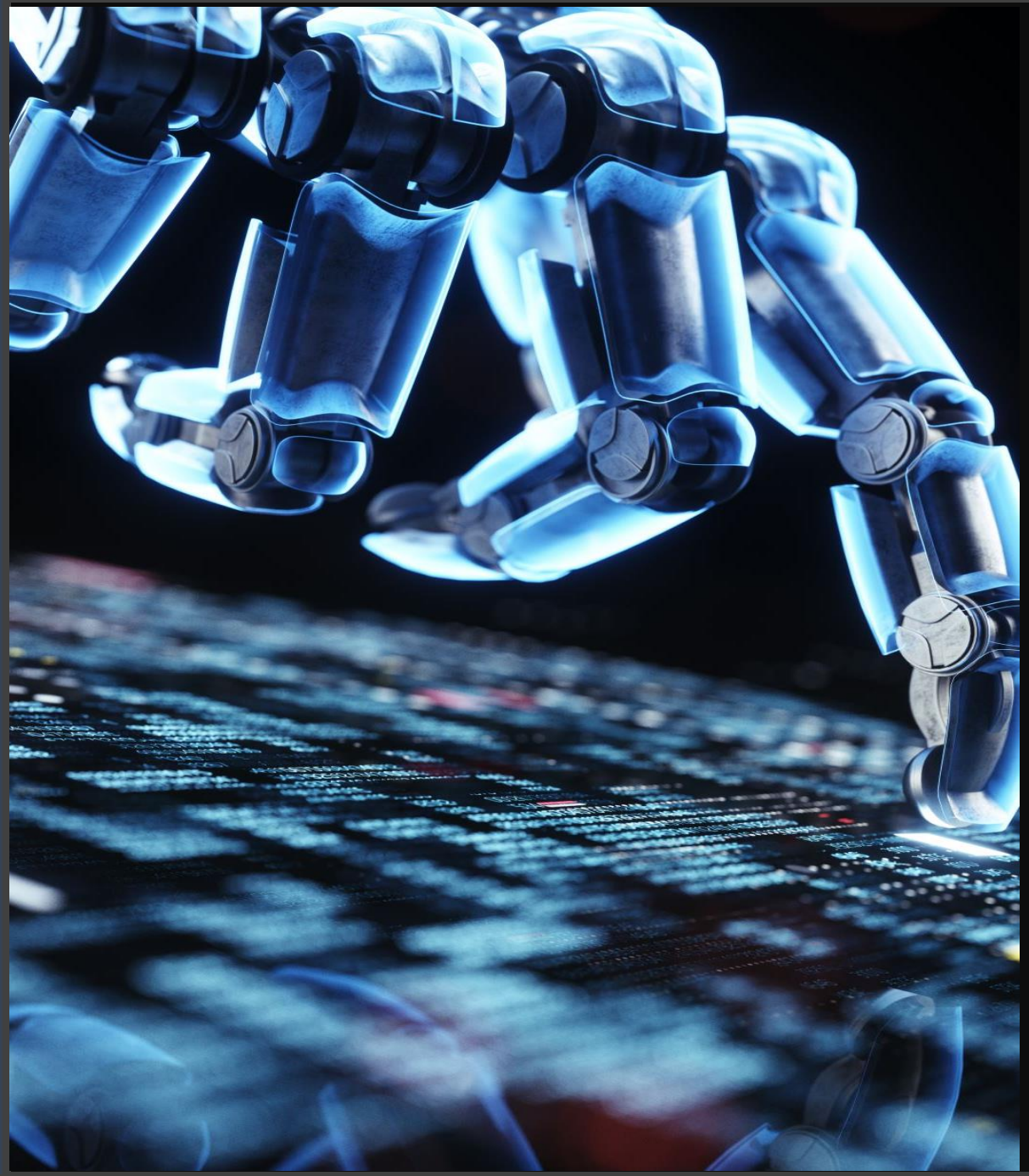

Reducing Carbon Foot-Print By Adopting New Technology & Best Practices

Raymond LIMITED
Textile Division - Jalgaon

Profile -Raymond Limited

Textile Division, Jalgaon

Location	Raymond Limited situated at M.I.D.C Area, Jalgaon (Maharashtra) on way to Aurangabad
Commissioning of Plant	March 1979
Manufacturing	Suiting's - Polyester/Wool, Polyester/Viscose grey Fabric
Capacity	24287 Million Picks per annum
Plot Area of Plant	1.62Lacs Sq. Mts.
Manpower Employed	Staff - 107, Workers – 1000
Certification	Our Company is Certified with ISO 9001, 14001, 45001 and 50001.

Raymond LIMITED
Textile Division - Jalgaon

Contents

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PAT Cycles

Targets and Status

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PAT cycles

Target & Status

- PAT Cycle 02 (2016 to 2019)

Target – TOE reduction	293
Achieved TOE reduction	1227
Achievement over and above targeted TOE reduction	934
E-certs issued	934

- Current PAT cycle 07 (2022-2025)
  - ✓ Reduction in specific energy consumption from 1.5648 TOE/Ton to 1.5025 TOE/Ton, i.e., 3.98%

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Energy Consumption

Trend

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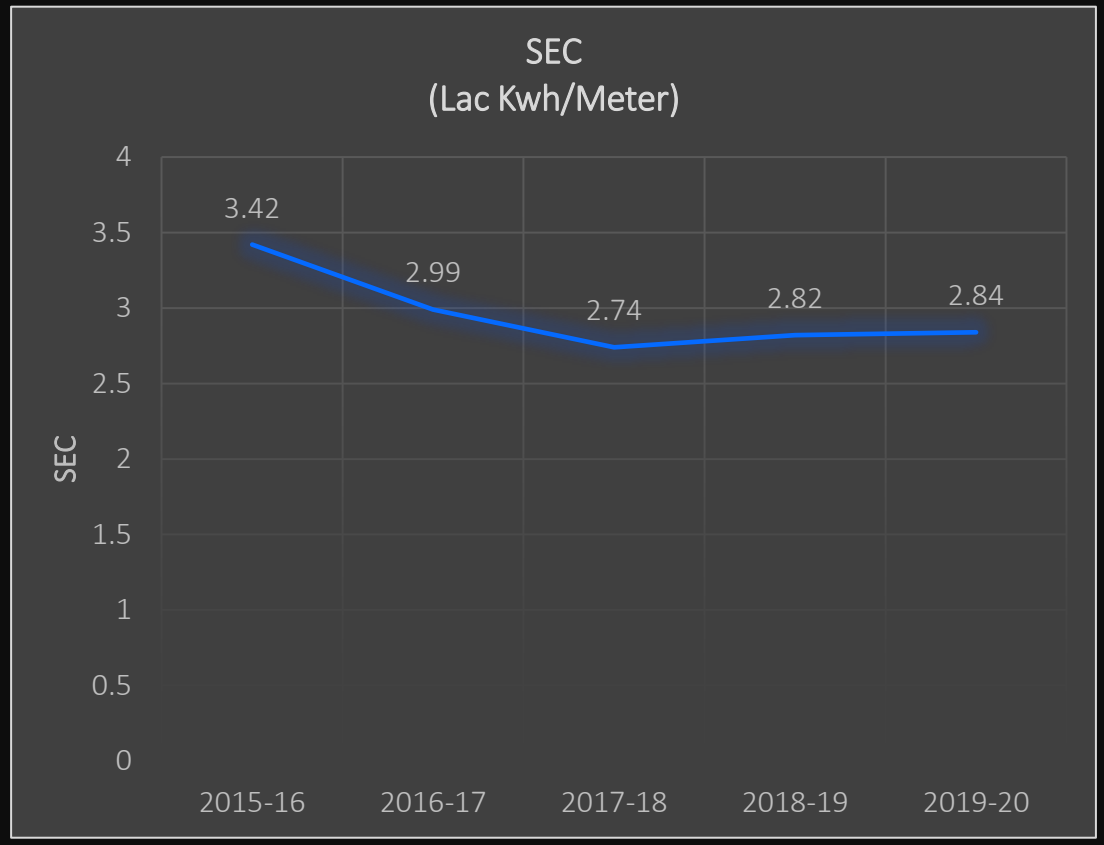
Power Consumption & SEC

Trend in last 5 years

Year	Power (Lac kWh)	Production (Lac Meters)	SEC (Lac Kwh/Meter)
2015-16	268.65	78.59	3.42
2016-17	232.99	77.83	2.99
2017-18	216.87	79.14	2.74
2018-19	218.03	77.40	2.82
2019-20	214.34	75.46	2.84



Note: FY20-21&21-22 Not considered due to under utilization of the plant.

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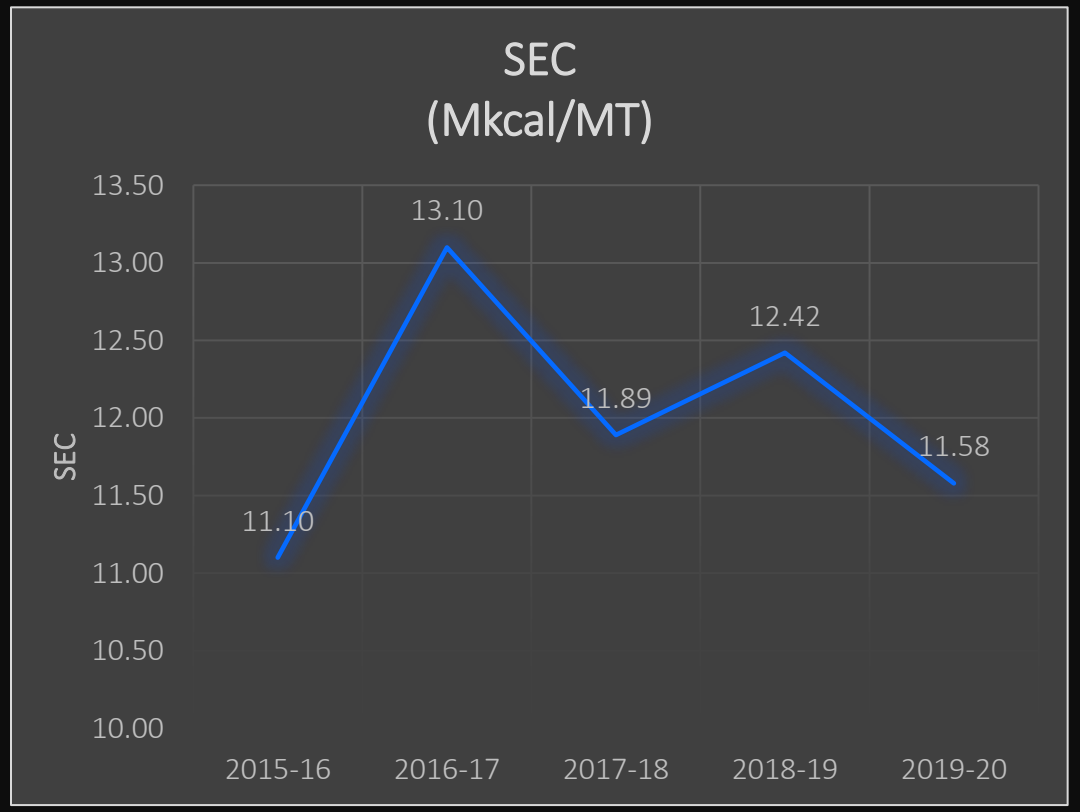
Thermal Consumption & SEC

Trend in last 5 years

Year	Coal (Million Kcal)	Top Dyeing Production (MT)	SEC (Mkcal/MT)
2015-16	15927.7	1434.61	11.10
2016-17	13617.7	1039.27	13.10
2017-18	8813.8	741.00	11.89
2018-19	15236.4	1226.86	12.42
2019-20	12778.0	1103.47	11.58



Note: FY20-21&21-22 Not considered due to under utilization of the plant.

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CO_2 Emission

Trend

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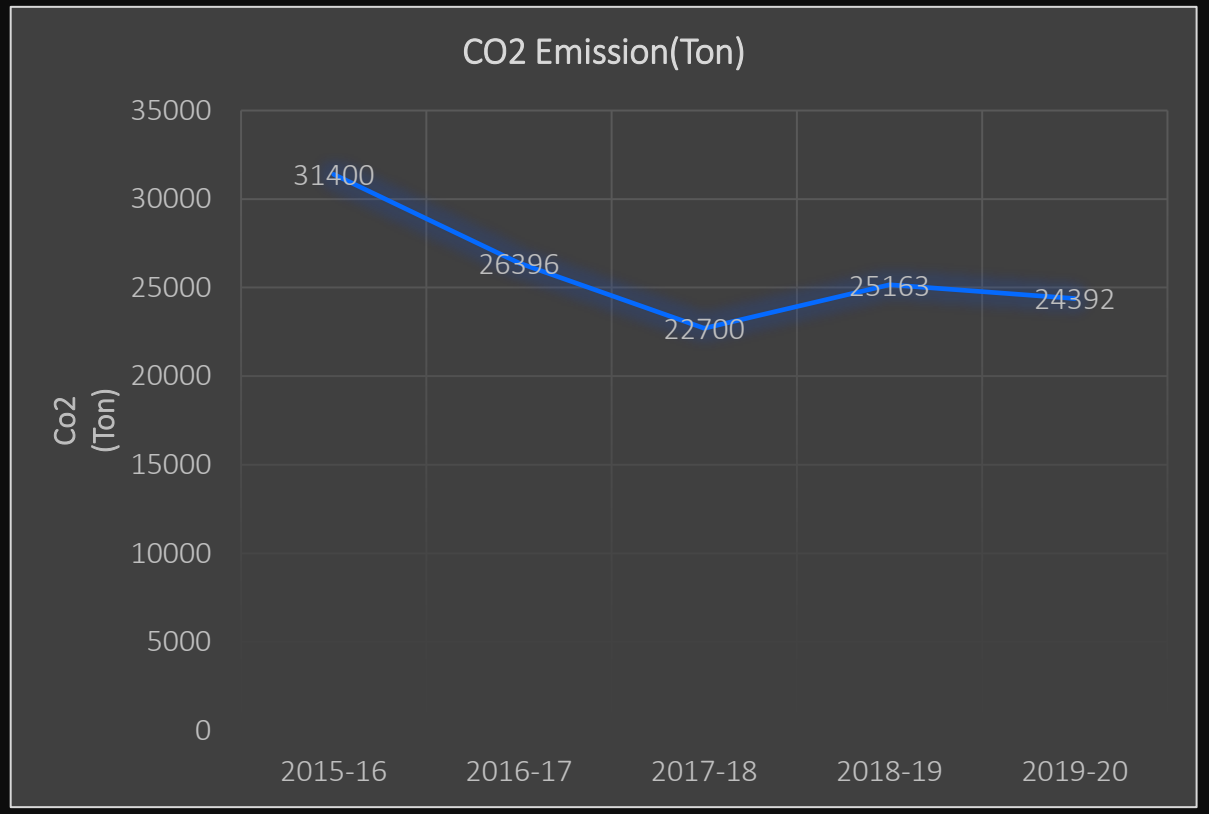
CO_2 Emission Trend

Year	CO_2 Emission (Ton)
2015-16	31400
2016-17	26396
2017-18	22700
2018-19	25163
2019-20	24392



Note: FY20-21&21-22 Not considered due to under utilization of the plant.

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Reducing Carbon Footprints

Adopting new and efficient technology

Arresting Leakages to reduce energy wastage

Monitoring and Measurement

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Adopting New and Efficient Technology

Installation of 1 MW Roof Top Solar (OPEX Model)

Benefits:

- ✓ Expected Annual unit generation – 14 LU
- ✓ Cost Benefit – Rs 53 Lacs
- ✓ CO2 Reduction – 1190 MT

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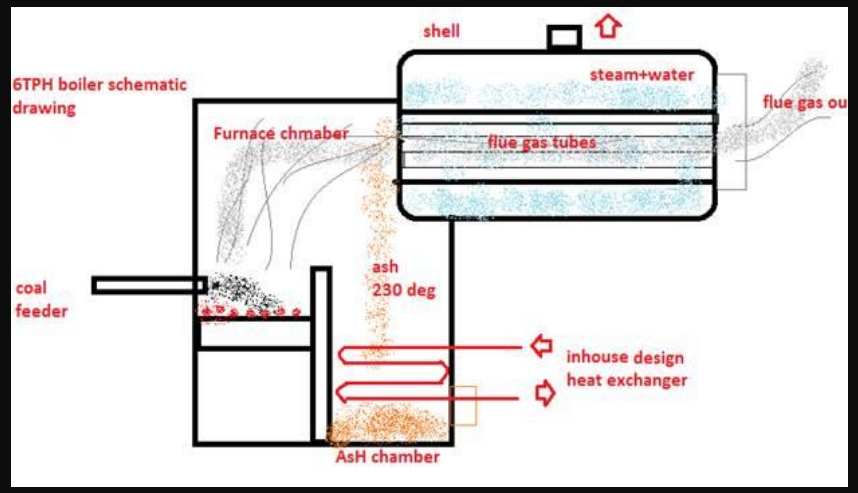
Adopting New and Efficient Technology

Bottom Ash Heat Recovering System



- *Initially*, there was no system to recover the heat from Bottom and fly ash. Potential energy was being lost in the environment.
- *Now*, to capture the heat, a heat recovery system has been installed at the bottom ash chamber, which recovers the heat and same is used to raise feed water temperature
- Benefits:
  - ✓ Feed water temperature rises by 20°C.
  - ✓ Fuel Saving is around 2%

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Adopting New and Efficient Technology

Replacement of steam Heater into Electric heater in Yarn Conditioning Machine

- *Initially*, as the Dyeing operation had been stopped completely owing to the reduced production demand, 6 TPF boiler was run only for yarn conditioning machine. The boiler was underutilized and less efficient.
- *Now*, The steam heaters of yarn conditioning machine have been converted into electric heater without compromising in quality and production.
- Benefits:
  - ✓ Completely stopped our under-utilized Coal Boiler
  - ✓ Coal Saving-650MT
  - ✓ Cost Saving-72Lacs/Year
  - ✓ Reduction in Co2-1200MT/Year

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Adopting New and Efficient Technology

Replacement of two 40-year-old 1 MVA transformers with single 1600 kVA Transformer

- *Initially*, 2 transformers of rating 1MVA each, were in use for more than 40 years. These were rewound transformers. Furan reports indicated abrupt breakdowns o these transformers.
- *Now*, the transformers have been replaced with single 1600 kVA, highly efficient transformer with efficiency 99.49%.
- Benefits:
  - ✓ Highly efficient
  - ✓ Less Maintenance
  - ✓ Unit Saving around 1 LU/Year

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Adopting New and Efficient Technology

Energy saving by controlling pneumaphil suction in Zinser ringframes

- *Initially*, Zinser ring frame machine is designed for 1/30 to 1/120 counts. However, suction motor was designed to run with same RPM for all counts resulting in power loss.
- *Now*, a pressure transducer has been installed and reference is given to suction drive, so that suction motor can vary as per the suction demand resulting in power saving.
- Benefits:
  - ✓ Power saving of 0.36 LU/Year
  - ✓ Reduce Motor Maintenance cost

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Adopting New and Efficient Technology

Reduce line loss by installation of power capacitors

- ***Initially***, power factor was maintained at LT level. A survey indicated a scope to improve power factor at PDB level and reduce plant line losses.
- ***Now***, a capacitor has been procured and installed to improve power factor and reduce line losses.
- Benefits:
  - ✓ Improved PF
  - ✓ Reduced line losses
  - ✓ Power saving of 2.2 LU/Year

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Adopting New and Efficient Technology

Small Group Activities

- ✓ Replacement of 110 kW inefficient motor of compressor with IE3 class motor (1 No)
- ✓ Replacement of 22 kW old inefficient motor with IE3 class motor in Sant Andrea ring frame machine (Old Plant)
- ✓ Replacement of 4 kW old inefficient suction motor with IE3 class motor in Sant Andrea ring frame machine (Old Plant)
- ✓ Replacement of 5.5 kW old inefficient motor with IE3 class motor in Sulzer looms
- ✓ Modification of waxing unit system in Prashant Robo warping.
- ✓ Replacement of old inefficient 15HP Vacuum Pump by 7.5HP energy and water efficient vacuum pump. Approx saving is 4 lac .
- ✓ Energy saving by installation of energy efficient fans (500 Nos)
- ✓ Energy saving by installation of LED tube rods(6000)

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Arresting Leakages to reduce energy wastage

Air Leakages

- Internal Audit in every three months to detect leakages in machines and air lines
- External Audit every year to identify potential improvement opportunities

Steam Leakages

- Monthly traps and steam line monitoring
- Providing insulation on flanges and valves
- Thermography on yearly basis

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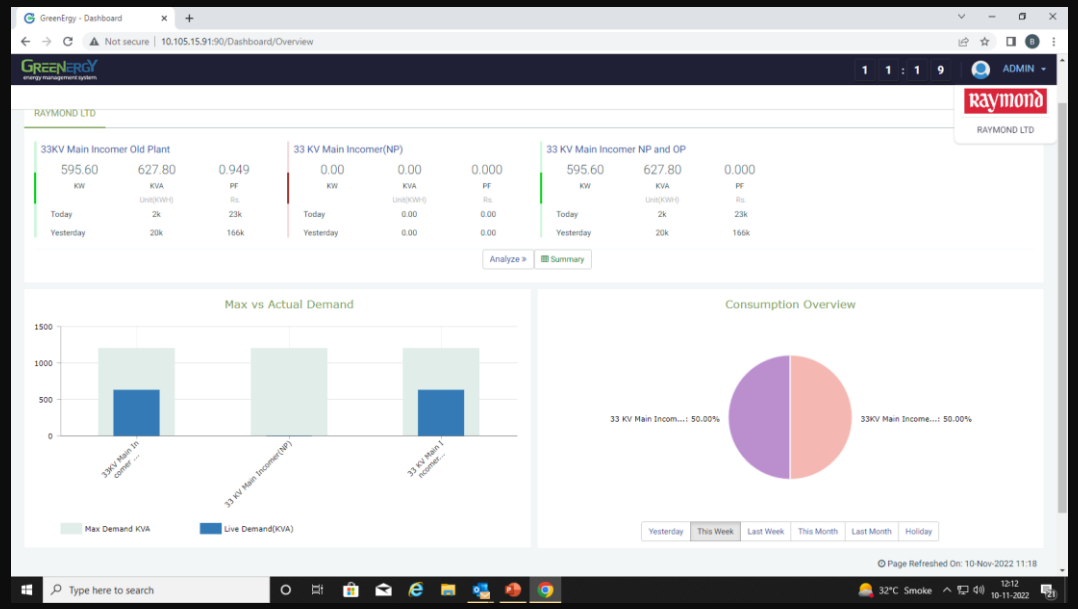
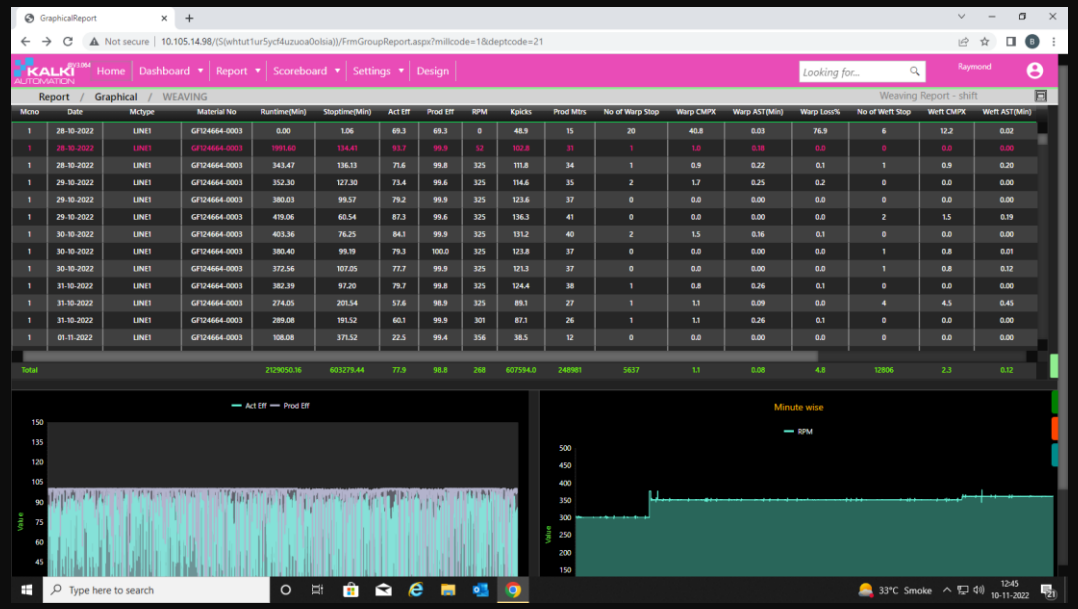
Monitoring and Measurement

Corrective action can not be taken with out proper monitoring and database of utilities and production. For this we have installed below monitoring system.

- Power Monitoring System



- Loom Monitoring System



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Awards and Accolades

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National Energy Conservation Award, 2010, 2nd Position

Maharashtra Energy Development Award, 2016
2nd Position

National Energy Conservation Award, 2016
2nd Position

Energy Management Insight Awards, 2020
CEM Energy Management
Working group, California

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Way Forward

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Way Forward…

- ✓ Installation of another 1 MWp roof top solar in the factory.
- ✓ Replacement of 40-year-old centrifugal compressor with efficient compressor.
- ✓ Replacement of 4 diesel operated forklifts with battery operated forklifts.
- ✓ Replacement of 40-year-old 125kVA DG set with efficient DG.
- ✓ Installation of 70 kWp roof top solar at Raymond's Residential Colony.

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Thank You!

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