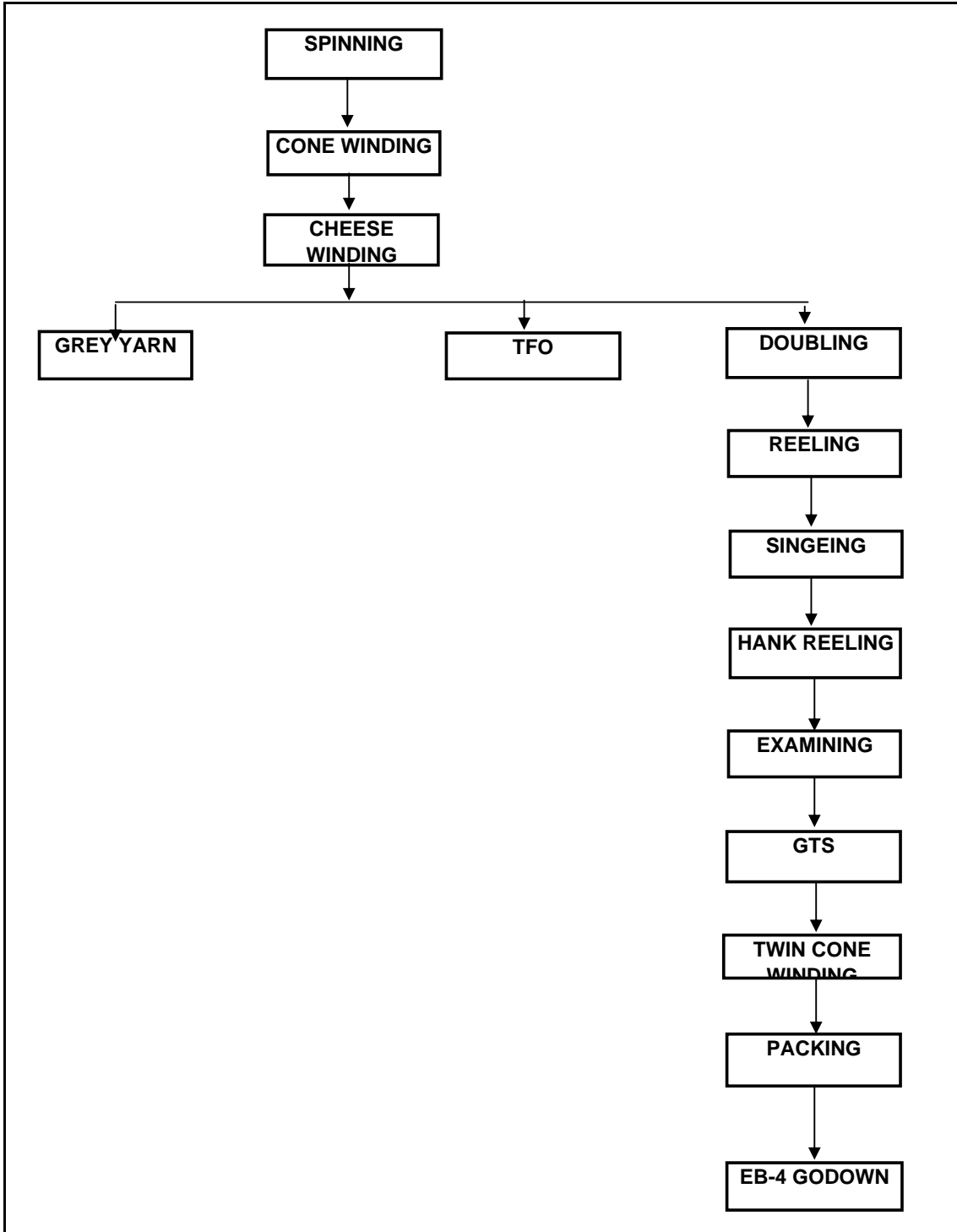
Mahavir Spinning Mills Limited.:

- Should assign specific responsibility for implementation of proposals.
- Should monitor saving achieved on a proposal by proposal system.
- Should have the goal of achieving the best Energy Efficient unit in the country.

**PROCESS FLOW CHART SPINNING.**



# PROCESS FLOW CHART - POST SPINNING



**FLOW CHART FOR SEWING THREAD WET PROCESS.**

