



Our Vision

***‘A significant player in the
Global Tyre Industry and a
Brand of choice, providing customer delight
And continuously enhancing stake holder value.’***



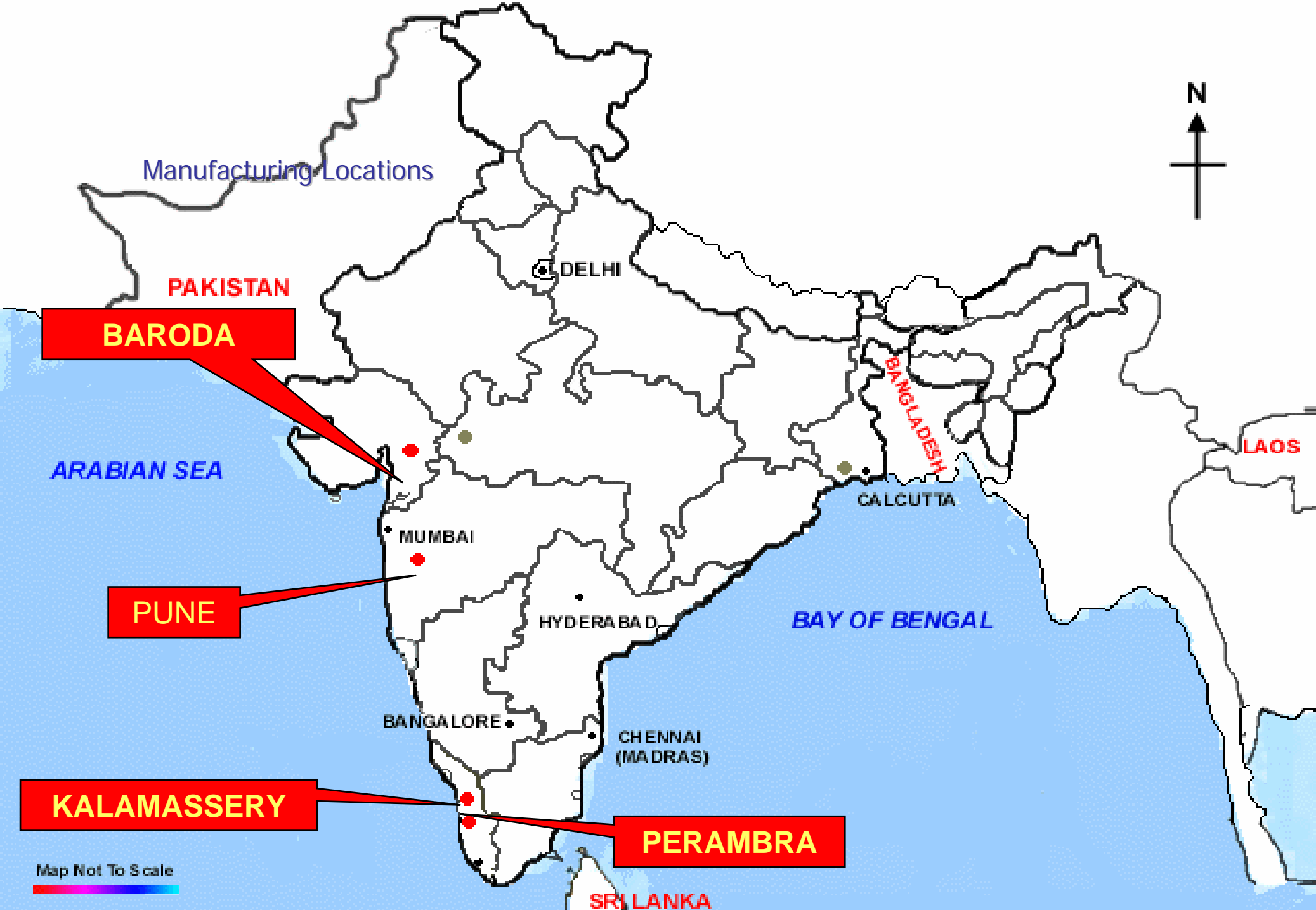
Our core values

- C : Care for Customers**
- R : Respect for Associates**
- E : Excellence through Teamwork**
- A : Always Learning**
- T : Trust Mutually**
- E : Ethical Values**

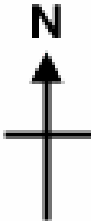


Head Office at Gurgaon, Haryana





Manufacturing Locations



PAKISTAN

BARODA

ARABIAN SEA

LAOS

BANGLADESH

CALCUTTA

PUNE

MUMBAI

BAY OF BENGAL

HYDERABAD

KALAMASSERY

BANGALORE

CHENNAI (MADRAS)

PERAMBRA

Map Not To Scale

SRI LANKA



APOLLO TYRES LTD.

ENERGY CONSERVATION AT APOLLO TYRES LTD. LIMDA .BARODA





Plot Area	: 525,000 SQ.MTS
Built-up Area	: 140,000 SQ.MTS
Landscape Area	: 125,000 SQ.MTS
Present Capacity	: 302 MT/ DAY
Product Range	: Truck, Passenger, LCV, Rear Tractor, & ADV Tyres
Connected Load	: 29237 KW
Power Requirement	: 290,000 KWH/DAY
Captive Power	: 1,71,000 KWH/DAY
Steam Requirement	: 650 MT/DAY
Water consumption	: 1500 M3/DAY





Most Modern Tyre Plant In India.

Continuous Expansion.

Continuous Reduction in Energy cost.

Continuous Improvement In Conversion Cost.

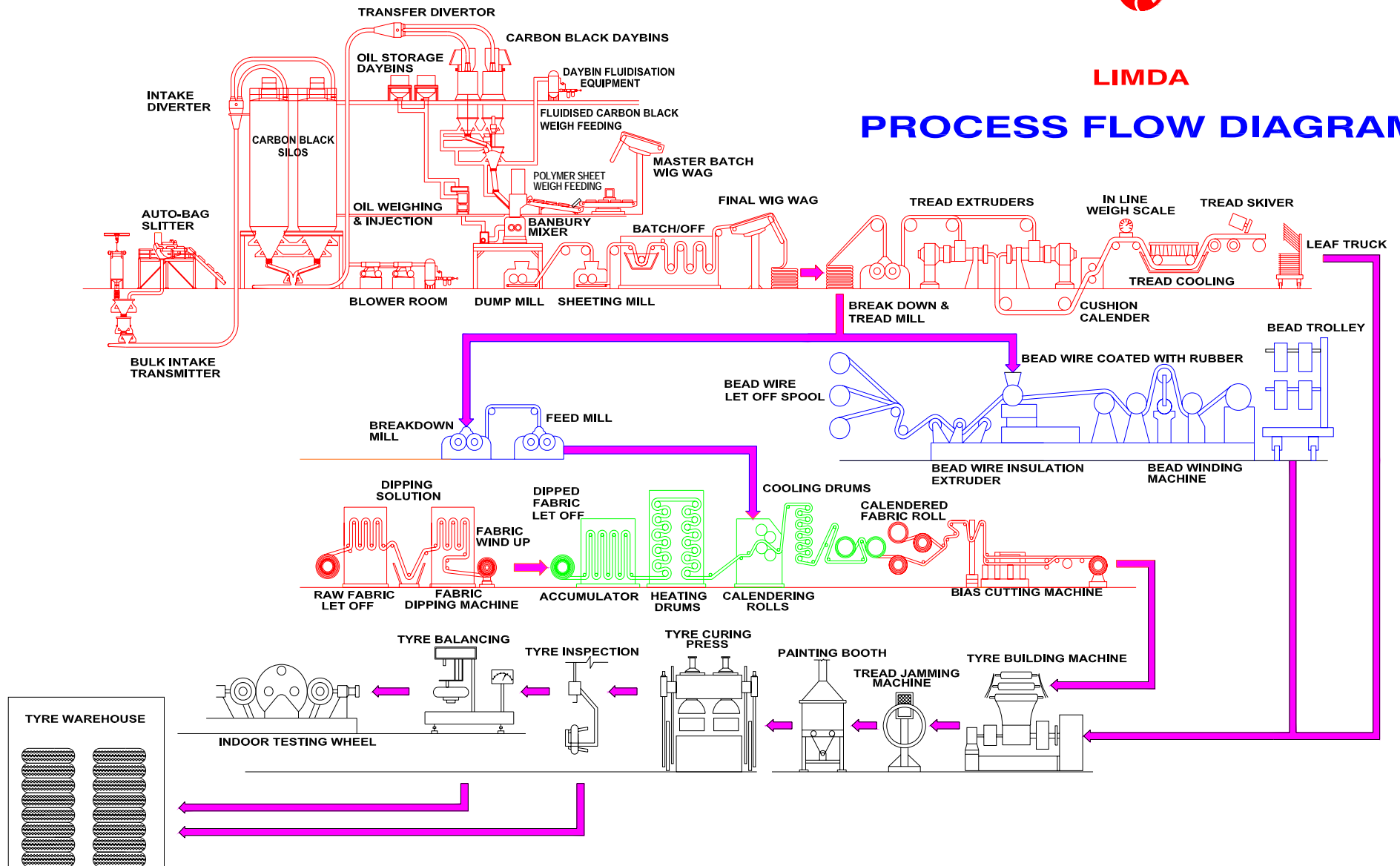
Single largest Bias Truck Tyre mfg. facility in India.

Environment friendly.



LIMDA

PROCESS FLOW DIAGRAM

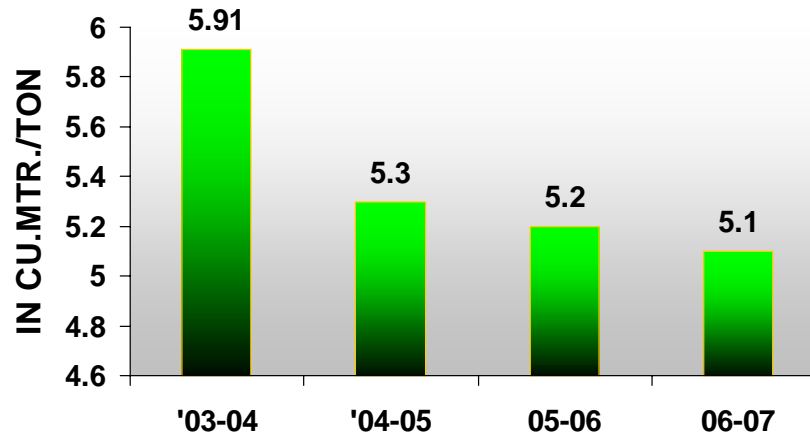


EFFICIENCY TREND

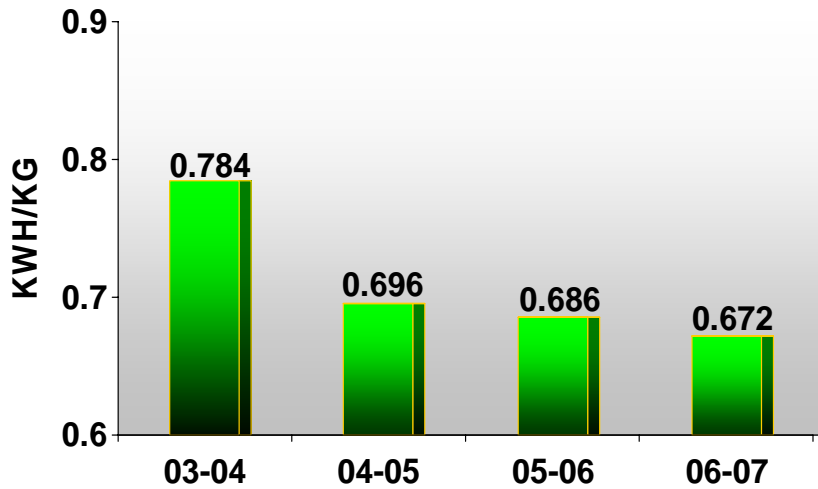


APOLLO TYRES LTD.

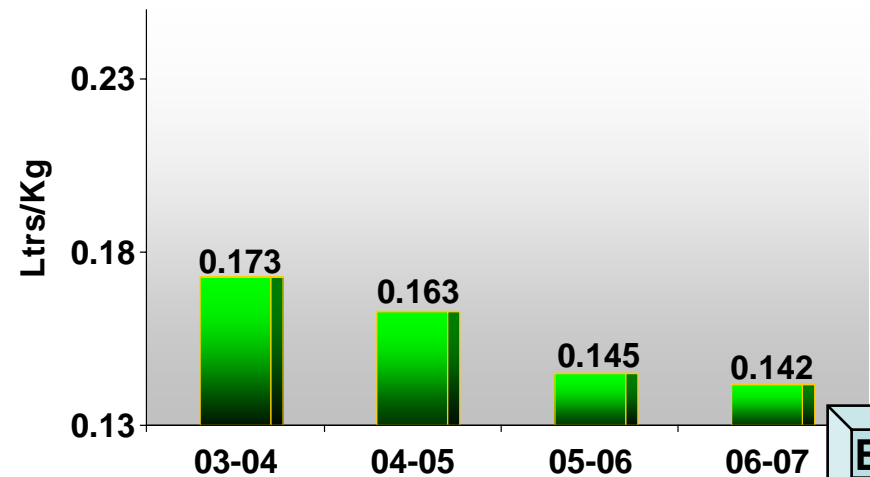
WATER CONSUMPTION TREND



SPECIFIC POWER CONSUMPTION



SPECIFIC FUEL CONSUMPTION



BACK



Dual Extruder Line Speed Increase.

Reduction of Cycle Time in Banbury Rubber Mixer.

Recovery of Hot Water from Tyre Curing Process.



Challenges

High Temperature of Feed to Extruders

High Extrudate Temperature

Inadequate Cooling of the Final Product

Scrap and Rework

Actions

- Feed Mill Motor Speed Optimized by using AC Variable Frequency Drive
- Conveyor Line Tuned for High Speed
- Provided Additional Cooling Water Spray Nozzles



DUAL EXTRUDER LINE SPEED INCREASE

Benefits



- Productivity Increase by 12 %
- Power Consumption Reduction by 1200 units per day
- Less Scrap and Rework



Identify the Non Value Added Time in the Mixing Cycle

Usage of Variable Speed Facility to the Maximum

Re-design of the Process by Incorporating Changes in Steps and Sequences



Benefits

Reduction in Cycle Time
by 20 Seconds in Total Cycle
Time of 140 Seconds

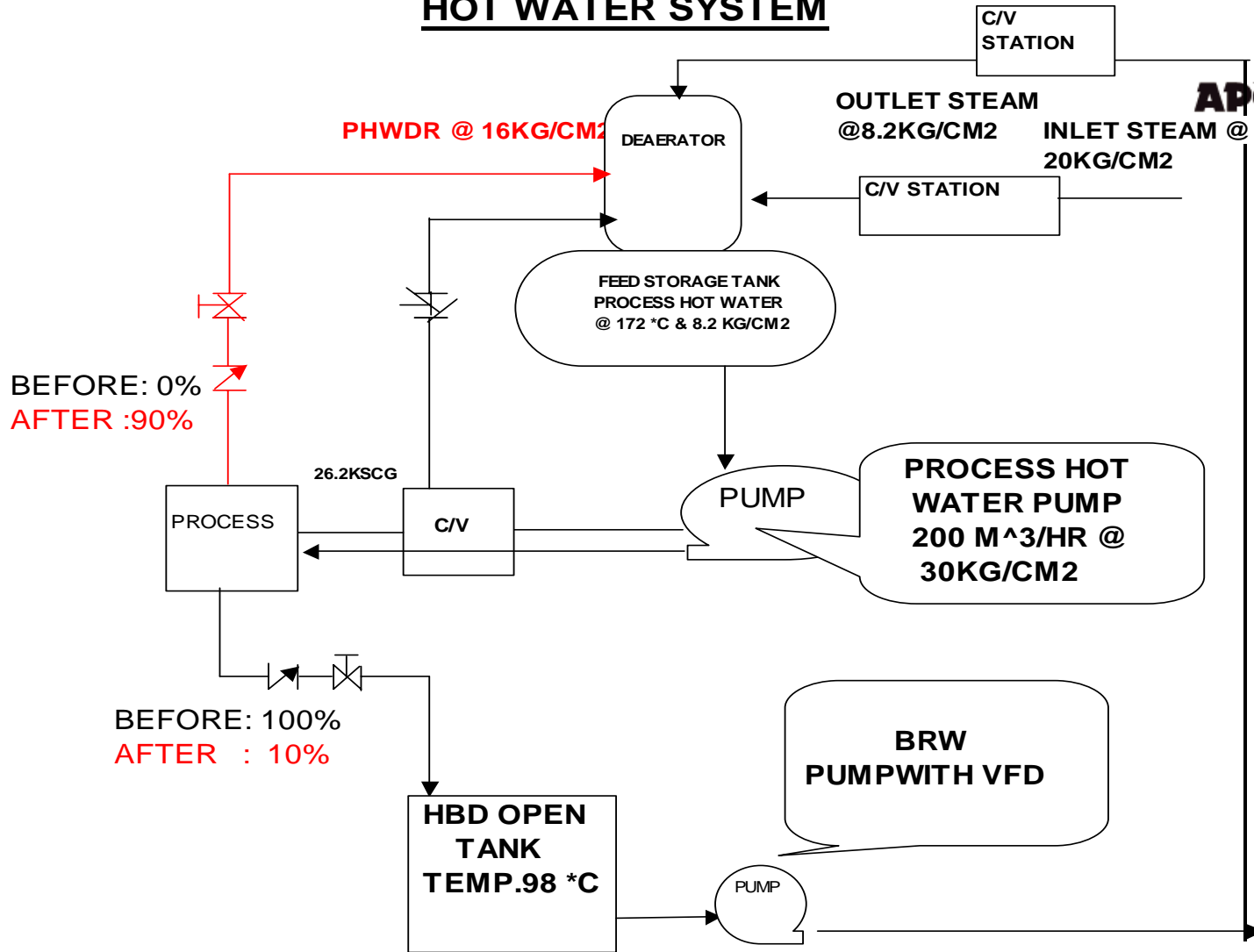
Productivity Increase by 14%

Power Consumption Reduction by
100 Units / Day per Mixer

HOT WATER SYSTEM



APOLLO TYRES LTD.



LEGEND
 MODIFIED LINE
 OLD LINE

PHWR- PROCESS HOT WATER RETURN
PHWDR- PROCESS HOT WATER DIRECT RETURN
BRW- BAG RETURN WATER
HBD- HOT BLOW-DOWN



HOT WATER RECOVERY FROM CURING PROCESS

Before

Steam Consumption
120 Mt/Day
Flash Steam Loss
50Mt/Day

After

Steam Consumption 60Mt/Day
No Make up Water
Zero Flash Steam Loss
Reduction in Chemical Consumption
Reduction in Fuel Consumption 4000 Ltr/day



Major energy Conservation Projects Implemented

Project # 1

Replacement of Single Stage Pump with Multi Stage Pump for Process Hot Water Supply

Before

Two Motors of 180 KW with Pump Capacity 150 m³/hr

After

Single Motor of 200 KW with Pump capacity 200 m³/hr

Savings

Electrical power saving 3840 kwh per day

Total Net Saving per Annum : 56 lakhs

@ Rs.4.11/kwh





Project #2

Reduction of Speed of Feed Mill Motors

Before Change

Extrusion Speed was restricted to 8.1 MPM because of High Extrudate Temperature.

Methodology Adopted

After Trial and Successive Deliberation it was decided to reduce the speed of Mill Motors by Providing AC Drives.

Results

- The Extrudate Temperature was reduced by 10 °C
- 12% Increase in Line Speed

Total investment : 8 Lakh

Power saved per annum : 84000 KWh

Savings per annum @ Rs. 4.11/kwh : 34.52 Lakhs





Variable Frequency Drives Installed in Blowers, Compressors, Fans, Conveyors and Pumps

FRP Blade with Improved Design for Cooling Tower Fans

Impeller Trimming in Pumps Based on System Requirement

Ceramic Coating of pumps

Process Pumps Upgradation with High Efficiency Pumps

Vapour Absorption Chillers for Process

Vapour Compression Chillers Stopped

Screw Compressors with VFD installed for Process Plant Air

Supply Voltage Reduction in Lighting

Power Factor Improvement



APOLLO TYRES LTD.

ENVIRONMENT FRIENDLY APPROACH

**Green Belt around the factory premises
by planting saplings & developed lawns
to the extent of 125,000 sq mtrs.**





ENVIRONMENT FRIENDLY APPROACH APOLLO TYRES LTD.



Treated water from Effluent treatment plant going to Recycling Reverse Osmosis Plant



Reject from Reverse Osmosis plant used for gardening and firefighting system.
Permeate used in process.

ENVIRONMENT FRIENDLY APPROACH



APOLLO TYRES LTD.



Reservoir created with
Storage capacity of 38000 M3
for supplying water to plant and
Rain water Harvesting



Gas Pressure Reducing Station
installed
[supplying Natural Gas to Boilers
and Gas Turbine]

EMISSION CONTROL MEASURES



APOLLO TYRES LTD.



Low NoX Natural Gas based Engine & Turbine Installed for Co-Generation



Gas Fired Burners Installed in Place of Conventional Low Efficiency Furnace Oil Burners

MONITORING & REPORTING SYSTEMS



APOLLO TYRES LTD.

- **Daily Monitoring of Power and Fuel Consumption in all Process Areas.**
- **Weekly and Monthly Review of Energy Conservation Activities with Functional Teams.**
- **Periodical Audit by Qualified External Agency.**
- **Internal Audit for “Implemented Energy Conservation Projects”.**
- **Identifying Potential Projects for Future Energy conservation.**

EMPLOYEE INVOLVEMENT AND TEAMWORK

- Cross Functional Teams from each Process Areas
- Small Group Activity across Manufacturing and Support Functions
- Knowledge, skill and Attitude improvement through Training Programs for Operational Crew
- Exposure to Specific Training Program on Energy Conservation

- Synchronization of Captive Generation Plant with Grid
- Explore Possibility of implementing wind power
- Adoption of back pressure Turbines across Pressure Reducing stations.
- Procurement of steam generated by Utilization of Waste Heat From the gas turbines of GAIL and use it for Power Generation and Process





AWARDS:

Year 2002

“Letter of Appreciation” from Gujarat Government for promoting Energy Conservation.

Year 2003

Award from Ministry of Power for Energy Conservation in General Sector.

Year 2006

Carbon Credit CER 13400 Awarded by UNFCC against Waste Heat Recovery Project.