Best Practices in Energy Efficiency in Tyre Sector

Apollo Tyres Limited
Kerala Plants

go the distance

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- Energy Management System
- Energy Conservation Projects
- Rewards & Recognitions

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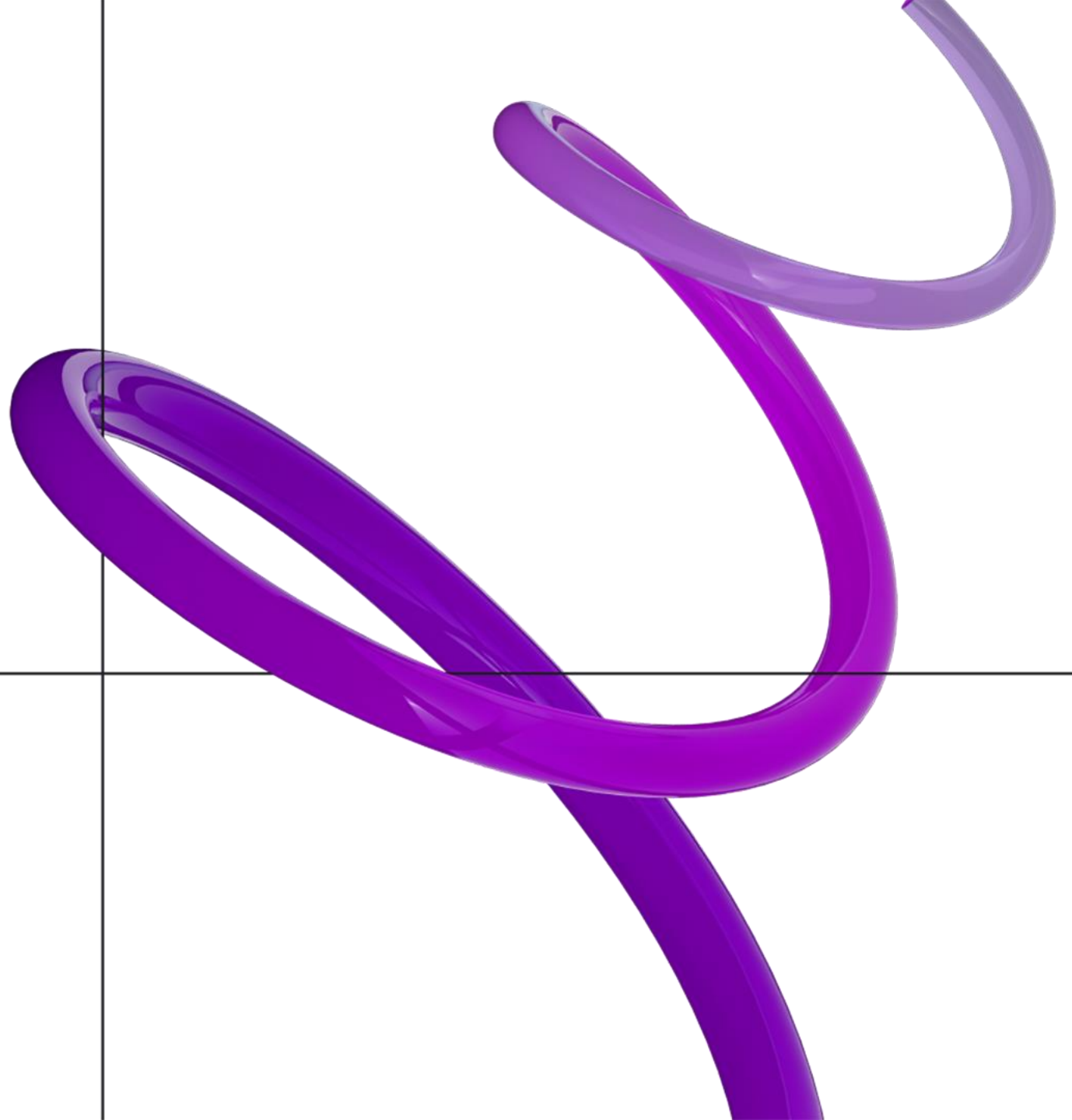
Unit Profile – Kerala Plants



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Unit Profile – Kerala Plants

	Perambra	Kalamassery
Plant		
Year Of Inception	1975	1962
Present Capacity	293 MTPD	115 MTPD
Product Range	Truck, LCV, Rear Tractor, Farm Radial, Passenger, OTR & ADV Tyres, OHT - Radial & bias	

- ❑ **IATF 16949 – Quality Management System**
- ❑ **ISO 50001:2018 -Energy Management System**
- ❑ **ISO 45001:2018 – Safety Management System**
- ❑ **ISO 14001:2015 – Environmental Management System**

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Energy Savings – Kerala Plants

	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Steam Savings in GJ	10201	21064	12320	13314	18506	36411
Power Savings in GJ	2916	3132	5292	7272	5184	7632

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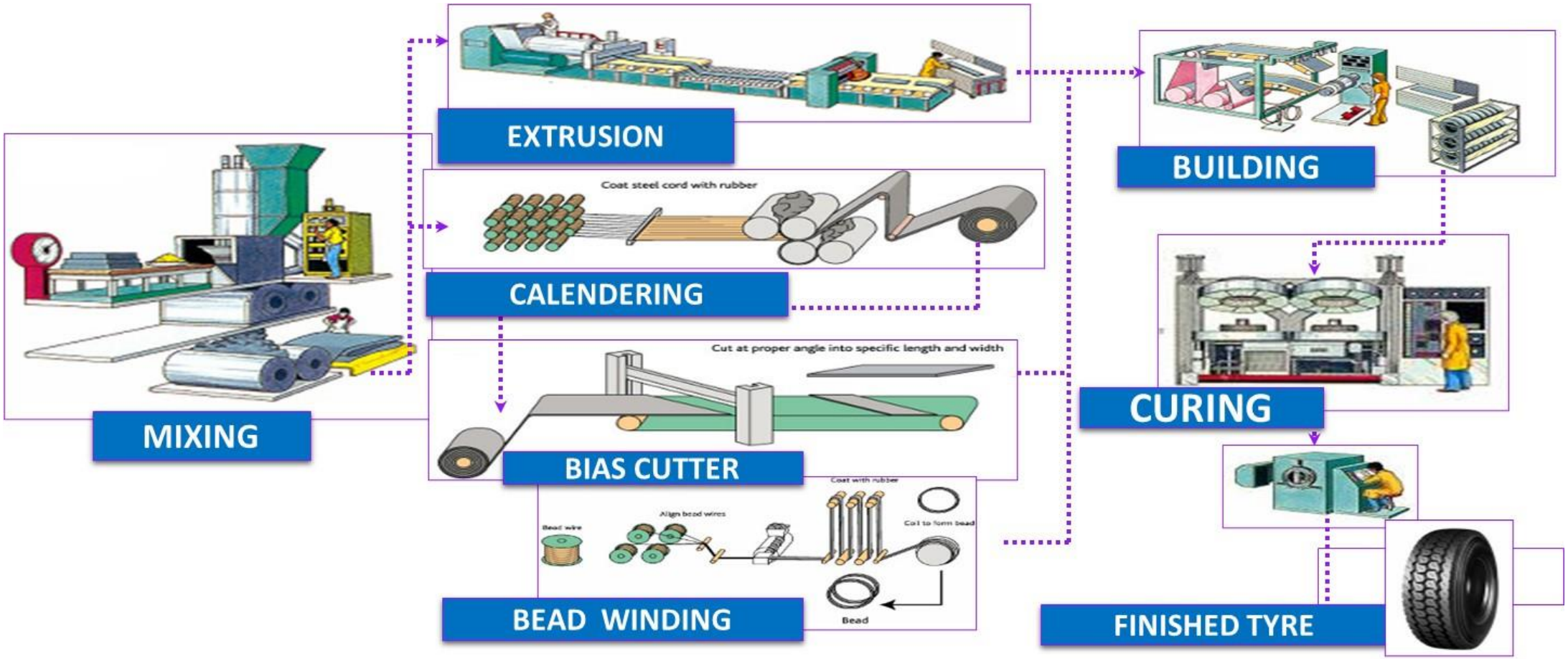
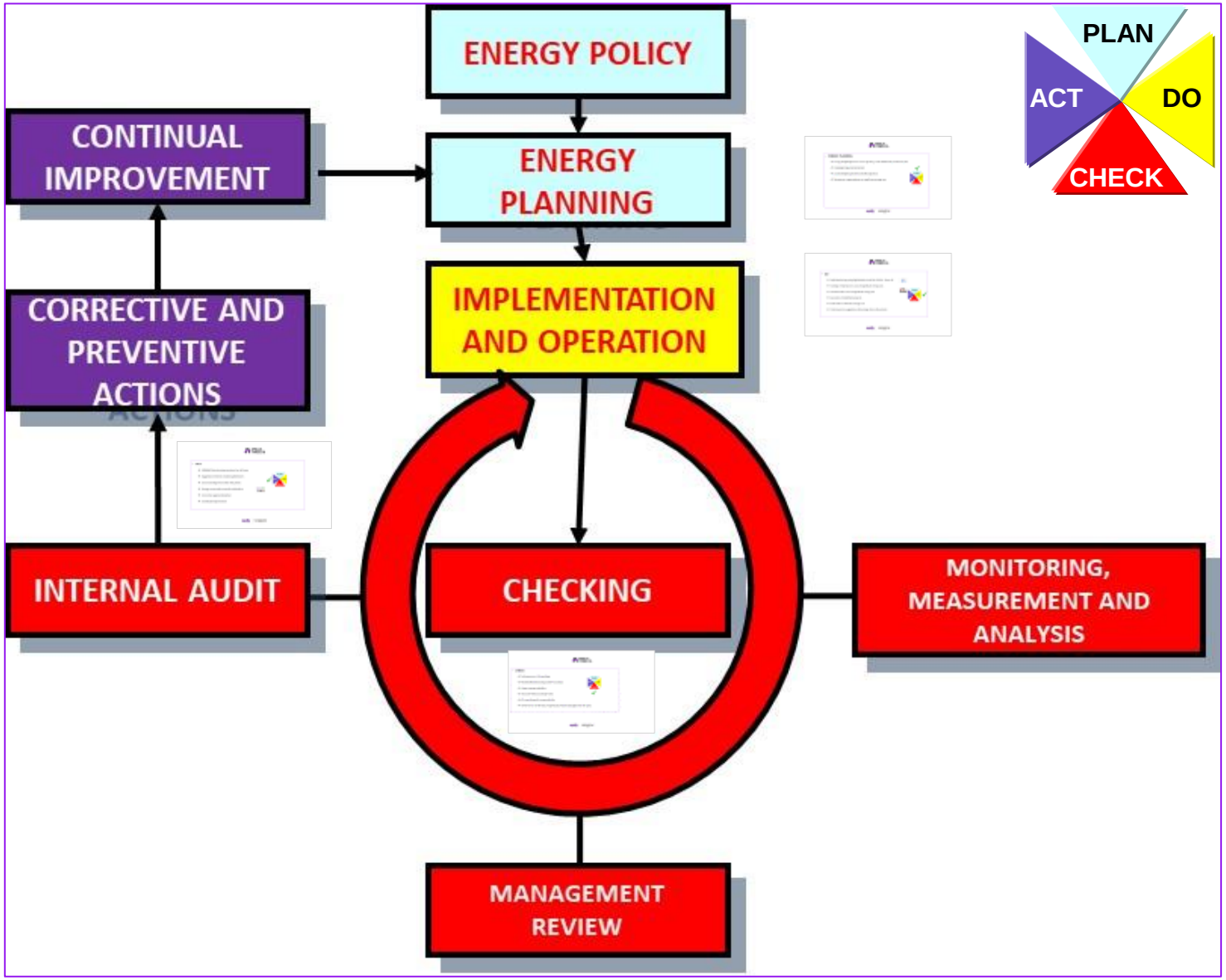
TYRE Manufacturing Process Flow



Energy Management System EnMS - Model



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Major Energy Saving Activities in FY 24

Sl No	Project description
1	Rerouting of the steam header in main header to reduce the dead loss
2	Deaerator make up optimization
3	Cascading System for Vaccum pumps of Tyre Curing
4	Energy efficient system for Banbury Cooling
5	Upgrading the Booster compressor motor and VFD
6	Dedicated 150 CFM Screw compressor for 150 psi air ipo 1000 CFM
7	Energy efficient pump for Factory Cooling Water (FCW)

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Rerouting of the steam Main header to reduce the dead loss

Purpose

- To reduce dead loss by relocating trench control station.

Existing System

- Steam line tapping for trench control station is taken from a farther location.

Modified System

- Steam line for trench control station rerouted, so that the pipe length is optimal.
- Reduction in steam pipe length by 120m

Savings

- Steam savings of **1.29 MTPD**

New Control Station

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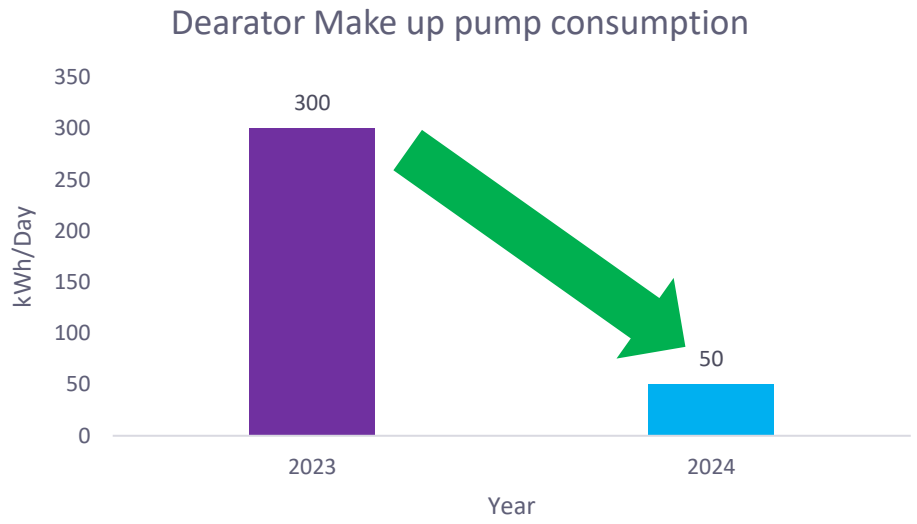
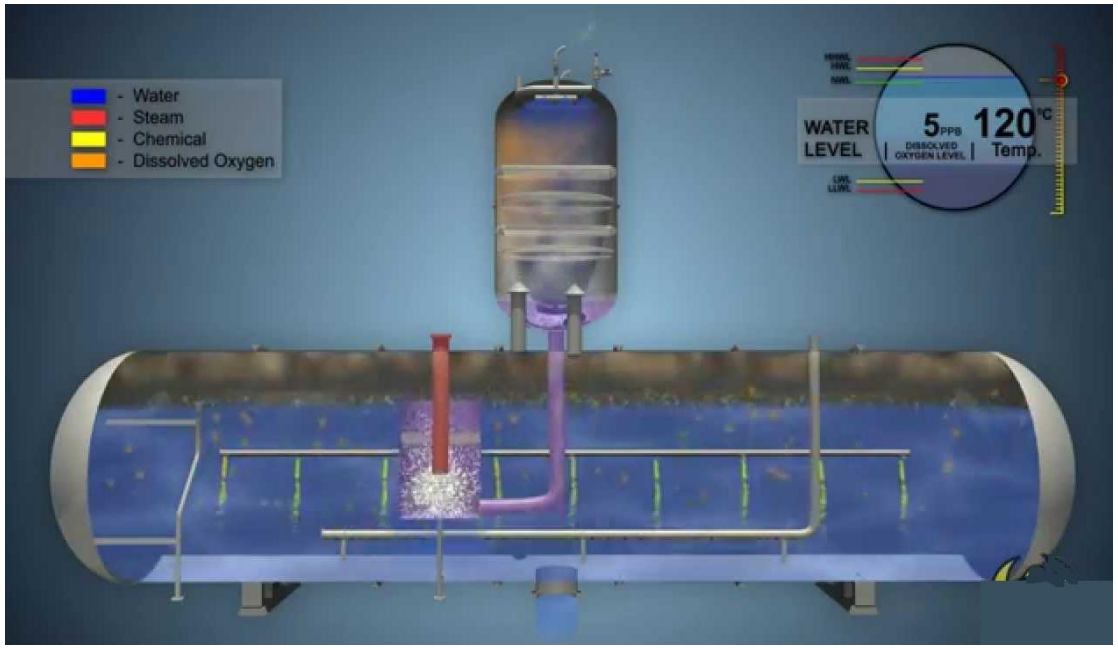
Deaerator make up optimization

- Water balance study conducted
- Optimised temperature for Hot water recovery
- Make up pump switching ON only when required – Reduction in power





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Cascading System for Vaccum pumps of Tyre Curing

Purpose

•To reduce the fixed load consumption of Tyre Curing by reducing energy consumption of Vacuum pumps

Existing System

- Two pumps continuously running at full speed generating header pressure more than spec.
- One pump alone can meet header pressure requirement for 75% of time.
- Two Pumps is needed only for 25 % of time

Modified System

- Development of in house logic using PLC for cascading operations.
- Energy efficient pump assembly with PLC control used for constant pressure and flow thereby improving system reliability.
- Improved pump life.

Savings

This project gave savings of **300 kWh/day**

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Energy efficient system for Banbury Cooling

Purpose

•To reduce the energy consumption for Banbury Cooling

Existing System

- Factory cooling water pumped from Utility is being circulated through mixer TCU. Chilled water is added to reduce the temperature**.**

Modified System

- Separate cooling circuit provided for mixers with energy efficient cooling tower and cascaded pumping system.

Savings

This project gave savings of **700 kWh/day**

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Upgrading the booster compressor motor and VFD

Purpose

•To reduce the energy consumption for Booster compressor system by upgrading the existing compressor motor and VFD.

Existing System

- 2 nos Booster compressor required to meet the plant requirements

Modified System

- Compressor motor upgraded from 37kw to 55kw and VFD also upgraded
- Required only one compressor to meet the plant requirement

Savings

This project gave savings of **200 kWh/day**

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Dedicated 150 CFM Screw compressor for 150 psi air ipo 1000 CFM

Purpose

- To reduce the specific energy consumption in 150 PSI Compressed air

Existing System

- The Present 1000 CFM, 150 psi Reciprocating compressor is running in VFD and unloading time is also more

Modified System

- Compressor derating by rearrangement of Post Cure Inflation units (PCI) using 100 psi compressed air
- Install Energy efficient Screw compressor in 150 psi.
- Pressure controlled mode with VFD, to cater for variable demand-Down sizing from 200kW motor to 35 kW motor

Savings

- Power savings of **250 kWh/Day.**

BEFORE

AFTER

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Energy efficient pump for Factory Cooling Water (FCW)

Purpose

- To reduce the specific energy consumption in Factory Cooling Water Pumps

Existing System

- The present Pump is having lesser efficiency in tune of 37%

Modified System

- Replace with energy efficient Pumps.
- Pressure controlled mode with VFD, catering to variable demand.

Savings

- Power savings **100 kWh/day.**

BEFORE

AFTER

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CAPSULE TRAININGS

Energy Management Training Programs/ Energy Conservation Campaigns

Energy conservation month celebration

- Spot Quiz for Employees based on Energy Usage of Section
- Energy awareness training for Employees based on Energy Usage of Section by micro owners
- Energy saving Suggestion schemes for the employees as part of ACL (Apollo Champions League)
- Distribution of booklet & Pamphlet from EMC on Energy Conservation - Dec 14

Theme
3 R's
Reduce, Reuse, Recycle

Energy Efficient equipment awareness through stalls.

- Stalls arranged on Dec19th for Energy efficient equipment awareness to employees

Atomberg BLDC Fans & Mixer Grinder

Saura - Solar panels/ Solar lights/ Solar water heaters/ Solar pumps

V- Guard - 5 * rated water heaters/

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Apollo Tyres Kalamassery wins Kerala State Energy Conservation Awards – 2023

Apollo Tyres Kalamassery Plant Wins the **Kerala State Energy Conservation Awards- 2023** under Large Scale Consumers Category. The announcement had been done on National Energy Conservation Day 14th December 2023 and function was held on 07 February 2024 at Thiruvananthapuram.
The award was handed over by the Hon'ble Speaker of Kerala Legislative Assembly, Mr. A N Shamseer to Mr. George Oommen Unit Head Kerala Plants.

WINNER - SEEM AWARDS 2023-PLATINUM CATEGORY

Apollo Tyres Kalamassery Plant has won '**SEEM National Energy Management Award (SNEMA) -2022**'. The team has won the **Platinum** award under the **Industries & Facilities (Tyres)** category by implementing power saving projects. The event was conducted by Society of Energy Engineers and Managers (SEEM) and the award ceremony took place in Delhi, India on 21 September 2023

SNEMA acknowledges the various sectors for improving energy efficiency, there by supporting India's journey towards climate change mitigation and sustainable development. The institute do focus on the percentage of energy saving achieved during the assessment year, systematic actions taken towards sustainable energy performance are also considered for recognition.

WINNER - SEEM AWARDS 2023-PLATINUM CATEGORY

Apollo Tyres Perambra Plant has won '**SEEM National Energy Management Award (SNEMA) -2022**'. The team has won the **Platinum** award under the **Industries & Facilities (Tyres)** category by implementing power saving projects. The event was conducted by Society of Energy Engineers and Managers (SEEM) and the award ceremony took place in Delhi, India on 21 September 2023

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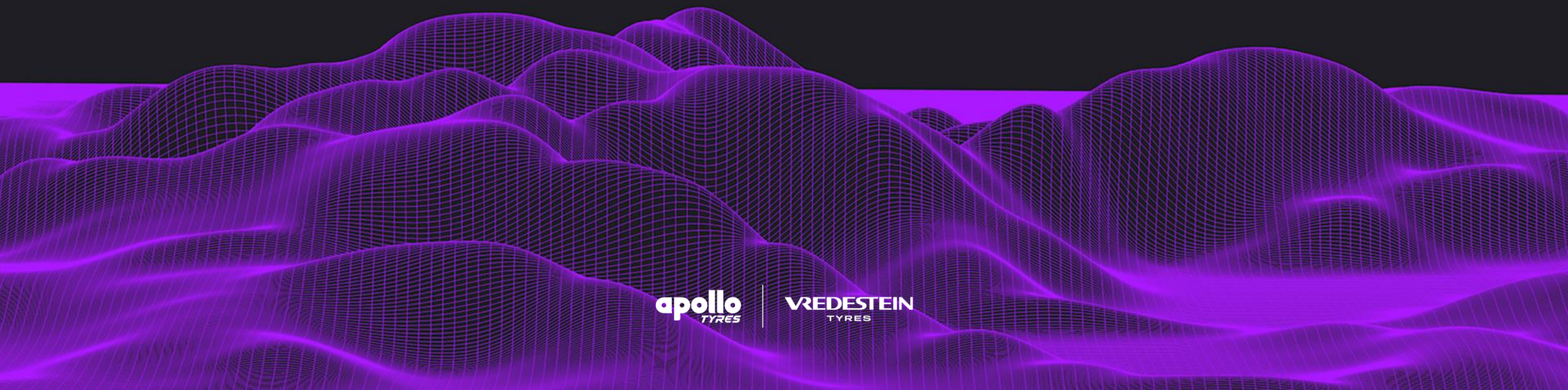
Thank you



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