



Raymond Limited, Textile Division, Jalgaon

Organization Profile & Business Case

Raymond Ltd Jalgaon division is one of the 4 Textile units established in year 1979 with manufacturing capacity of 79 lakh meters per annum of worsted suiting. Worsted division manufactures Worsted Suiting fabric with polyester-wool and polyester-viscose blends. Turnover of Jalgaon unit was Rs. 296.80 Crore for previous year. Raymond Ltd. Jalgaon is ISO9001, 14001, 45001 and 50001 certified company.

While making operational budget for financial years, cost of energy is main focus area. As the raw material and energy cost increasing day by day, this leads to higher manufacturing cost. To sustain in market for longer time with marginal profitability we need to control manufacturing cost. Since cost of raw material is not in our hand we can reduce manufacturing cost by controlling energy uses. This leads us to implement the EnMS system. Since we are identified as designated consumer under PAT (Perform Achieve and Trade) scheme by Bureau of Energy Efficiency, India we need to comply with legal requirements

“ISO 50001 is a very handy tool to reduce production cost by implementing various energy measures.”

Mr. A S Narkhede (Works Director)

Keys to Success

- Each and every department power should monitor and recorded in proper way.
- Production data of each process should be up to date.
- Every data should be accurate and up to date.
- Top management commitment

Case Study Snapshot

Industry	Textile Manufacturing
Product/Service	Greige Mended Fabric
Location	Jalgaon, Maharashtra
Energy management system	ISO 50001
Energy performance improvement period, in years	4
Energy Performance Improvement (%) over improvement period	21%
Total energy cost savings over improvement period	392194 \$USD
Cost to implement EnMS	278871 \$USD
Total Energy Savings over improvement period	96148 GJ
Total CO ₂ -e emission reduction over improvement period	3159.75 Metric tons

Business Benefits

- We have saved coal consumption by 1068 Ton. We achieved this saving by implementing following initiatives
 1. Replacement of inefficient 10 TPH boiler with 6 TPH Boiler,
 2. Thermal jacketing of valves,
 3. Waste heat recovery and

- 4. Condensate recovery from various department
- We have saved electricity consumption by 29.30 Lac Units. We achieved this saving by implementing following initiatives over the improvement period.
 1. 2.4 Lacs units has been saved by replacement of 6000 nos of 36 watt conventional tube light with 16 watt LED tube lights
 2. 0.68 Lacs units has been saved by Installation of VFDs in Dyeing machine circulation Pump.
 3. 0.027 Lacs Units has been saved by replacement of fluid coupling type motor with new energy efficient motor with VFD.
 4. 6 Lac units savings by conversion of chiller plant into normal humidification plant.
 5. 5.5 Lac units saving against installation of VFD on H-Plant.
- 18000 kl water has been saved by recycling of 50% of effluent water by installation water of RO Plant.
- We are one of the very few companies in Textile sector to get certified with ISO 50001:2011.
- Total Energy cost saving over the improvement period was 392194 US\$
- Total cost to implement EnMS was 278871 US\$
- Total 15 Energy team members worked rigorously for around two months to implement EnMS.

“Plant energy consumption reduced significantly after implementation of ISO 50001.”

Mr. Rintu Das (Dy.GM-Engg.)

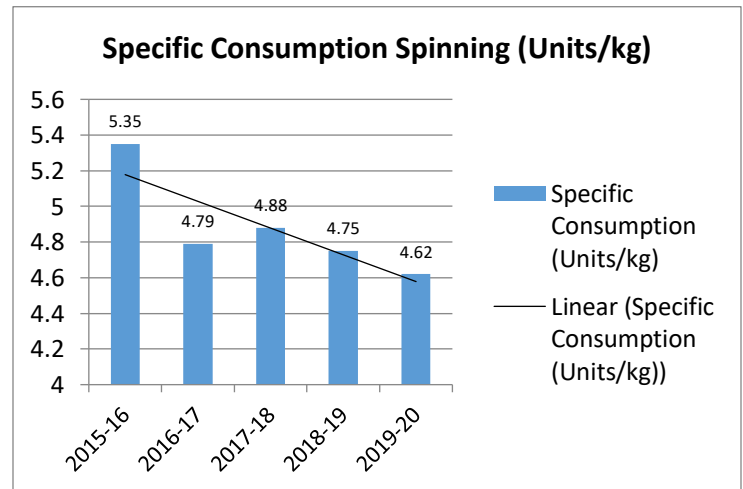
Plan

The motivation towards implementing the Energy Management System was increasing manufacturing cost. Since the increasing manufacturing cost is a major concern for industries due to increasing cost of raw material and man power cost, so lowering down the cost of utilities was only option we were left with. Also

we are a designated consumer, so we need to comply with legal requirements of union government.

Organizational and Top Management Commitment

Top management is committed towards EnMS system as it is directly going to affect the cost of operation. Also Top Level management encourages EnMS system by providing separate fund for EnMS system. Top level management involve HODs of each department to take decision regarding EnMS implementation and use available resources for this. An energy team was formed comprising of young and energetic members with experienced members. Team members involved the representation from all the departments like Combing, Top Dyeing, Spinning, Weaving and Engineering. Each team member responsibilities has been clearly defined and taught to each member.

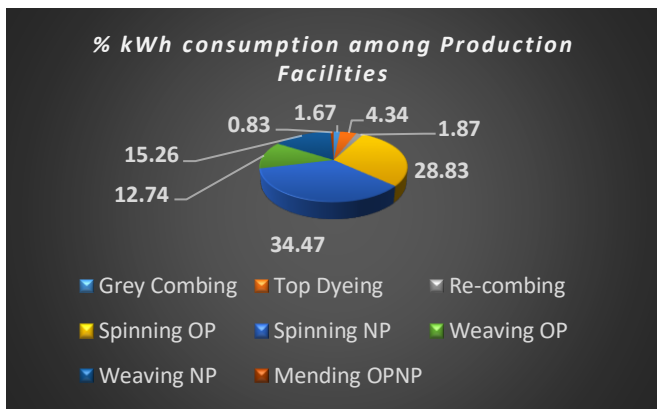


Energy Review & Planning

Identified current energy sources. We evaluated past and present energy use and consumption. Based on the analysis of energy use and consumption, identified the areas of significant energy use. We used energy meter data of each department and then drawn the Pie chart of electricity and thermal consumption of each department. Then the department whose consumption share was more than 5% was identified as SEUs (Significant Energy Use).

We identified the facilities, equipment, systems, processes and personnel working for, or on behalf of,

the Organization that significantly affect energy use and consumption. We identified other relevant variables affecting significant energy uses. We determined the current energy performance of facilities, equipment, systems and processes related to Process. Identified significant energy uses (SEUs) and then estimated future energy use and consumption. Identified, prioritized and recorded opportunities for improving energy performance. On the basis of energy review we have drawn energy baseline for each SEU and set the target for each department.



Strategic Benefits with EnMS

After the implementation of EnMS, we saved significant amount of electricity as well as coal. As a result, manufacturing cost dropped significantly because energy cost is a major contributor towards the manufacturing cost. Also Raymond being a responsible organization, we owe to society. We reduced GHG and carbon emission and strived towards a greener society. Also it developed awareness towards everyone in plant towards the efficient use of energy and started to contribute towards the mission.

Process for Reviewing and Analyzing Energy Use

First of all, we identified SEUs (Significant Energy Use) based on System, processes and machineries. We identified variables on which energy depends and used regression analysis to predict energy consumption and deviation between actual and projected. Priority is decided for saving is based on the major SEUs and potential for savings.

As it was a recertification process, although the process was similar with initial certification process but the

system was much mature than during initial certification process. People involved proactively and showed higher intensity of awareness during recertification process.

“EnMS has given us a new dimension towards our thought where we can see energy as a vital part in manufacturing operations.”

Mr. Aleem Shamasti (Dy.GM-Works)

Do, Check, Act

Implementation Process, People Involved, Top Management Input and Communication

Company hired professional for the guidance and implementation of EnMS 50001. He provided training in accordance with various levels of employees regarding awareness of EnMS system and their implementation. Top management is also committed towards EnMS system as it is directly going to affect the cost of operation. Top Level management encourages EnMS system by providing separate fund for EnMS system. We have provided Suggestion box in every departments for shop floor workers suggestions. We have provision for incentive for best suggestion of the month, to encourage the workmen about these systems. At middle level, there is a monthly meeting regarding effective implementation of EnMS system

Key Activities Identified and Implemented

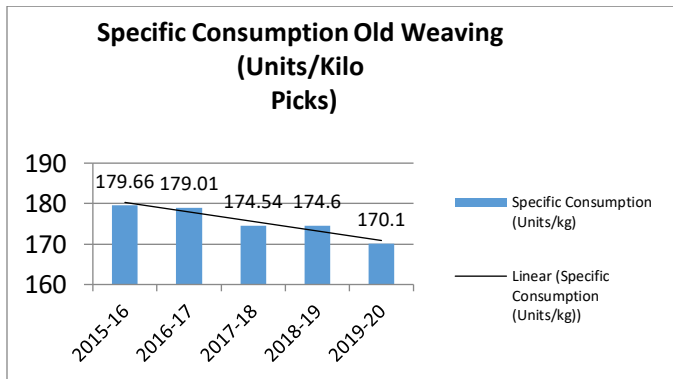
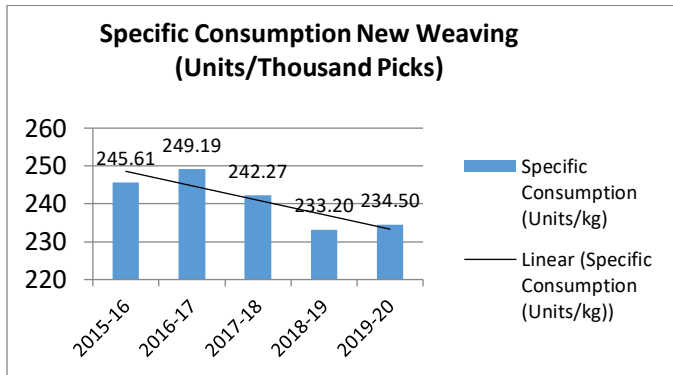
We have taken guidance of BEE certified energy auditor and identified the scope of energy saving and approach in coordination with energy auditor and applied the energy saving initiatives.

We have also taken guidance of ISO 50002:2014, ISO 50003:2014, and ISO 50004:2014. ISO 14001:2008 was also become very handy tool for implementation of EnMS system.

Target Status

In most of the cases where the project was taken to reduce the consumption, we achieved the target. Also we are covered under PAT cycle II, an initiative of BEE (Bureau of Energy Efficiency) and Union Government of India where we were given a target to reduce energy consumption by 6% in specific over the

baseline specific consumption which was 1.399 and the target was 1.31. Our specific in the assessment year was 1.06 which was far better than target given and we achieved 934 ESCerts for that.



Approach used to determine whether energy performance improved to validate results

1. Monitoring of Monthly monitoring of specific energy consumption of each department.
2. Monitoring of Monthly Power Consumption of the Plant
3. Monitoring of efficiency and machine utilization %.
4. Energy meters have been installed in each area to measure the power consumption.
5. Daily production record.

Methodology to Validate Energy Performance

we adopted regression analysis (A statistical tool) to

predict and project the expected consumption. An advantage with regression analysis is that we can include various variables in account which affects the energy consumption in the department. We have taken the power consumption of previous year in regression analysis including the variables as baseline year and drawn the projection of current year.

Factors Used for Normalizing the Data

We used various variables which affects the power consumption. These variables depend on the department where the regression is used. List of variables are

1. Top Dyeing – Polyester production, Wool Production and Depth of Shades
2. Recombing – Production and Average Lot size
3. Spinning – Production, Count, TPI, RPM and Efficiency
4. Weaving – Production
5. Boiler – Steam production, GCV of coal

Tools and Resources

- We have taken guidance of BEE certified energy auditor. We have also taken guidance of ISO 50002:2014, ISO 50003:2014, and ISO 50004:2014. ISO 14001:2008 was also become very handy tool for implementation of EnMS system.
- We have online energy monitoring system in place, which provides real time data and is useful tool for analysis.
- We have developed an energy team which is responsible for taking energy saving related initiatives.

Steps taken to maintain operational control and sustain energy performance improvement

we have made Critical Operating Parameters for each department and monitoring these parameters continuously. We have displayed COP in each department. We are daily monitoring the specific consumption of the plant.

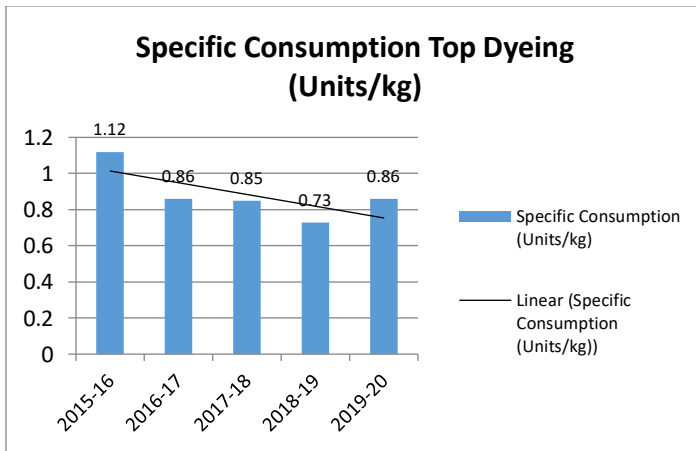
“By Implementation of EnMS system, we are able to track the energy performance, analysis the effectiveness of energy measures and act on deviation.”

Mr. Bhupender Rajput (Energy Manager)

Transparency

There are various modes in which communication is done

1. For internal employees, communication is done through e-mails, posters and charts
2. For other bodies or government, we declare EnMS certification through their respective registration forms.
3. For other stakeholders, we declare EnMS certification through company’s annual reports.



Lessons Learned

1. Energy cost is playing very vital role in manufacturing process, so we need to use energy efficiently.
2. Use of Energy efficient equipment should be our focus.
3. Awareness is very important for energy efficiency as it involves every individual to contribute towards the goal.
4. We were able to get how to achieve long term strategic goals of the organization and resources required for that.
5. Skill development of fitters and electricians of maintenance section of every department so that the can have approach of day to day work based on energy efficiency also.

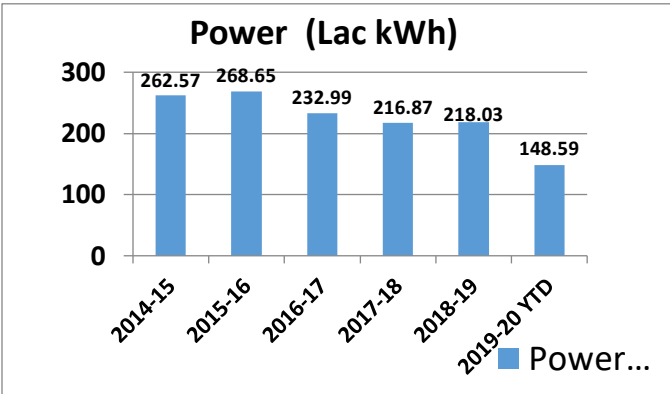
Visuals

The plant performance improvement in electricity is below.

Through the Energy Management Working Group (EMWG), government official’s worldwide share best practices and leverage their collective knowledge and experience to create high-impact national programs that accelerate the use of energy management systems in industry and commercial buildings. The EMWG was launched in 2010 by the Clean Energy Ministerial (CEM) and International Partnership for Energy Efficiency Cooperation (IPEEC).

For more information, please visit www.cleanenergyministerial.org/energymanagement.





Energy Team



+The plant performance improvement in Thermal is below.

