ASHOK LEYLAND

Aapki Jeet. Hamari Jeet.

Ashok Leyland Technical Center

CII National Energy Award for Excellence in Energy Management 2022

Krishnan AG
DGM –Utility /Infra and Safety

Ashok Leyland overview

Founded by Sri Raghunandan Saran in 1948 rechristened as Ashok Leyland

Flagship company of the Hinduja conglomerate with a turnover of 2.3 billion USD

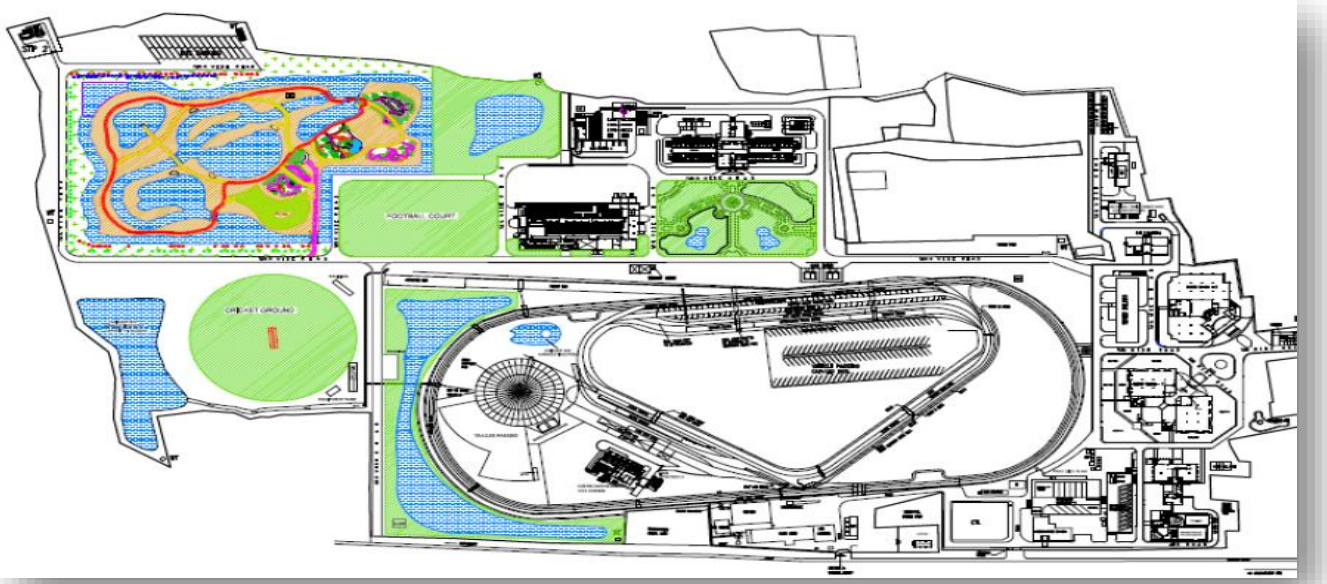
ASHOK LEYLAND

Global automotive manufacturer with Chennai as its base with manufacturing units across the world

We are the 2nd largest commercial vehicle manufacturer in India – Buses, Trucks, Military Vehicles, Indl Engines, Marine Engines & Spare parts

AL is the market leader in bus segment, carries 70million people a day

AL Technical Center-Over view



Key Highlights on Sustainable efforts

- First Wet land project executed in 15 Acres to enhance bio diversity
- 50 Acres of Land Utilized for Forest and Green
- 100% Water Positive & 90% Energy Positive
- 90% Green energy utilization & Carbon Neutral -85% in 2021
- Having More than 15000 Grown Trees
- Having 10 Acres of RWH with capacity of 75000KL

Technical Center

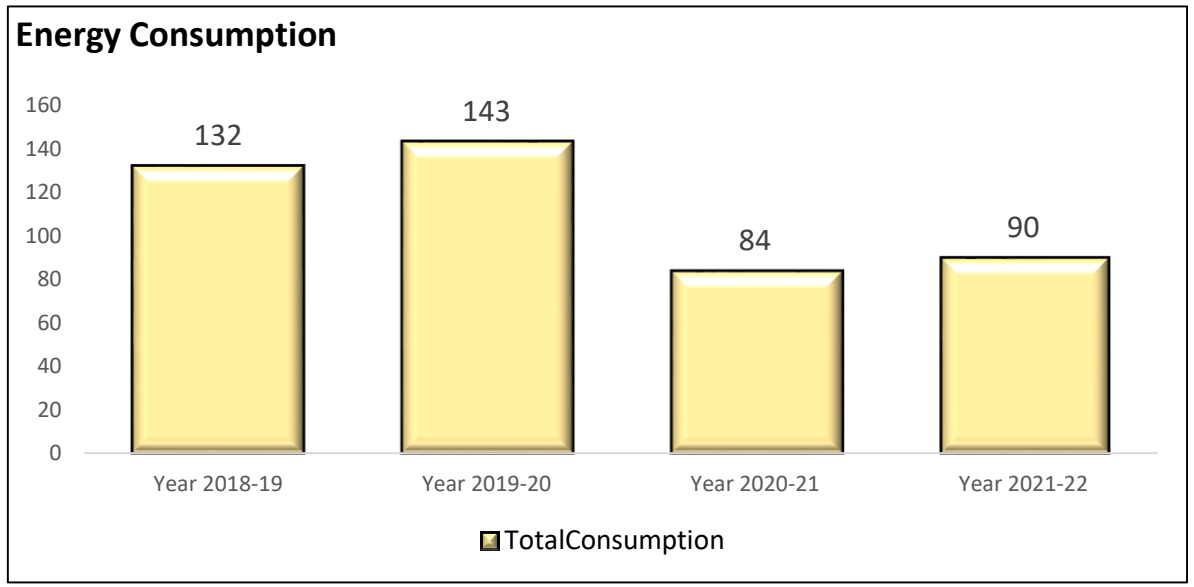
- Common R&D Facility for 7 Plants
- Center spread in over 134 Acres -1500 Peoples are working -2 Shift
- It is the combination of Design –Proto and Testing facility
- Working on Alternate Fuel Programs -Electric- CNG-LNG-Methanol-H2
- Having 4900 KVA demand and 9MVA of DG back up

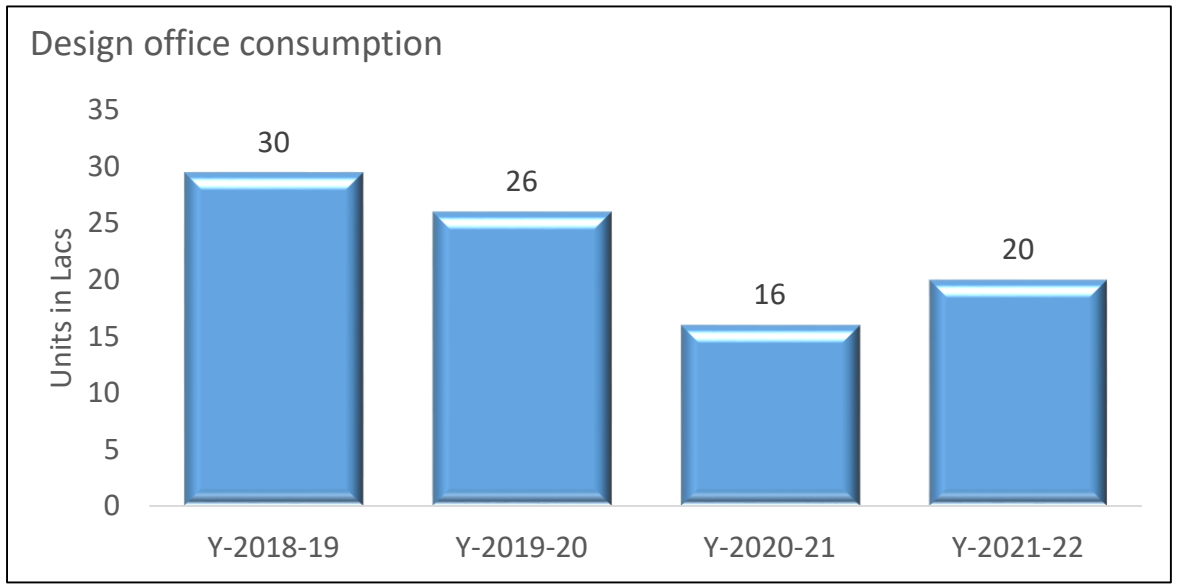
Design center-Over view

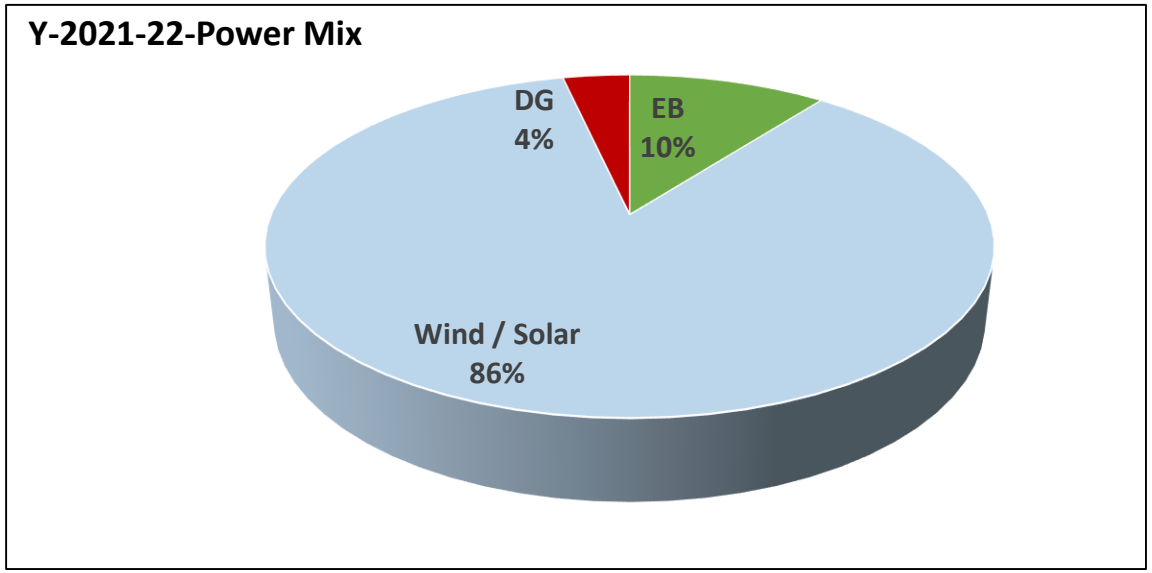
- Building Operation from 2006 & 2010
- Build up area – 1.4 Lac Sq. feet
- Total occupancy of each office – 400+550
- Avg. customer /visitors/day – 30
- No of Floor –GF +1 --2 wings in Each Floor
- Complete glass façade building
- 100 Sqft per workstation
- Orientation: East - West

Building s	Sq. Meters
Engineering office	725.00
Design office 1	8300
Design office 2	8300
Testing Labs EDC & Labs	23000.00
Utility	7200.00
Stores	1915.00

Energy Consumption Over view

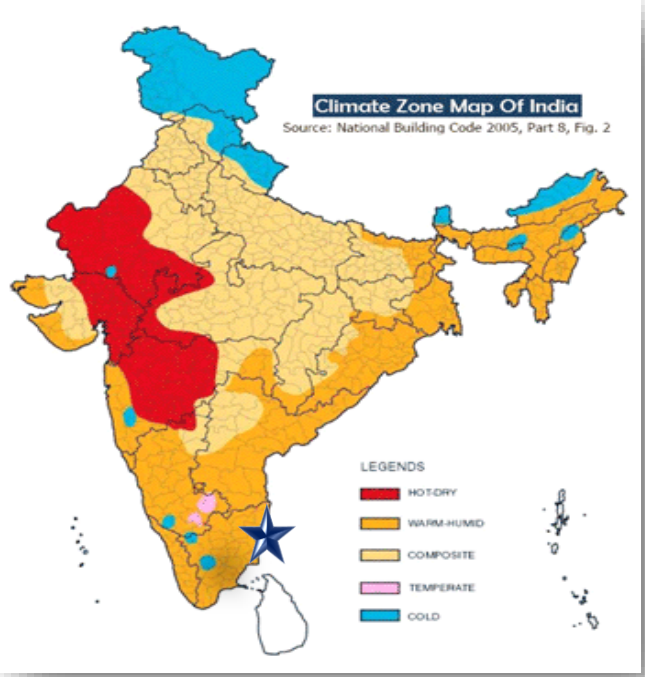




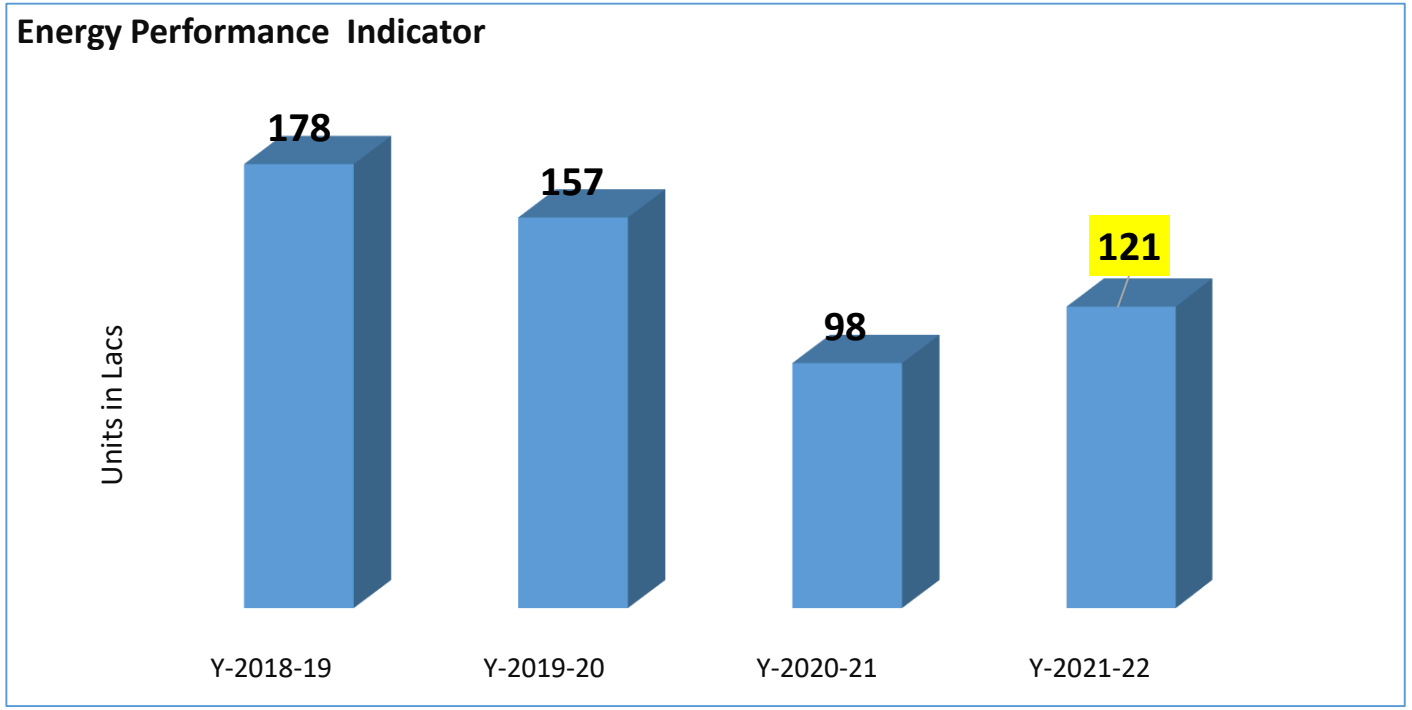


Total area of Building 16600 Sq. meter

Building Energy Performance



Energy Star



22%

Less

BEE - National Benchmark			
	EPI in kWh/Sq. M. / Year		
Star Rating	Warm and Humid	Composite	Hot and Dry
1 Star	200-175	190-165	180-155
2 Star	175-150	165-140	155-130
3 Star	150-125	140-115	130-105
4 Star	125-100	115-90	105-80
5 Star	Below 100	Below 90	Below 80

Energy -Bench Marking

Bench Mark details	Reference	SEC KW/m2/Year	Ashok Leyland R&D
Other Ashok Leyland Offices	Corporate office	125	121
Other IT/ITES companies/Group	CII Energy award Programmes,	90	
National Level	BEE	176	
International Level	Lawrence Berkeley National Laboratory	65to 90	

EPI Bench Mark for Office Buildings		
Climate Zone	Less than 50% AC	More than 50% AC
Warm & Humid	101	182
Composite	85	179
Hot & Dry	90	173
Moderate	94	179

- Office Building EPI depends upon multiple factors like climate zone, operating hours, occupancy trends etc..
- Technical Center Campus comes under mixed category. Combination of Office, Data labs, Data center, Open Lobby with 95% Air conditioned space.
- Chennai comes under Warm & Humid Climate Zone and our campus comes under the category of more than 50 % Air-conditioned area. Hence EPI Bench Mark as BEE -**182**.

Energy Conservation –Our Approach

Consumption

On line Energy Management –Monitoring

Energy Efficient Equipment's

Energy Conserve Committee

Conservation

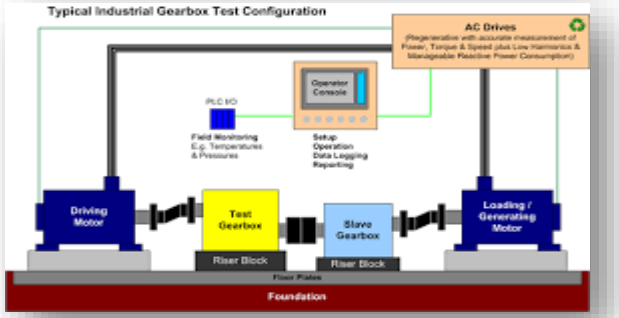
95% plant lighting is LED

Conserve Drives

- Automation projects
- Neutral Balancing
- Compressor AIR leak audits
- Energy saver in AC & Lightings
- Audits and Periodic Maint
- UPS system Optimization
- AC –Climate based Control
- Fixed Loss reduction

Reduce /Recycle

Natural Lighting Usage



Power Regeneration from Test Rig

Green Energy Systems

Kaizen by plant Team

Audit & Insulation

Periodic Maintenance

Temperature Measurement

Fresh Air Entry in morning

Optimized
Pump operation using VFD

Optimized Chiller temperature
Using Valve and Thermostat

Kaizen by Plant team

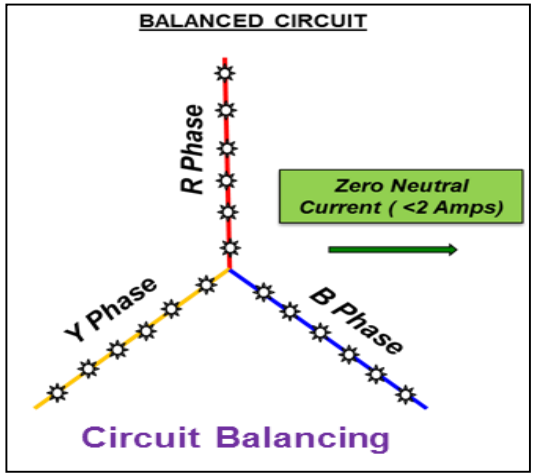
Split AC timer control

Timer control street lights

Timer based Speed control

Natural lighting

Low height Streetlights



Key Projects on Conservation

Capacity Optimization & Energy Saving

320 KVA

- SCR TECHNOLOGY RECTIFIER
- HIGH HARMONICS IN I/P SIDE
- LOW EFFICIENCY
- 0.85POWERFACTOR
- BULK IN SIZE
- NO REDUNDANCY

- IGBT TECHNOLOGY RECTIFIER
- LOW HARMONICS IN INPUT SIDE
- HIGH EFFICIENCY
- UNITY POWERFACTOR
- VERY COMPACT IN SIZE
- REDUNDANCY AVAILABLE

200 KVA

Sl. No	Particulars	Old ups	New ups
1	Total UPS weight	3700 kg	700 kg
2	Total battery weight	6245 kg	3960kg
3	No.of batteries	12V – 150 AH – 136 no's	12V -200 AH – 60 no's
4	Number of AC	2tr – 6 no's	2tr- 3 no's
5	Area utilization	1200 sift	600 sqft

58233 Units /Year
Cost Saving of 4.6 Lacs

Key Projects on Conservation

New water line with Natural OH tank flow

Initiatives

- New Pipe line replacement entire campus
- UG sump Storage Eliminated
- Transfer pump operation eliminated
- Saving of Water and Energy

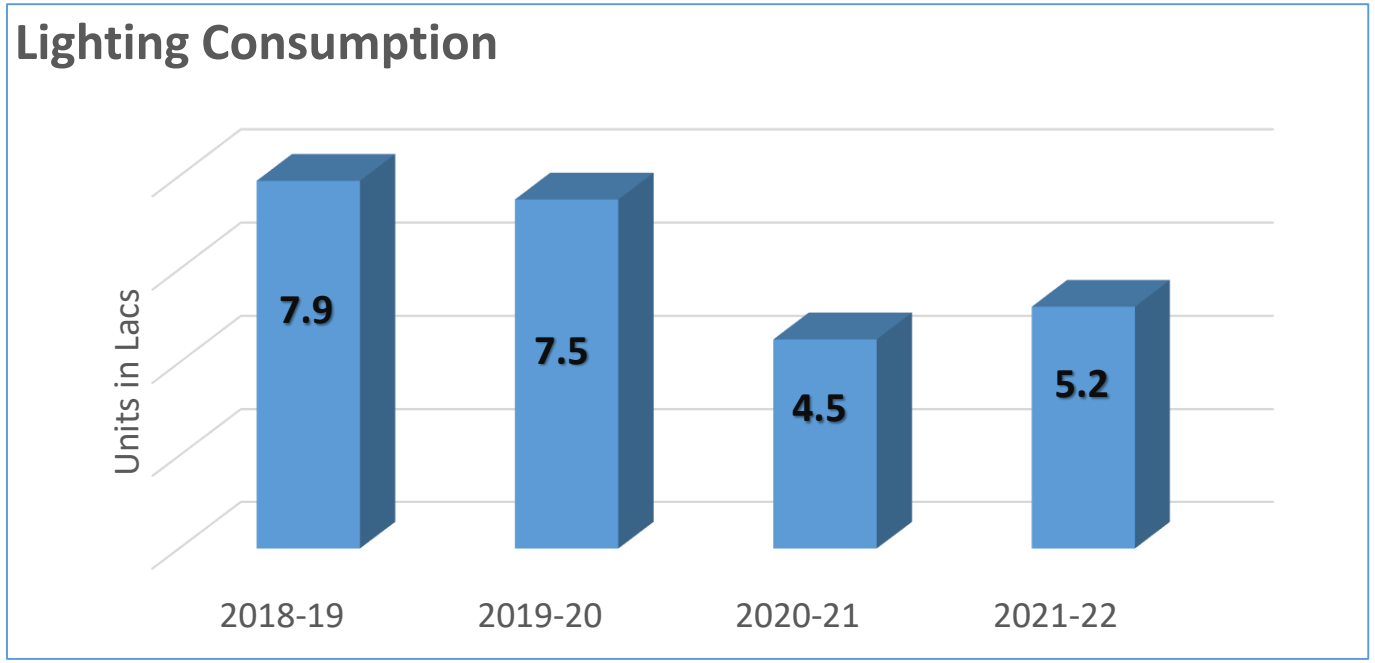
Investment of 65 Lacs

Energy Saving 0.7L units/Year

Cost saving of 5.6 Lacs

Water saving of 4000KLD/Year

Key Projects-Lighting Energy conserve Drive



Initiatives

- 100% LED transformation
- Lighting Automation
- Solar street lights
- Lighting segregation
- Natural lighting
- Low height street lights

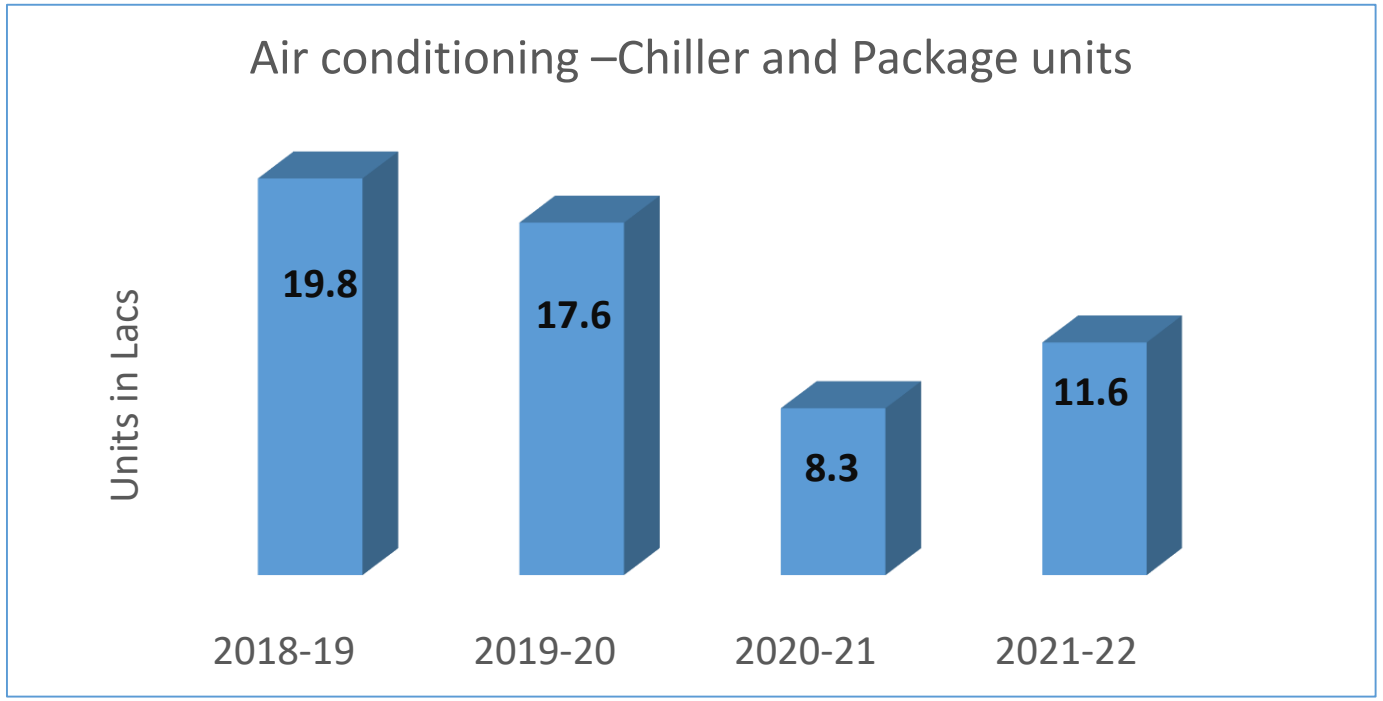
Investment of 30 Lacs

Energy Saving 2L units/Year

Cost saving of 16Lacs /Year

34 % Less Consumption

Key Projects-in Air conditioning Conserve initiatives



Initiatives

- VFD drives in Secondary pump
- VFD drives in AHU
- Motorized valve in Cooling line
- Old ac to Inverter AC
- Maintenance Excellence
- Shift closing /Holiday audits

Investment of 19 Lacs

Energy Saving 5L units/Year

Cost saving of 40Lacs /Year

41 % Less Consumption

Energy Conserve Initiative with Investment

Sl.No	Project	Investment in Lac	Energy Units savings in Lac	Cost Saving in Lac
1	DO1 UPS upgradation	36.06	0.53	4.46
2	Data Centre precession AC upgradation	22.85	0.7	5.95
3	Vanishing Blinds in NDO1	9	0.31	2.65
4	DO2 AHU Automation	1.83	0.86	7.34
5	Water Line Project	65	0.70	5.6
6	LED conversion Projects	30	2	16
7	Air-conditioning Projects	19	5	40
8	HVLS fan in Shop floor -8 fan	24	1	8
	Total value in Lakhs	142.74	10.4	84.4

Project Category 8 NO

Investment 140Lacs

Units saved 10 Lacs

Cost saved 80 Lacs

Energy Conserve Initiative with out Investment

HVAC	LIGHTING	UPS
1. A/c duct audits and Leak Arresting 2. AC temp. set at 24 degree Celsius 3. Set points of Chillers and AHU changed as per External Ambient temperature 4. A/C operation timing Optimization by using External Climate condition 5. AC filter, coil and cleaning of Y strainers, air flow balancing 6. Alternate Switching–Lobby A/C Optimization 7. Space Management -	Lighting classification done and removed lights from non-work areas (13 kw) Natural Lighting usage been Increased	One UPS Been switched off (4.7 kw) PF maintained well -0.99-1
Total Units Saved 2.2 Lac	**O.55 Lac Units**	**0.45 Lac Units**

Zero Investment

Units saved 3 Lacs

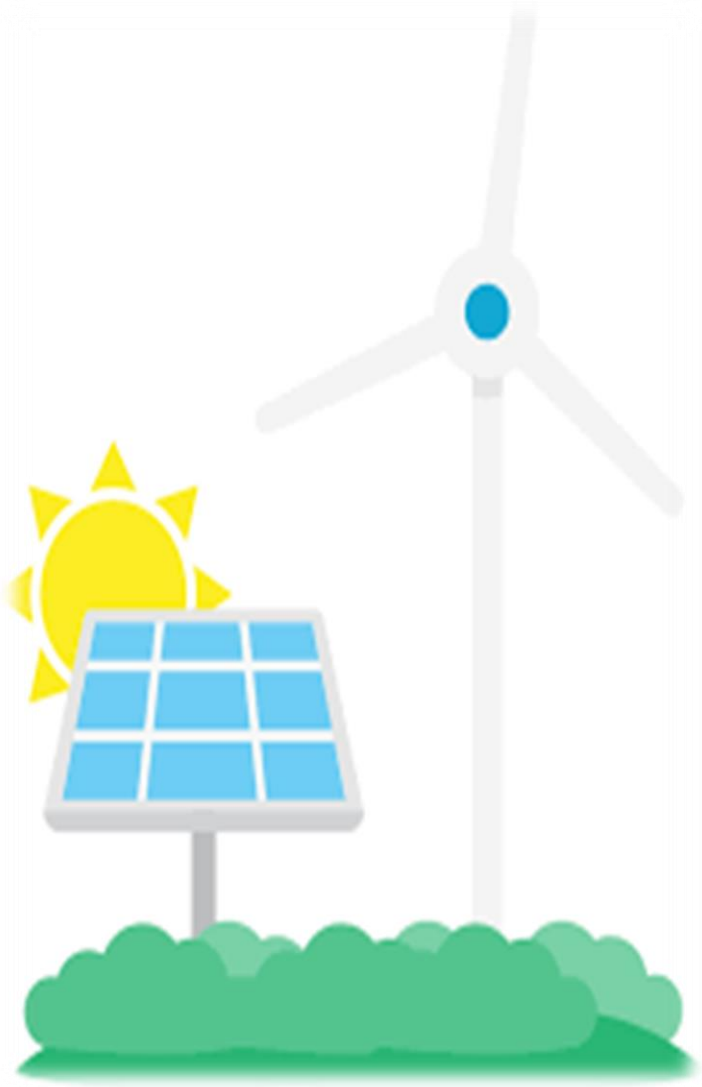
Cost saved 24 Lacs

Planned Encon Projects

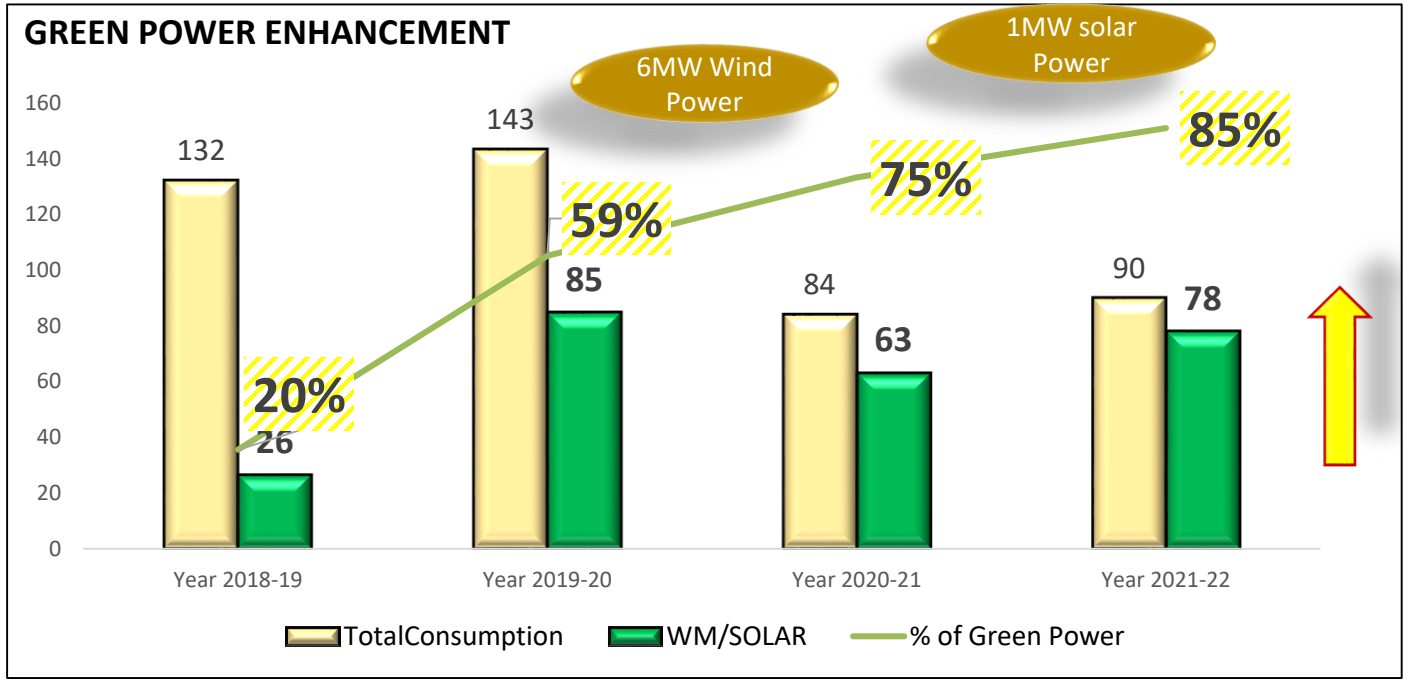
HVAC /Lighting	Projected Annual saving
1. Equipment Level Monitoring & Controlling of Operations -Implementing small automations	50,000
2. EC fans in the AHU'S	75000
3. Chilled water line and duct Insulation	20,000
4 Package AC to Chiller Model	100000
Total Units Saved 2.5 Lac	**2.5Lac Units**

Equivalent reduction of EPI IS 15

Utilization of Renewable Energy Sources



Off site Generation



Units in Lacks	2018-2019	2019-2020	2020-2021	2021-2022
EB	27.52	5.62	7.28	9.47
IEX	73.45	47.60	11.27	0.00
Wind / Solar	26.38	84.74	63.17	77.67
DG	4.77	5.30	3.08	3.19
Total Cons	132.12	143.26	84.80	90.32

Utilization of Renewable Energy Sources

- Enhance Green Power by 1MW
- Consumption reduction by 10%
- 5-7% Power Fed back from testing equipment's equipment's

Waste Management

Method Adopted - EM-1 (Effective Microorganism)
It is derived from nutrient solution predominantly anaerobic microorganisms in a carbohydrate-rich liquid carrier substrate. A combination of approximately 80 different microorganisms was capable of positively influencing decomposing organic matter such that it reverts into a "life-promoting" process, mainly positive microorganisms (regeneration),

Compost garden waste is being used as fertilizer in campus Garden

130 ton
Garden Waste Recycled
2021-22

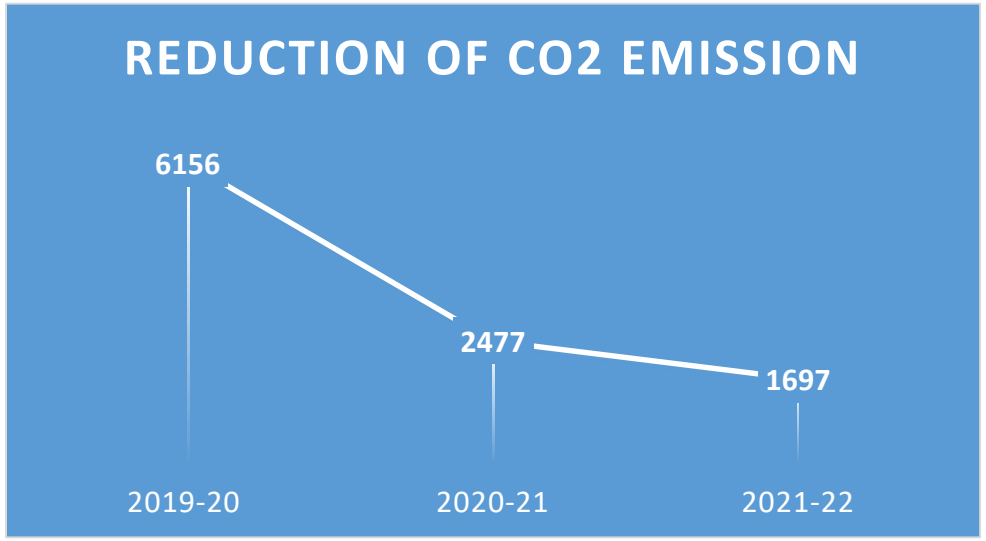
Waste Recycling

5 ton
COCO Peat Waste Recycled
2021-22

- Retain water about 7 to 8 times of its weight,
- Reduce watering by 50%.
- Flowering Pot Handling Weight reduced by 40%

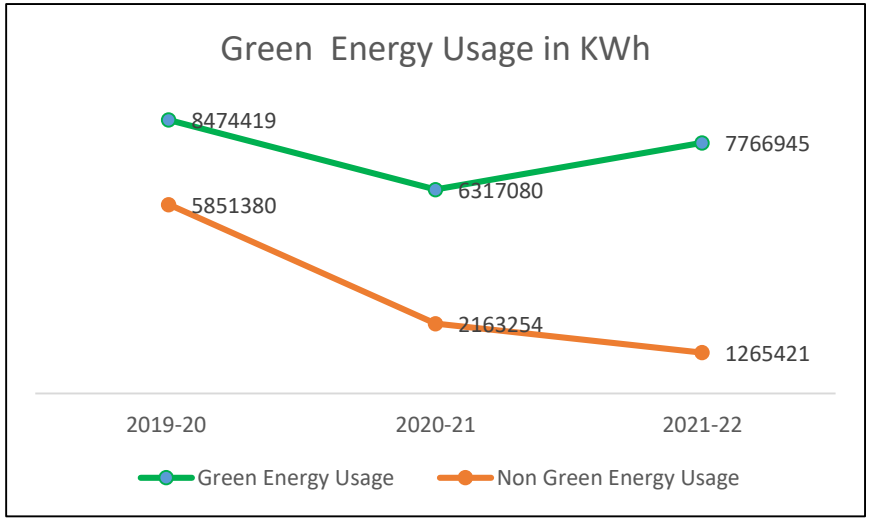
COCO Peat concept Gardening –Estimated Saving of 450KL/Acre

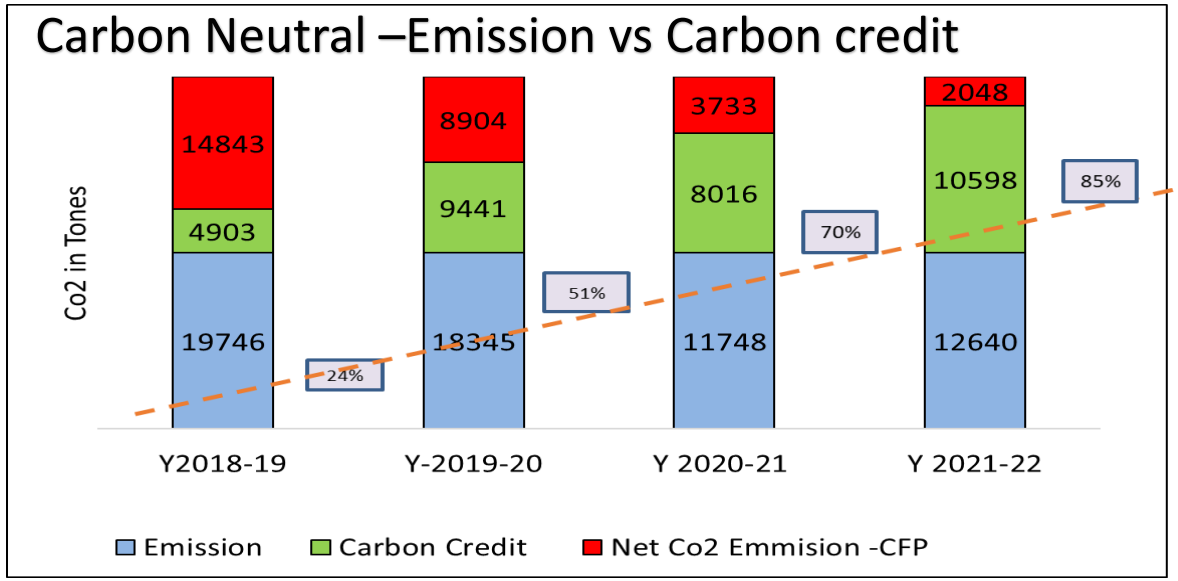
GHG Inventorisation

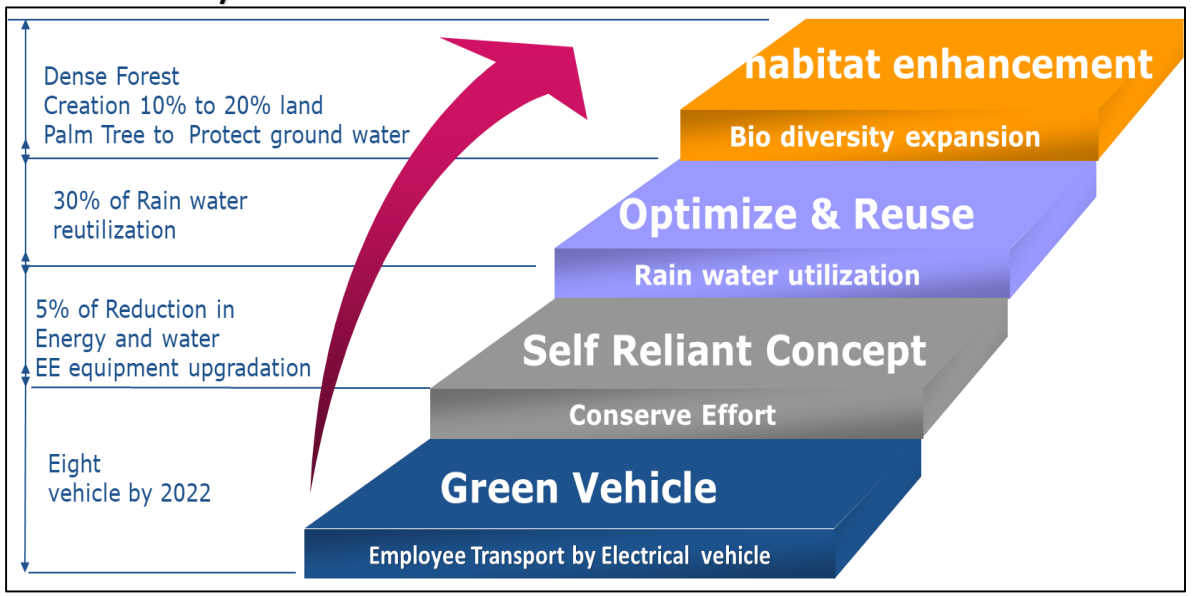


Year	Ton of CO 2 Emission		
	TNEB +IEX	DG	Total
2019-20	4736	1420	6156
2020-21	1651	826	2477
2021-22	843	854	1697

Year	Green Energy Usage	Non Green Energy Usage
2019-20	8474419	5851380
2020-21	6317080	2163254
2021-22	7766945	1265421







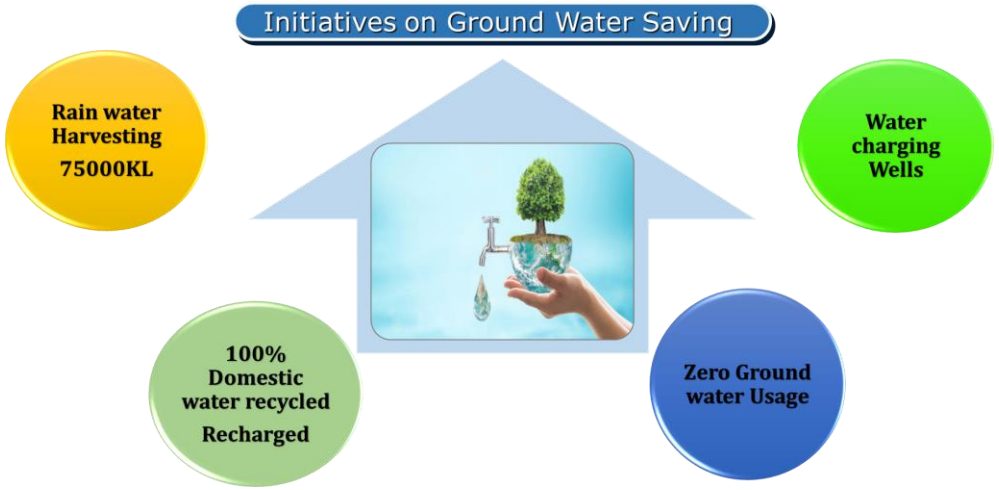
BIO DIVERSITY

- 15 Acres Forest & Garden
- 2 Acre RWH Pond (75,000 KL)
- 4000 trees 70 verities of local species

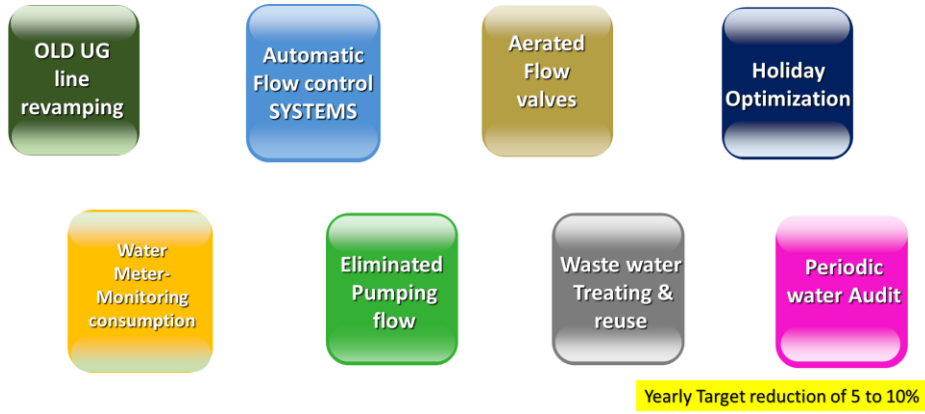
Automobile Industry first Natural Forest with self sustained water bodies

Water Balance

Improve Ground water

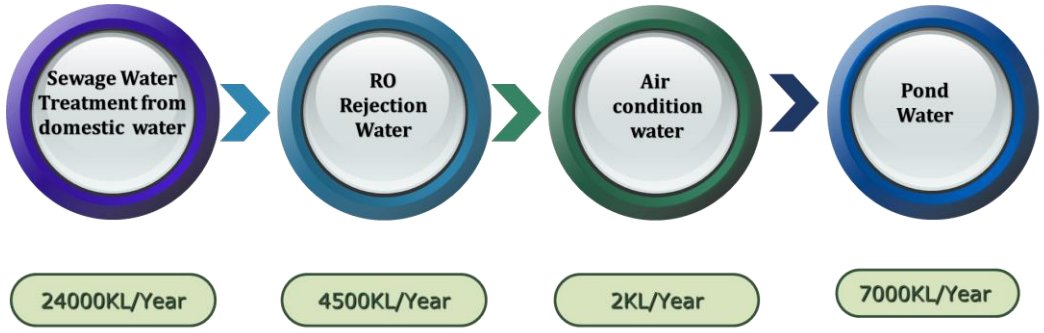


Conserve Initiatives



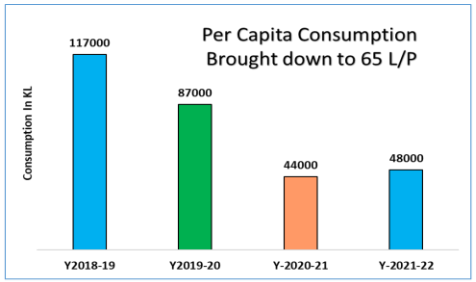
Yearly Target reduction of 5 to 10%

Recycling

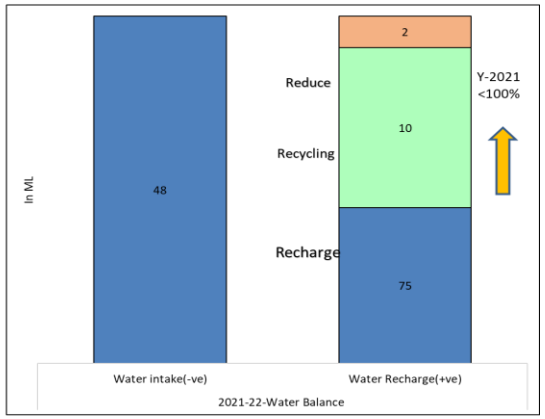


Zero Waste water Discharge Plant

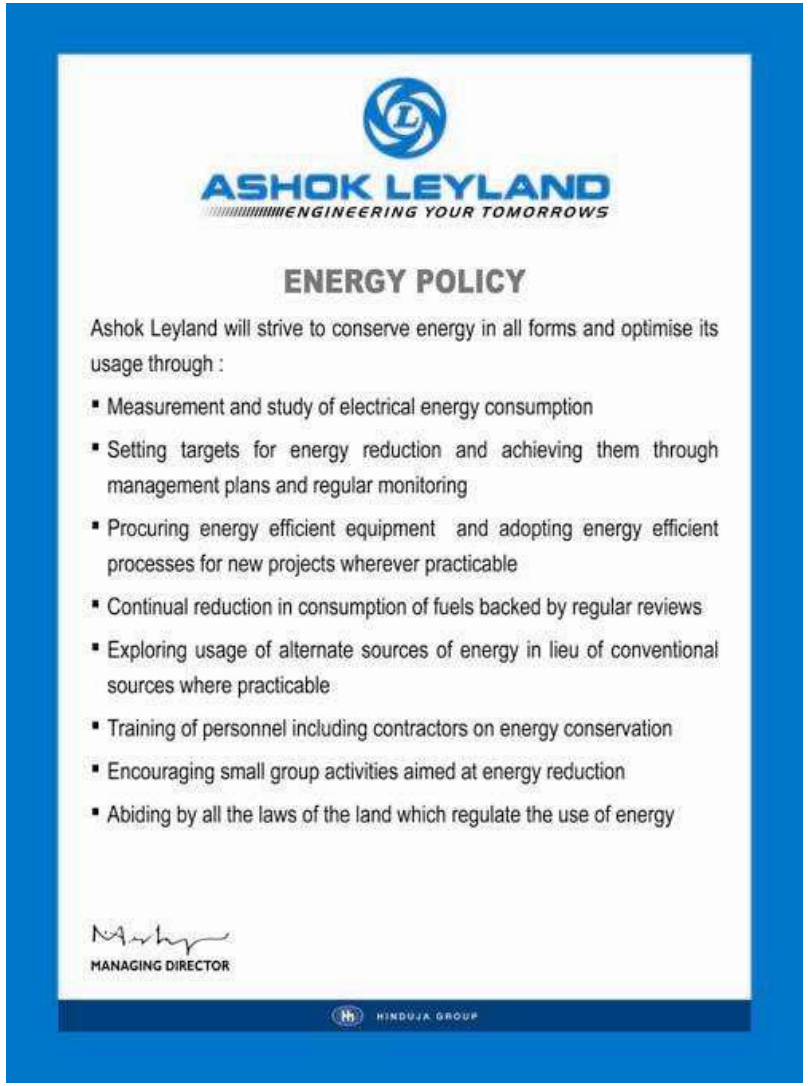
Water Positive Trend



Water Positive for Last 3 consecutive Years



Energy & Environment Policy



ASHOK LEYLAND

ENGINEERING YOUR TOMORROWS

ENERGY POLICY

Ashok Leyland will strive to conserve energy in all forms and optimise its usage through :

- Measurement and study of electrical energy consumption
- Setting targets for energy reduction and achieving them through management plans and regular monitoring
- Procuring energy efficient equipment and adopting energy efficient processes for new projects wherever practicable
- Continual reduction in consumption of fuels backed by regular reviews
- Exploring usage of alternate sources of energy in lieu of conventional sources where practicable
- Training of personnel including contractors on energy conservation
- Encouraging small group activities aimed at energy reduction
- Abiding by all the laws of the land which regulate the use of energy

MANAGING DIRECTOR

HINDUJA GROUP

ASHOK LEYLAND

Aapki Jeet. Hamari Jeet.

ENVIRONMENT POLICY

We at Ashok Leyland are committed to reduce the environmental impact of our business beyond regulatory and legal requirements.

Towards this commitment, we shall;

- Fulfill all the organization's compliance obligations.
- Adopt pollution prevention/reduction techniques in design, manufacture, distribution, and end of life disposal of our products.
- Consider ways in our design and manufacturing process to minimize waste generation while promoting conservation of the natural resources.
- Enhance the use of clean energy in our operations, to reduce impact on the environment.
- Ensure all our employees are aware of the environmental policy and their obligations towards implementing it.
- Set and implement objectives and targets for continually addressing the environmental impacts.

These above objectives are our commitment to the environment and to our stakeholders, and we will apply them to all our activities.

Chairman

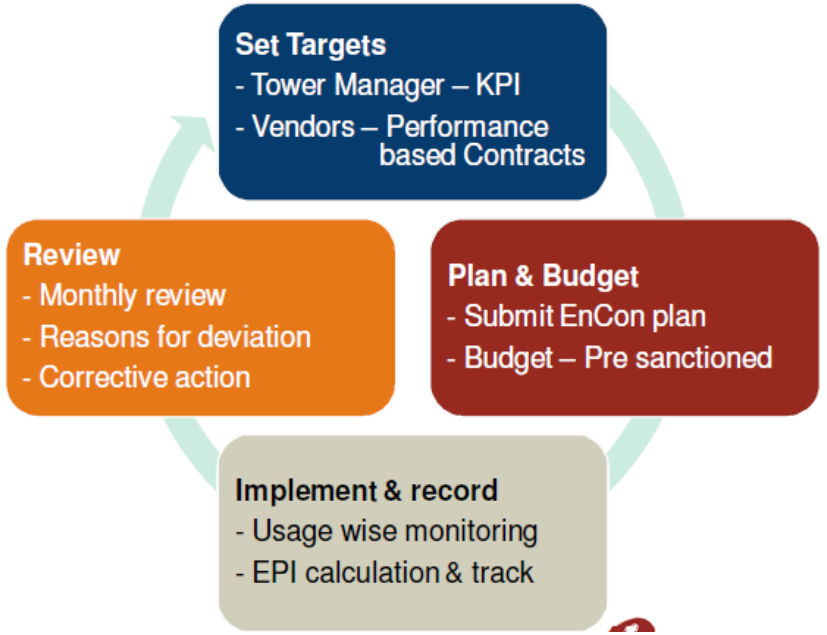
HINDUJA GROUP

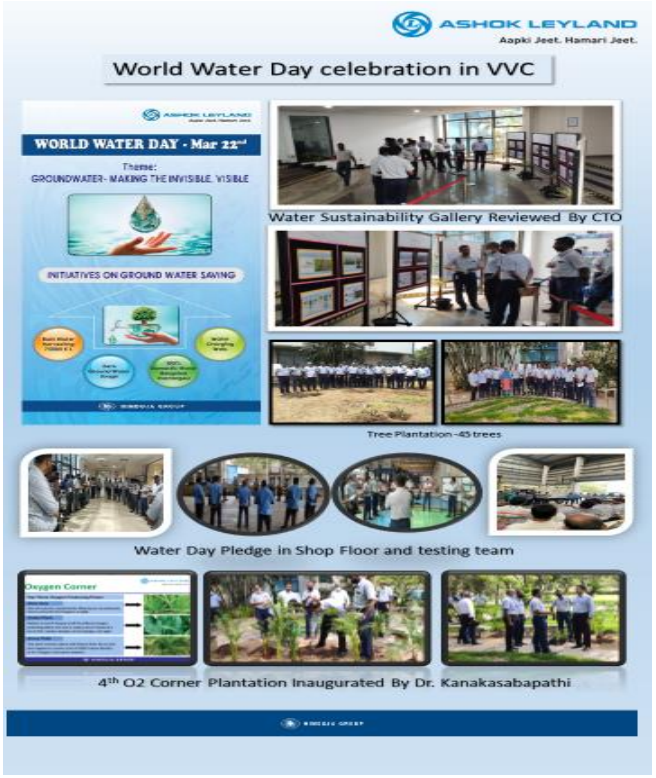
Team work Employee Involvement and Monitoring

On line Energy Monitoring

- More than 90 Energy meter Hooked up in On line
- Periodic Review on various parameters relating energy

PDCA of EnCon





Energy Conservation Committee

Awards and Recognition

Green Champion Award From
TN Environment ministry

Intercompany
Quality Circle Award

CII-National Energy Management Award

Thank you

Krishnan.ag@ashokleyland.com
9600093475