23rd CII National Awards For Excellence In Energy Management – 2021-22

Presented By : Akshay Admane
Sr. Manager (Elect & Inst)
Energy Manager
Mr. Shamarao Goluragi (Dy. Manager Elect.)

Raymond UCO
Denim Private Limited

Raymond **Group is a front runner in the Indian textiles market. Denim plant of Yavatmal is one of the largest Denim fabric producer in India. Raymond UCO Denim is well recognized in India and created a good image in international market.**

Raymond Yavatmal has been very keen on energy conservation from the beginning and has adopted all the latest technology available for Energy conservation. Like electronic ballast, LED Lights, Lighting with low voltage, street lights with LDR, EFF Motors , VFD used in almost all the application, Replacement/ up gradation of old machines, Renewable Energy & automation was to its highest level in any textile plant .

We believe energy conservation is the way of life and thus for the last Three years we have *Invested Rs. 31.20 Million /-* for ENCON & achieved *Saving of Lacs Rs. 66.42 Million /- .*

By this efforts we have achieved PAT-II Target with Escerts - 2315.

Our aim is to become a role model to all the Denim manufacturing units in terms of Quality, Quantity and Efficient Utilization of ENERGY.

Plant Details

Location	Raymond UCO Situated in Vidharbha ,Yavatmal Maharashtra. Maharashtra Industrial Development Corporation (MIDC)
Manufacturing	Denim Fabric
Commissioning of Plant	1996
Capacity	Fabric(Denim) – 400 Lac Mtr.
Plot Area of Plant	567311 Sq. Mts. Industrial Utilization – 117267.96 Sq. Mtr. Residential - 55731.10 Sq. Mtr. Green Belt - 364217 Sq. Mtr. Roads - 30094.94 Sq. Mtr.
Man Power Employed	Staff -482 , Workers - 1637
Accolades	ISO 9001:2015; **ISO -50001: 2011 Certified Company** ; SA – 8000 ; GOTS; Oeko tex 100; Accredit by NABL, Leave's & GAP Lab; Organic exchange

Energy Management Policy

We at Raymond UCO Denim Pvt. Ltd. Yavatmal, involve in the production of High quality Denim Fabric and Yarn are dedicated to conserve Energy for the self, National and global interest without affecting our product quality.

We strive continuously to –

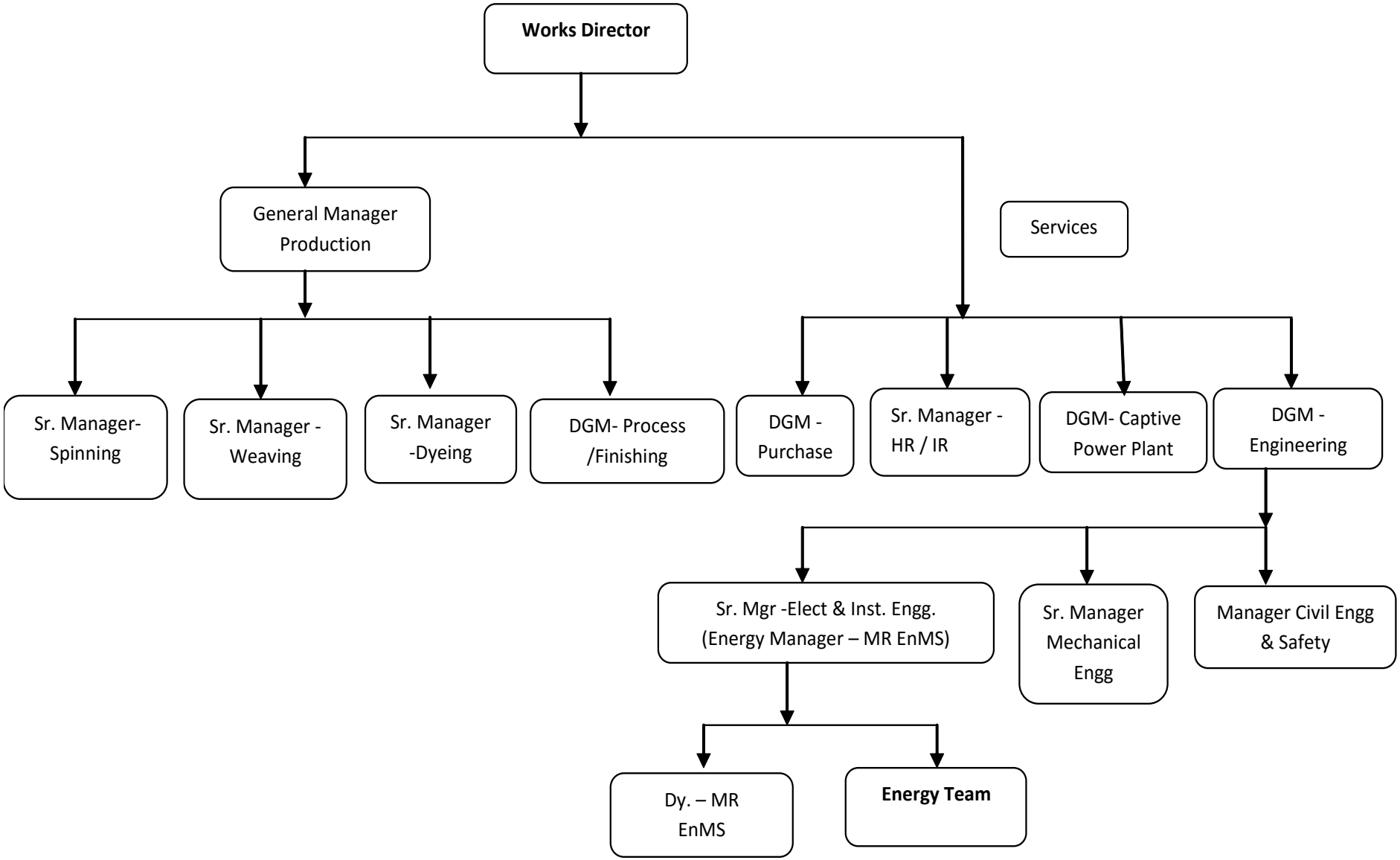
- Reduce specific energy consumption of the plant.
- Use renewable energy sources wherever possible.
- Rationalize the consumption of fossil fuels.
- Implement the Innovative techniques to reduce energy consumption.
- Committed to purchase of energy efficient product and services.
- Comply with the Energy legislation, social and other requirements.
- Adopt and spread the information of energy conservation technique in organization and stake holders.
- Educate the people / student on the benefit of energy conservation.
- Committed to ensure the availability of information and necessary resources to achieve objectives and targets.
- Reduce the specific energy consumption of our plant by 2% for next 5 years.

Date – 1/04/2018

Nitin Shrivastava

Works Director

Encon Cell Structure



Standard Practices Adopted For ENCON

- Maintain UNITY power factor.
- Provided all tube lights with LED
- Utilized maximum natural light
- To procure all new equipment with BEE five star ratings
- To procure Energy efficient motors only
- Provided Steam, Air & water shut off valves to all the machines.
- Adopted zero leakage policy for Steam, Air & Water.
- Recovered all hot water & steam condensate to Boiler feed tank to maintain Feed temperature above 80 deg.
- Separation of cleaning and machine Air as per specific pressure requirement of machines.
- Close Monitoring and follow-up of Energy Conservation Activities

Absolute Energy Saving and Investment made

SEC Consumption Of Plant -

Years	Kwh/Mtr	Kcal/Mtr
2015-16	2.44	4705.51
2016-17	2.42	4468.35
2017-18	2.41	4329.44
2018-19	2.36	4226.43
2019-20	2.15	5202.09
2020-21	2.50	6080.09
2021-22	2.32	5168.94

Electrical & Thermal Energy Saved by Encon Projects -

Years	Electrical Energy (Million KWH)	Thermal Energy (Million Kcal)
2015-16	3.75	20862.40
2016-17	2.05	1300.00
2017-18	3.21	12950.00
2018-19	2.02	16520.00
2019-20	2.69	9175.88
2020-21	2.11	10111.00
2021-22	2.41	12417.00

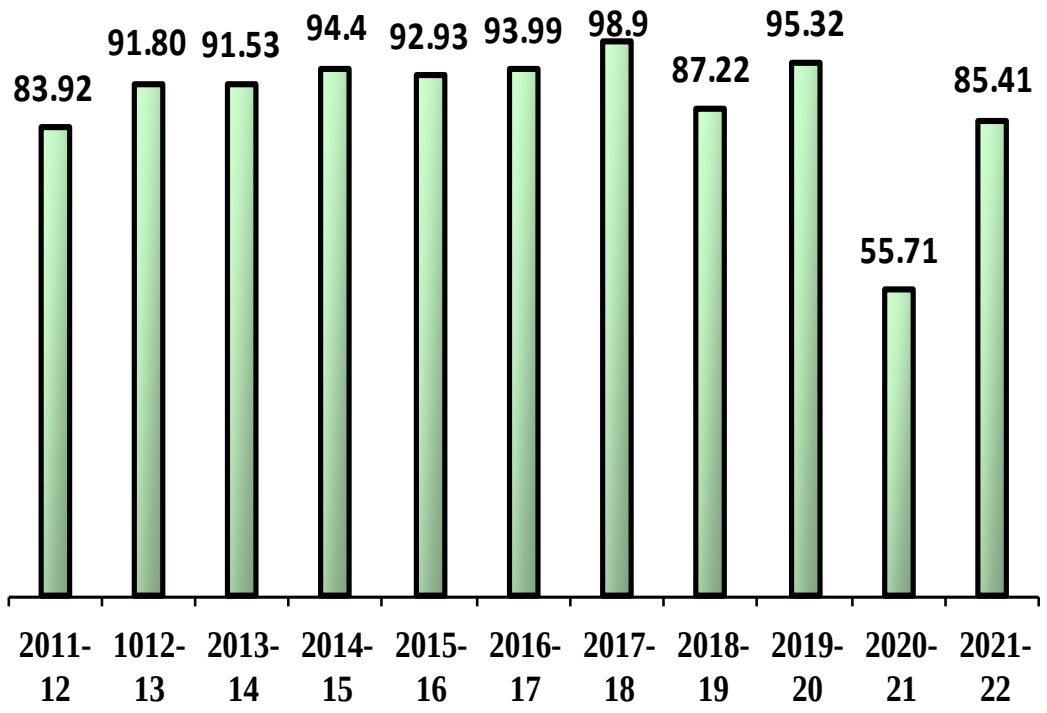
Investment & Saving Achieved-

Years	Investment made (Rs. Million)	Saving achieved (Rs. Lacs)
2015-16	74.39	44.26
2016-17	35.50	17.07
2017-18	44.68	31.02
2018-19	17.61	15.68
2019-20	10.70	18.40
2020-21	10.00	22.96
2021-22	10.50	25.06

Separate Budget for Energy Conservation & up gradation– 180 Lakhs

Years	Proposed Investment (Rs. Lacs)	Expected Saving (Rs. Lacs)
2022-23	760	376

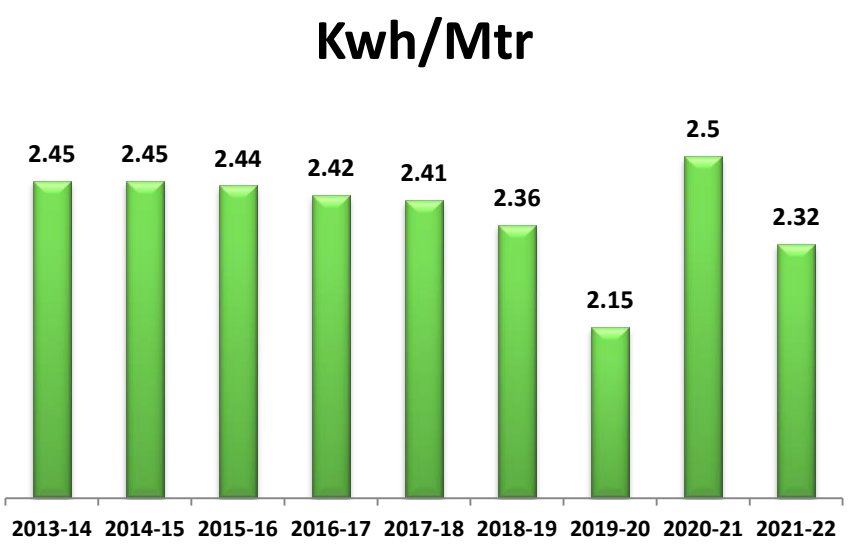
Capacity Utilization Of The Plant

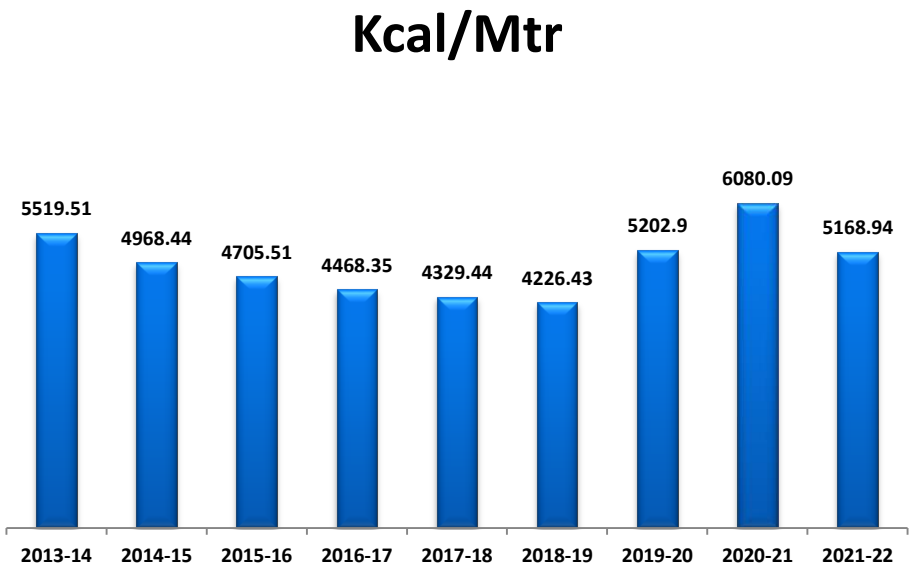


Year	2011-12	1012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
% Utilization	83.92	91.80	91.53	94.4	92.93	93.99	98.90	87.22	95.32	55.71	85.41

Raymond UCO

Electrical & Thermal Energy Consumption

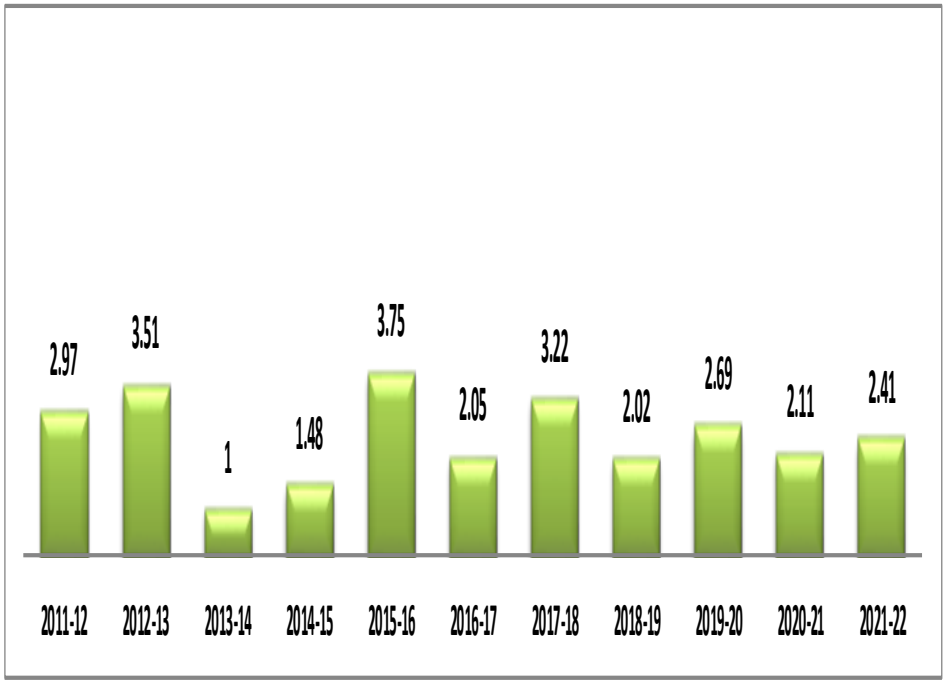


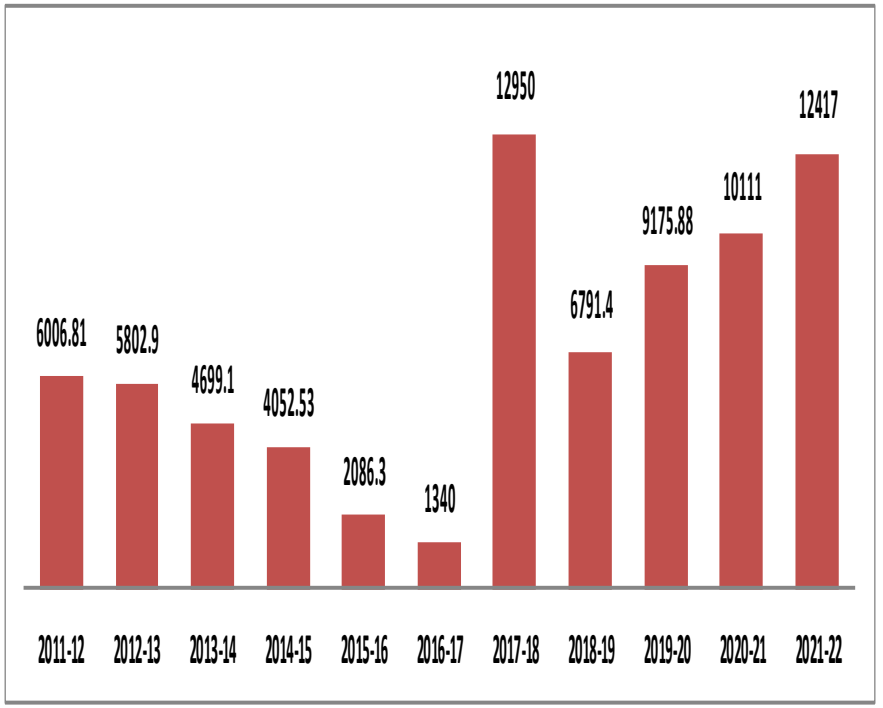


Year	2011-12	1012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Kwh / Mtr	2.45	2.2.45	2.44	2.43	2.44	2.42	2.41	2.36	2.15	2.5	2.32

Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Kcal / Mtr	5684.36	5652.18	5519.51	4968.44	4705.51	4468.35	4329.44	4226.43	5202.9	6080.09	5168.94

Absolute Savings in Electrical & Thermal Energy





Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Energy saved in Million KWH	2.97	3.51	1.00	1.48	3.75	2.05	3.22	2.02	2.69	2.11	2.41

Year	2011-12	2012-12	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Million KCal	6006.81	5802.9	4699.1	4052.53	2086.3	1340	12950	6791.4	9175.88	10111.0	12417

National & Global

Raymond UCO Denim Pvt. Ltd. Use to conduct regular Energy Audit by internal and External Auditor. We have implemented almost all the recommendation of External Auditor. We have increased our SEC reduction targets from 1% to 2% with reference to previous year for next five year.

National Benchmarking - As per national benchmarking is concern we have considered –

1. **CII Shakti Textile Book**–Technology compendium on Energy Saving Opportunities, Textile sector(P.no 27).
2. **Presentation of Arvind Mills at CII award.**

Table of comparison

Name of the Plant	Process	Electrical SEC	Thermal SCE
National Benchmarking (Shakti Foundation)	Spinning	3 – 3.5 Kwh/Kg	Not applicable
National Benchmarking (Shakti Foundation)	Dyeing	0.04 – 0.15 Kwh / Kg	4 - 9 kg steam / Kg
Arvind Mills(CII Award)	Complete plant	5.63 Kwh /kg	14255 K Cal/Kg
Raymond UCO Denim Pvt. Ltd.	Spinning	2.59 Kwh /Kg	Not applicable
Raymond UCO Denim Pvt. Ltd.	Dyeing	0.15 Kwh /kg	5 Kg steam / Kg
Raymond UCO Denim Pvt. Ltd.	Complete Plant	4.19 Kwh /kg	9998.27 K Cal/Kg

Global Benchmarking- As per global benchmarking is concern, we have not found any authentic data to consider. It is varying region to region and continent to continent. So we have not considered this data.

Project Implemented in Last Three years

Raymond UCO

	No of Energy Saving projects	Investment (INR Million)	Electrical Savings(Million kWh)	Thermal Savings (Million Kcal)	Savings(INR Million)	Payback Period	Impact on SEC (Electrical, Thermal)
2021-22	13	10.50	1.90	12417	25.06	12.52	1.0%
2020-21	5	10.00	2.10	10111	22.96	14.89	0.5 %
2019-20	26	10.70	2.26	9175	18.40	9.50	1.2 %

Year	Description	Cost Description
2021 - 22	Turnover of the Unit (FY 2021-22) (INR Cr.)	883.89
	Thermal Cost as % of Manufacturing Cost	8.93%
	Electrical Cost as % of Manufacturing Cost	25.91%
	Total Energy Cost as % of Manufacturing Cost	34.84%

Raymond UCO

Management of Energy Conservation Programs

Sr. no.	Project description 22-23	Electricity	Fuels	Expected Savings in (Rs. lakhs)	Praposed Investment in Lac Rs..
		(Lakhs (kWh)	Coal (MT)		
1	Installation of 1000 KW Solar plant.	**21.42**	**460.53**	**168.36**	**400**
2	Installation of FRP blades and VFD in RA and SA fans.	**3.1**	**67.48**	**24.67**	**30**
3	Coal saving by installation of Waste Heat Recovery system on Stenter Machines.	**0**	**1155.00**	**46.20**	**75**
4	Coal saving by installation of Economizer in Flue Gas Path of Thermopack.	**0**	**332.50**	**13.30**	**15**
5	Energy saving by replacing BLDC fans in place of conventional fans.	**0.077**	**1.65**	**0.60**	**1.2**
6	Energy saving by replacing Lobe type Aeration Blower with Screw blower.	**15.69**	**337.38**	**123.34**	**240**
	Total	**40.33**	**2354.55**	**376.48**	**761.2**

Innovative Project -1

Raymond UCO

Flash Steam Recovery At Process and Finishing Section

Raymond UCO always keep trying to find out new way of energy conservation.

Heat energy of generated flash steam was getting waste in the atmosphere.

We are collecting the flash steam from our major Processes and injected in the 50 KL insulated tank.

This tank is connected with 15 HP pump for HOT water transfer and circulation of water of the tank.

We are utilizing this water at –

1. Boiler Feed Water.

2. Process machines.

<u>Advantages –</u>

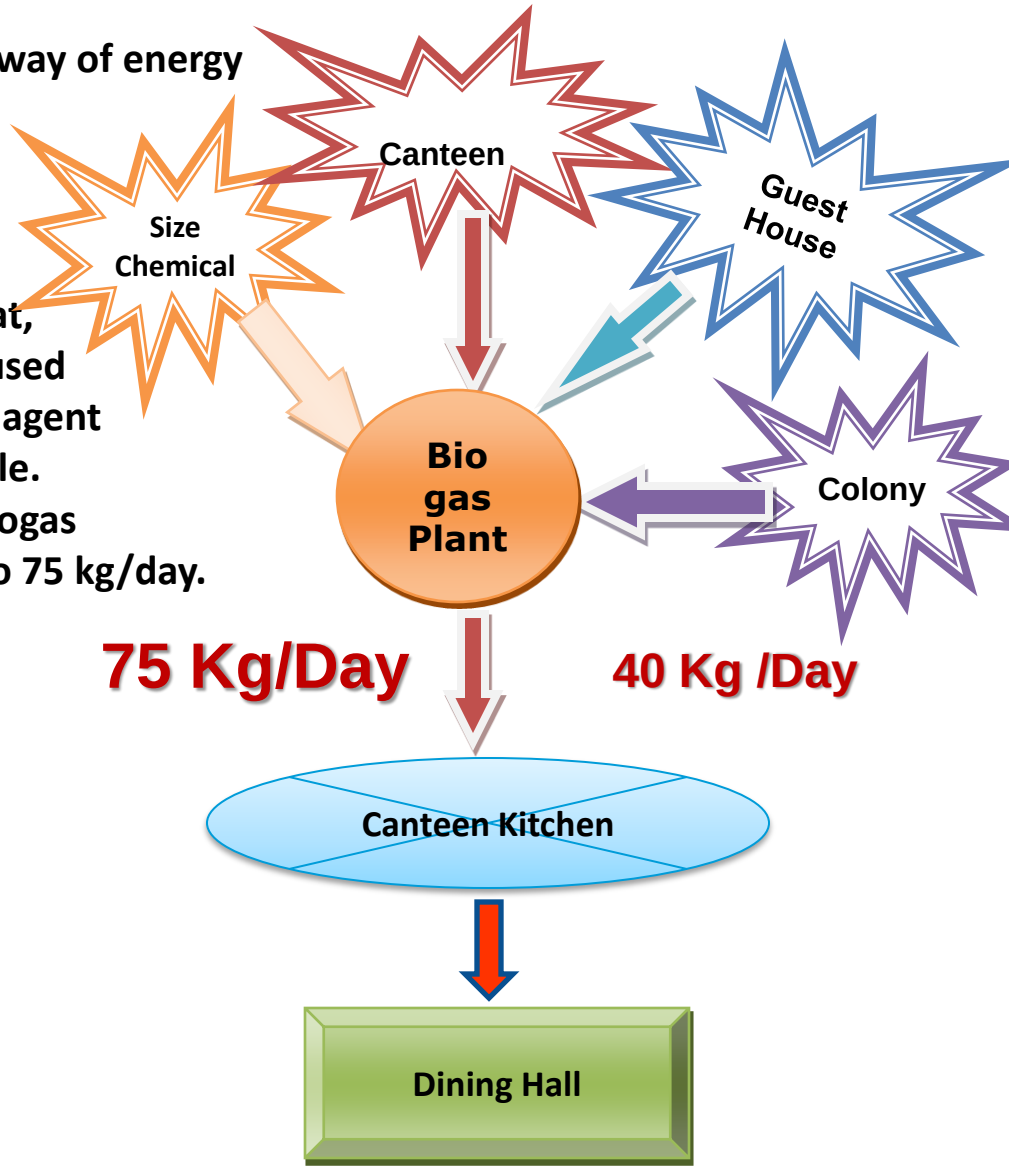
1. **Increased efficiency of Boiler.**
2. **Reduced startup time of process machines.**
3. **Reduce coal consumption by Appx. 1MT / Day.**
4. **Reduce Carbon emission.**
5. **Reduction in Ambient temperature.**

Innovative Project -2

Raymond UCO

Utilization of Size Chemical Waste In Biogas

Raymond UCO always keep trying to find out new way of energy conservation.
We have Biogas plant of 500 KG waste.
We were using canteen, Guest house and colony food waste to feed this plant.
After brain storming and research we observed that, we have Sizing machines wherein sizing chemical used which is composition of mainly starch and binding agent which has high COD value and 100 % bio degradable.
We started mixing this chemical into the feed of biogas and our biogas output increased from 40 Kg/day to 75 kg/day.



Advantages –

1. ETP COD and BOD load reduces.
2. Increased in generation of Gas output.
3. Approximate saving of 35 Kg/ day LPG gas.
4. Reduction in CO_2 emission.

Innovative Project -2

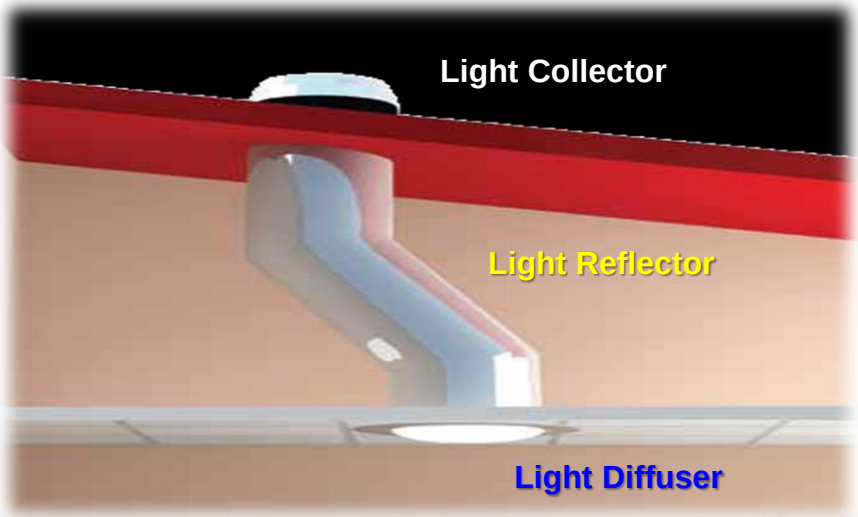
Raymond UCO

Waste Generation and Feeding

Raymond UCO

Light Pipe At Loom Shed

Raymond UCO always promote the use of Renewable Energy sources. In context of that we have installed the Light Pipe at our loom shed.



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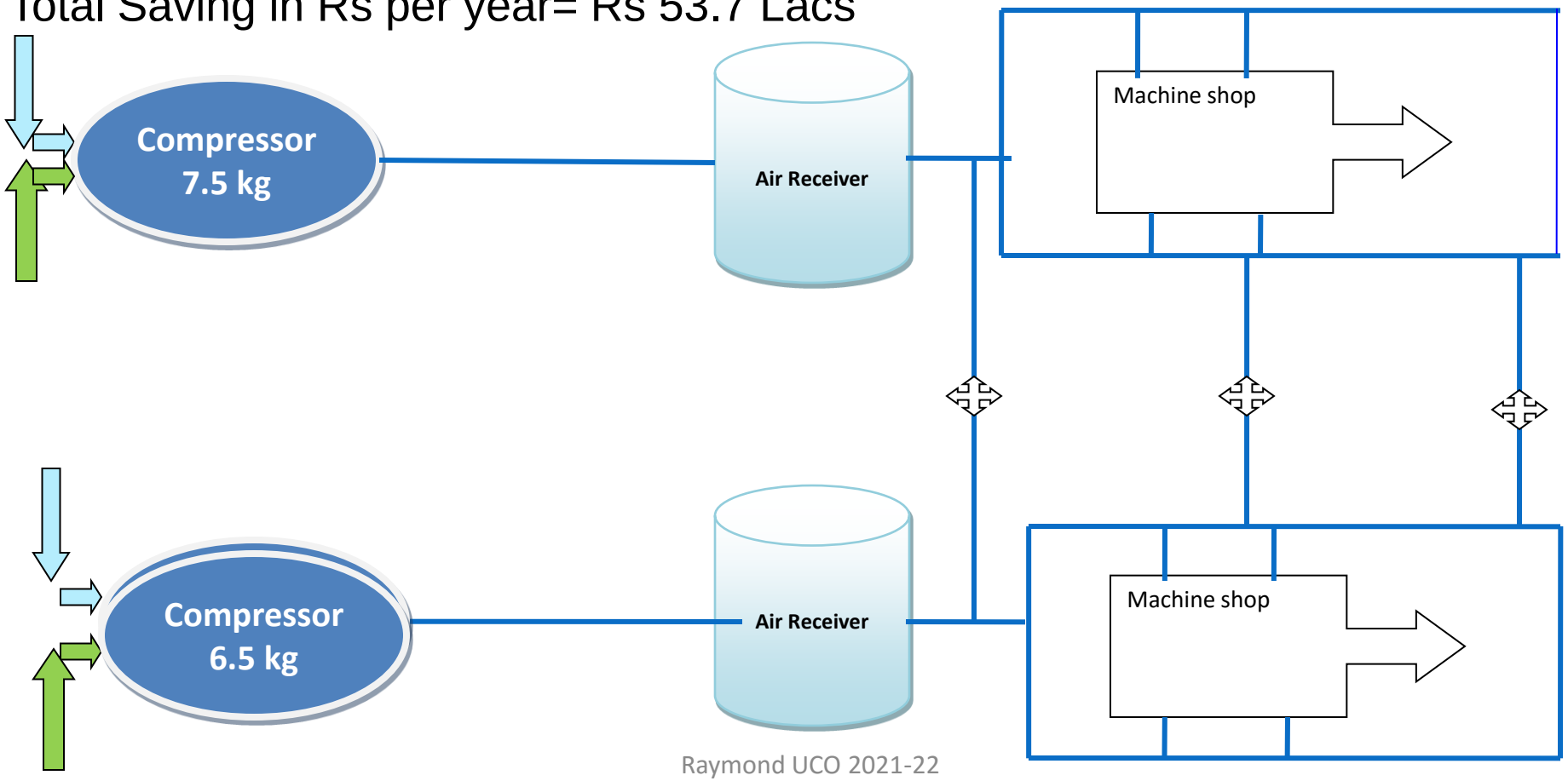
Segregation Of Compressor Line Network

Reduction of generation air pressure from 8 kg/cm2 to 7.5 kg/cm2 and separation of High pressure compressed Air Network into(7.5 Kg/cm2) and (6.5 Kg/cm2).

Total Saving per year = 10.7 Lac kWh.

Total Saving in Rs per year= Rs 53.7 Lacs



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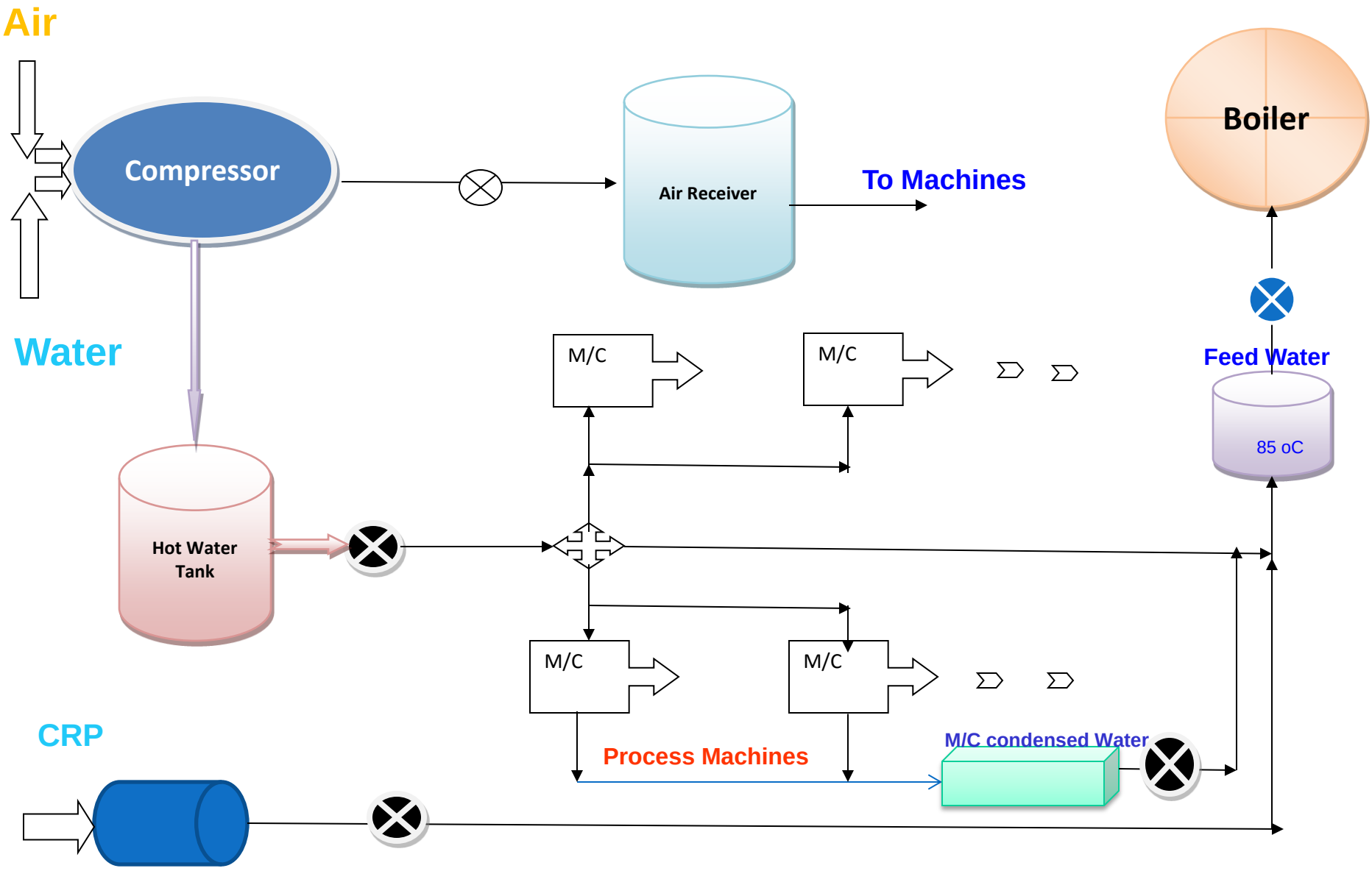
Recovered Hot water to process M/c and Boiler



Recovered Hot water to process M/c and Boiler

Advantages -

- Reduction in coal Consumption.
- Reduction in Electrical Power consumption.
- Less start up time of Process machines.
- Improvement in feed water temp. of Boiler.
- Reduction in Green House Gas Emission.
- Reduction in % Blow down in Boiler By using CRP condense water.

Fogging System At Spinning -1&2

Installation of Mist Spray Fogging System in Place of AWT to maintain Humidity

New Concept of Thermal Energy Saving at Drying cylinder

RO water to Boiler

Reusable Insulation

Renewable Energy Used

Installation of Light pipe transparent sheet and Turbo ventilator

Installation of transparent sheet and Turbo ventilator.
Saving of 5000 units / year.
Investment – Rs. 10.6 Lac
Payback - 42.4months

Renewable Energy Used - – 2 % Share of total consumption.

Solar Power Generation 155 KW-

Use of Day light (Light Pipe)

Solar Water Heater

Turbo Ventilator

Utilization of Waste Material As Fuel

Raymond UCO

Use Of Renewable Energy

Spinning & Weaving Dust

(Cotton Dust)

Pellet Making Machine

Pellet

Utilization as fuel in Thermic Fluid Heater

Our process of spinning and weaving generate nearly 3.5 MT of micro dust as a waste. We have converted it into pellet and directly feed to Thermopac with coal.

Also we have started mixing and feeding agro waste directly in the coal to reduce coal consumption.

Utilization of Waste Material As Fuel

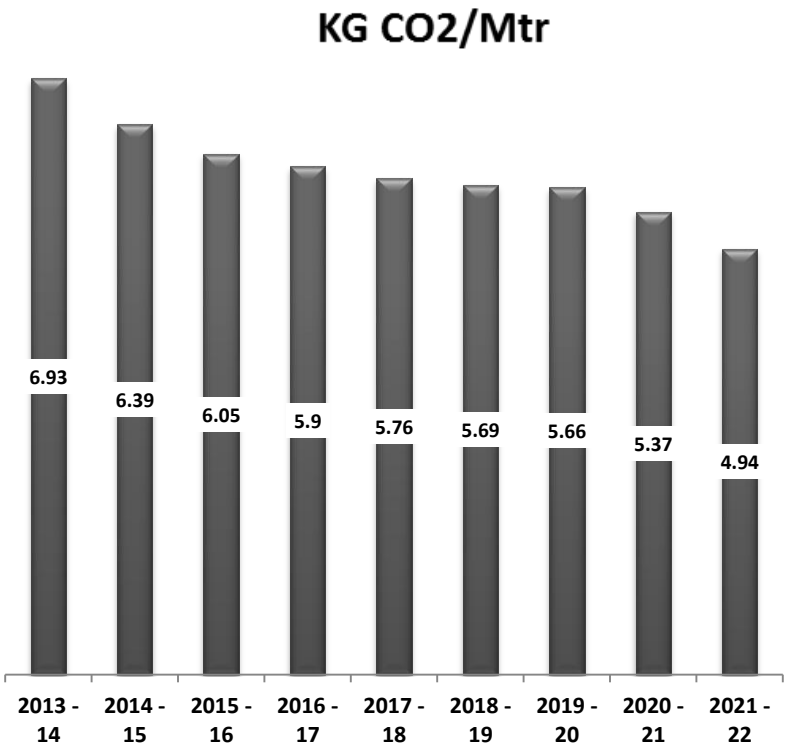
Raymond UCO

Description	Units	2019-20	2020-21	2021-22
ETP Biological Sludge	MT	1426.46	590.94	920.24
Canteen Food Waste	MT	43.07	7.54	15.81
Cotton Waste	MT	3182.24	2082.95	325419

Carbon Footprint Activity

We are committed to reduce the CO2 emission for green environment by taking continuous measures without affecting our product Quality & Productivity.

Description				Mitigation	
Year	Scope 1 Emission CO2e(MT) Grid Power	Scope 2 Emission CO2e(MT) Thermal	Scope 3 Emission CO2e(MT) Transport	Total reduction in emission since baseline year study KG CO2/Mtr.	
2013-14	28614	219741.4	408.41	6.93	%
2014-15	30186	206948.7	451.47	6.39	7.71
2015-16	30590	193891.6	403.68	6.05	5.36
2016-17	36472	196116.9	406.21	5.90	2.44
2017-18	41757	197161.0	510.00	5.76	2.34
2018-19	43960	163850.3	509.01	5.69	1.34
2019-20	52471	72851.11	355.87	5.37	5.08
2021-22	75915	100949.36	461.23	4.94	8.02



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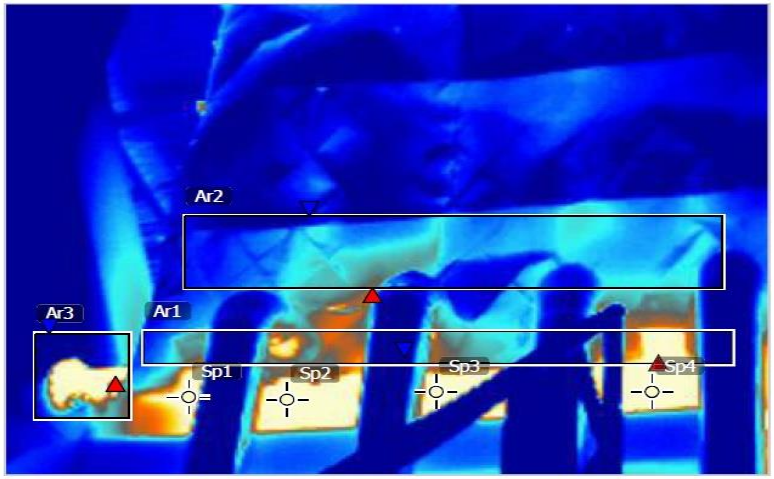
Use Of thermography Camera

To detect Thermal Insulation Leakages.



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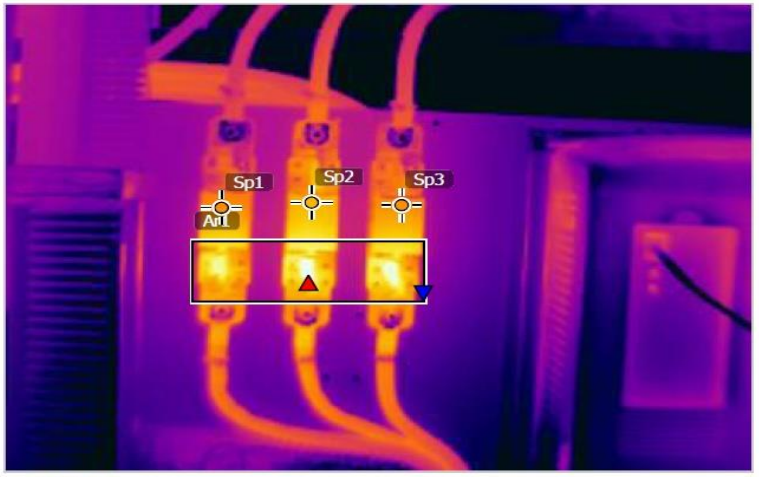
To detect Electrical losses due to heating.



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Energy Auditing Equipments

Load Manager 1735

Thermal Imager T10

Air Leak Detector

Temperature GUN

SPM (Shock Pulse measurement)

LUX meter

Training Program For Employees

These Programs are the part of Employee Motivation and Awareness

Sr. no.	Program name & Details	Organized by	No of participant	Duration
1	Energy Conservation & Best Practices	S & T Consultant	150	2 days
2	ISO 50001:2011	Raymond UCO	15	2 Hrs
3	Best practices in Electrical Energy conservation	Raymond UCO	100	2Hrs
4	Best practices in Textile Energy conservation	BEE	2	1 Day
5	PAT normalization program-Pune	MEDA & BEE	2	1 Day
6	Celebration Of energy Conservation Week	Raymond UCO	250	1 Hr/ Day
7	Theory-Cum –Practical Oriented Training Program	MEDA at Nagpur	2	2 Days
8	Hands-On Practical Training on Energy Efficiency	MEDA & NPC, Chennai	2	2 Days
9	PCRA Seminar At Nagpur	PCRA Nagpur	1	1 Days
10	Energy conservation in Textiles Industries	SEE Tech solution Nagpur	1	2 Days
11	Implementation of energy conservation Act-2001	MEDA PUNE	1	1 Days

Energy Conservation - Awareness

Seminar at Engineering College

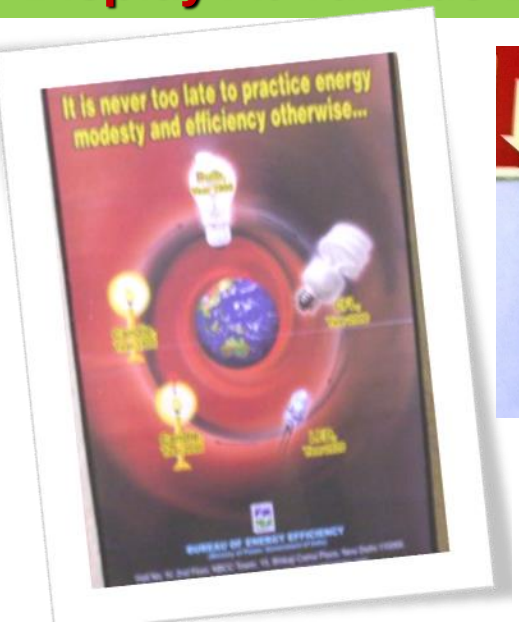
Participate in CII Surat as a faculty

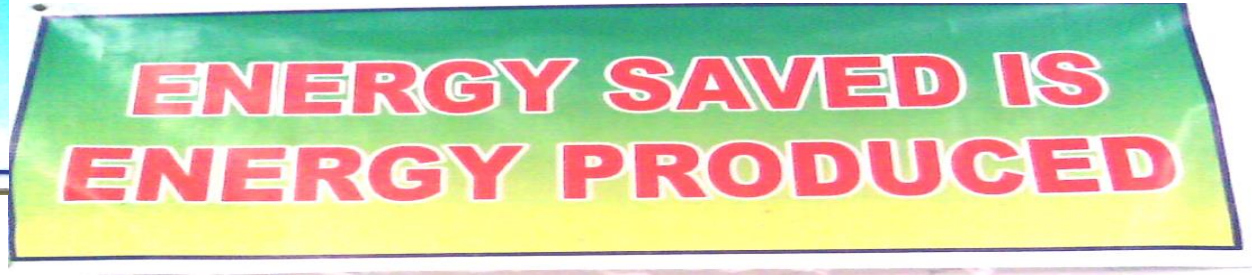
LED Light Distribution to Workers

Seminar at Engineering College

Audit at Nearby Schools

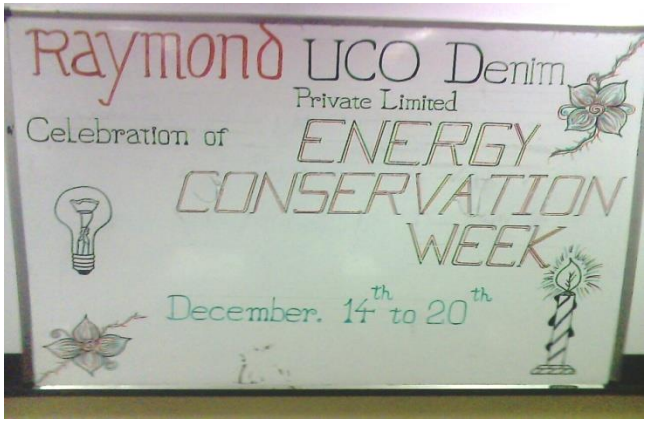
Display At Various Locations





Energy Conservation - Awareness

Program Conducted in Raymond UCO Denim Private Limited
Celebration of Energy conservation week



Management of Energy Conservation Programs

Constitution Of Energy Conservation Cell:

A full flesh group of 15 members has been formed which includes one or two member from each department and headed by Energy Manager. This group known as **Energy Conservation Cell (ECC),** meets once in every month to review progress on matter of Energy Conservation measures implementation and follow-up.

Technical Committee:

Technical committee is formed which comprises of **Engineers from all Faculties viz., Mechanical, Electrical, Electronics and Textile**, headed by **GM Engineering**. This committee evaluates suggestions and recommendations of Energy Conservation Cell for its technical and financial aspects. Than a proposal is prepared and submitted to top management for its approval.

Management of Energy Conservation programs

Finance Availability :

There is provision of CAPEX budget preparation at the beginning of FY.

If any proposal came in between the FY then -

Projects having recommendation of Energy Conservation Cell and are having investment Up to Rs. 10.0 Lacs are approved by unit head At Plant Level itself.

Projects having investment more than Rs. 10.0 Lacs are send for approval to corporate office, Thane for Capital Expenditure Budgeting.

Functions Of Energy Conservation Cell

- To ensure Involvement of top Management to workman for the cause of Energy Conservation
- To create Awareness among all employees regarding Energy Conservation
- To obtain Approval from top management for implementation of vital suggestions
- Organizing Periodic Meetings to brainstorm along with workmen and evaluate feasibility of suggestions received from employees
- Workout of Savings achieved after implementation of saving projects
- Data Compilation and send it to corporate office
- Close Monitoring and follow-up of Energy Conservation Activities

Major Audits

Raymond UCO

External & Internal Energy Audit

Sr. No	Name of firms	Area	Year
1	M/s AEEE Consultancy services	Mandatory Energy Audit – Complete Plant	2020 - 21
1	PAT Audit	NITCON Ltd.	2018 - 19
2	In House team	Compressed air leakages in the plant.	2017 - 18
3	In House team	Plant lighting.	2017 - 18
4	M/s AEEE Consultancy services, Akloa	complete plant	2017 - 18
5	In House team	Motor Audit above 7.5 KW to replace with Energy Efficient Motors.	2016 - 17
6	Shashi Agrawal Associates, Akloa	Thermal insulation and scope of savings.	2016 - 17
7	In House team	Micro potential of energy saving in the plant	2015 - 16
8	M/s AEEE Consultancy services, Akloa	complete plant	2014 - 15
9	M/s AEEE Consultancy services, Akloa	complete plant	2013 - 14
10	M/s Batliboi	Air washer tower.	2012 - 13
11	M/s Lloyed insulation, Delhi	Baseline Energy Audit by BEE	2012 - 13
12	M/s VSL Prayag, Coimbator	Feasibility of mist spray system at AWT.	2011 - 12
13	M/s Ground force, Nagpur	Pumping system at the plant	2010 - 11
14	M/s Forbes Marshall	Thermal system of plant	2010 - 11
15	Cholamandalam MS risk Servuces Ltd. Chennai	Thermal loss in the plant by infrared imaging	2008 - 09
16	Libra Agencies, Nagpur	Pumping system of Air Washer Tower	2007 - 08
17	Encon Engineers, Mumbai.	AWT Aluminum casting fan to FRP fan	2007 - 08
18	Shashi Agrawal Associates, Akloa	Pipe line sizing and scope of savings.	2006 - 07

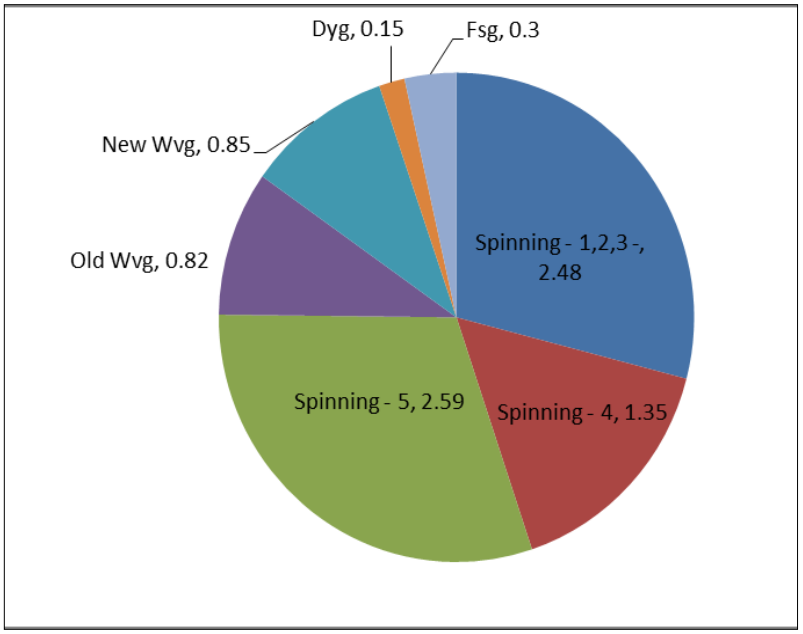
Energy Audit Measures Implemented

We have implemented almost all the measures suggested by Auditor like -

- Installation of Centrifugal Compressor.
- Installation of Heat recovery system at Centrifugal Compressor.
- Installation of Mist Spray System in Humidification Tower.
- Installation of New Waste recovery system in Spinning Blow room.
- Installation of Heat recovery system at various locations.
- Installation of VFD at various places.
- Installation of New 20 Ton Boiler.
- Installation of Stenter Heat Recovery.
- Installation of LED Tube Lights.
- Installation of Energy Efficient Motor.
- Installation of Coal Fire Thermo pack.
- Maintenance and Repair of Insulation.
- Use of Reusable insulation.
- Installation of Energy efficient Pumps.
- Interlocking of Utility with machine program….. And Many More…….

Monthly Monitoring And Reporting Format

Sr. no.	Section	Unit	Specific Energy Consumption
1	Spinning - 1,2,3	Kwh/Kg	2.48
2	Spinning - 4	Kwh/Kg	1.35
3	Spinning - 5	Kwh/Kg	2.59
4	Old Weaving	Kwh/mtr	0.82
5	New Weaving	Kwh/mtr	0.85
6	Dyeing	Kwh/mtr	0.15
7	Process & Finishing	Kwh/mtr	0.3
8	Thermal Energy	K Cal /Kg	9998.27



We have IOT in various section of the plant to gather data of Energy Consumption and Production.

Learning From AWARDS

Raymond UCO

Raymond UCO Denim is very keen in Energy Conservation Since inception.

We have participated in various State, National And International Awards .

We fill proud to be the part of CII National awards from last 10 years.

Receiving award gives great pleasure and it's a token of our continuous efforts towards energy conservation and management.

CII National Energy Conservation Awards Gives the great platform to understand and showcase the latest technology available in the Energy Conservation Sector. It gives an opportunity to observe the outcome of various innovative projects implemented in the industries.

We recommend all industries to participate this award to Enhance Energy conservation knowledge and awareness.

Raymond UCO Denim has ISO 50001 : 2018 certification from last 5 Years.

We are following all the procedure and SOP Of the System.

State, National and International Level Awards

- National Energy Conservation Award by BEE -2016.
- State level Energy Conservation Award by MEDA -2009-10,2012-13, 14,15,16,18.
- National Level Award for Energy management by – CII – 2012,14,15,16,17,18.
- CII Most Innovative Environment Project Award – 2017.
- National Level Award for Energy management by – SEEM - 2016.
- Asia Subcontinent Region Corporate Energy Management Award – Washington DC (U.S) -2015..
- Vasundhara Award for Environment management By Govt. of Maharashtra -2017
- TEXPROCIL Award (Textiles Export Promotion Council) –By Government of India. 7th Year in continuation.
- Fort and Sullivan's Green Manufacturing Award -2014,18,19
- Golden Peacock Award for Environment managemant-2014,15,17, 18,19
- Earth Care Award for Excellence In climate change Mitigation & Adaptation – 2015.
- Green Tech Award (Gold Category) for Environment – 2014-15
- Grow care India Occupational Health & Safety Award -2016,17,18
- National Water Mission Award – 3rd Rank 2019
- National Steam Tech Award – 2nd Price 2019.

State And National Level Awards

Water Conservation Projects

Requirement of plant

1. Total water requirement for plant – 6200 KLD
2. Water from MIDC Source – 2800 KLD
3. Water from recycling – 3400 KLD

Sources of Recovered/saved water

1. Caustic recovery plant (CRP)
2. Four stage Reverse osmosis (RO)
3. Multiple effect Evaporator
4. Indirect Cooling of equipments
5. Sewage treatment plant (STP)
6. Rain Water harvesting
7. Fogging system at Humidification plant (AWT)

Water Conservation Projects

Cooling Water recovery

Savage treatment plant

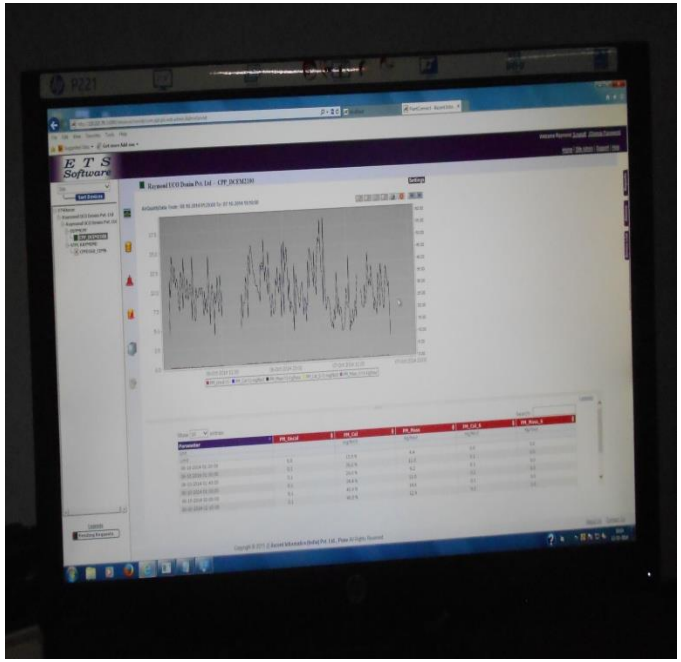
Caustic Recovery Plant

Water Recovery at CRP

Effluent treatment plant

Online stack monitoring

- **Installation of Online stack monitoring system in Boiler section.**

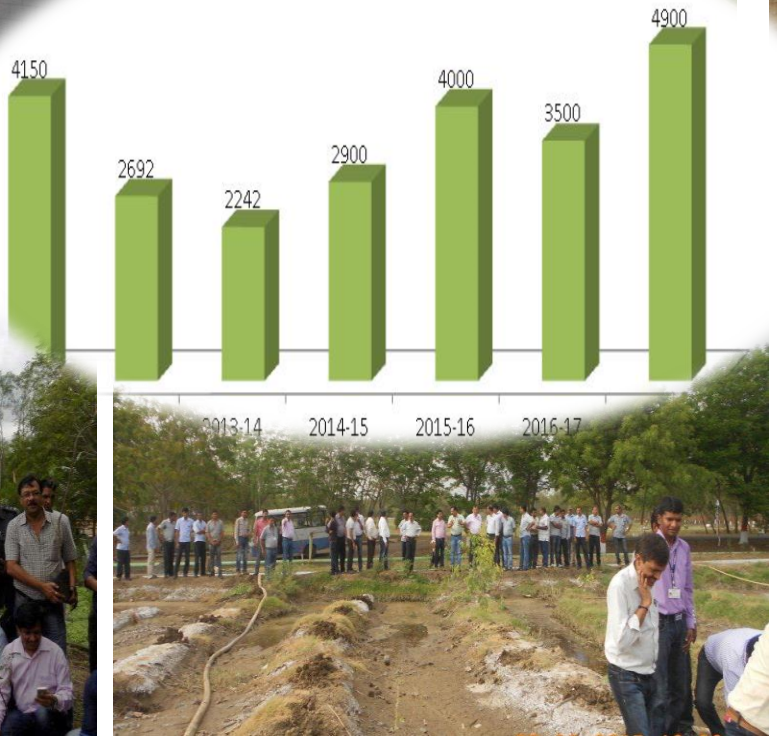


Limit -150 PPM & We are running with 70 to 90 PPM.

Plantation


जागतिक
पर्यावरण दिन
५ जून २०१५


रेमन्ड यूको डेनिम प्रा. लि.
वृक्षारोपण


Plant
4150
2692
2242
2900
4000
3500
4900
2013-14
2014-15
2015-16
2016-17


Plant

Save Energy

Save Future !

Thank You…!