Kirloskar Oil Engines Ltd, Kagal (Kolhapur)

Enriching Lives

GreenCo Gold Certification for KOEL Kagal

In Mumbai on 25th June 15

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CII Green Co Rating Certification Information

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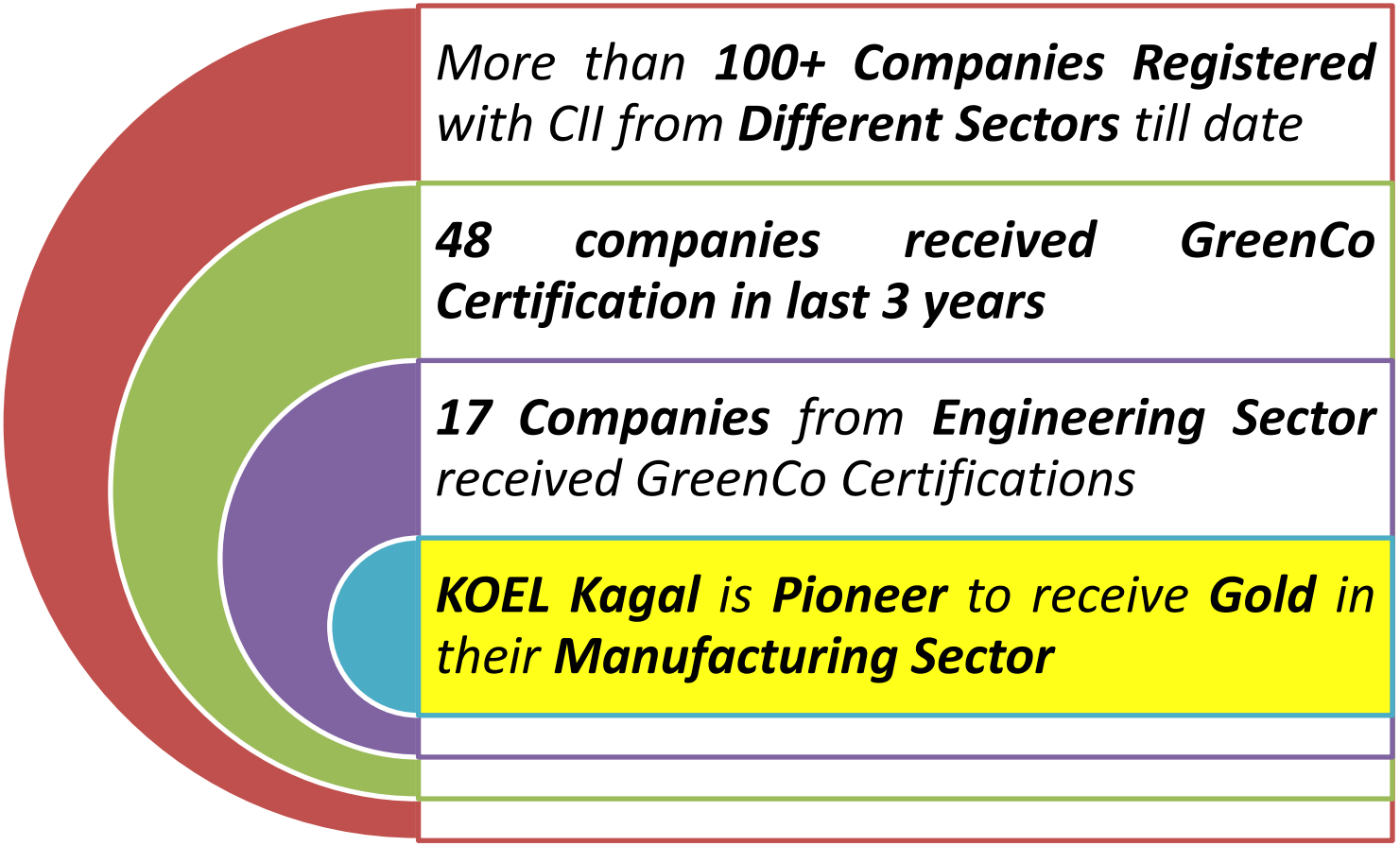

GreenCo Rating System Certification Evaluation Parameter & Weightage

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SN	Parameters	Weightage (Points)
1	Energy Efficiency	150
2	Water Conservation	100
3	Renewable Energy	100
4	GHG Reduction	100
5	Waste Management	100
6	Material Conservation, Recycling & Recyclables	100
7	Green Supply Chain	100
8	Product Stewardship	75
9	Life Cycle Assessment	75
10	Others (Ventilation, Site Selection, Green Belt & Innovation)	100
	Total	**1000**

GreenCo Rating Level

Levels	Points Awarded				
	350-449	450-549	550-649	650-749	750-1000
Certified					
Bronze					
Silver					
Gold				X	
Platinum					

GreenCo Certification – CFT

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About Kirloskar Oil Engines Ltd

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Manufacturing Plants : Kagal (Kolhapur), Khadki (Pune), Nasik & Rajkot

Kagal (Kolhapur) Plant →

- **Total Employees as on date - 1181**
- **Managers (TL, GL & UL) - 191**
- **Operators (Team Associates) - 990**

Initiatives

TPS

- *5S*
- *QMS, EMS & OHSAS*
- *ENCON*
- *Kaizen & POKA YOKE*
- *Autonomous Maintenance*
- *Six Sigma, QC Activities*
- *Standardized Work*

Product	Product Name	Capacities (2 Shifts Basis)	Range	Application
				Domestic & Exports
	Generating Sets with air cooled and liquid cooled engines	1650 / month	5 KVA to 625 KVA	Power Generation
	DV Engine with 8, 10 and 12 Cylinders	200 / Month	400 HP to 750 HP	
	Liquid Cooled with 1,2,3,4 and 6 Cylinder Engines	4000 / month	14 HP to 330 HP	
	Air Cooled with 1,2,3,4,5 and 6 Cylinder Engines	4000 / month	10 HP to 120 HP	
	Varsha Pump sets	8000 / month	3.2 HP to 5 HP @ 1500, 1800 & 2600 rpm	 Agriculture

Production Process at Kagal

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RAW MATERIAL

Machining Lines

- Crank Case
- Cylinder Head
- Crank Shaft
- Cam Shaft
- Connecting Rod

Receive Bought out finished components

Storage

Engine Assembly

Testing → Painting → Engine Up fitment → Storage → Engine Dispatch

Green Co Rating System Certification

KOEL Signed CII Code –Ecologically Sustainable Growth (MSG)

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Specific Energy And Water Consumption
- Reduce by 3-5% every year over next ten years.

Specific Generation Of Waste & Waste Going To Land Fills
- Reduce by 3-5% every year over next ten years

Use Of Renewables Energy
- Increase by 5% every year over next ten years.

GHG Emissions And Other Process Emissions
- Reduce by 3-5% every year over next ten years

Recyclable And Enhance Recyclability Of Resources
- Increase use of resources embedded in the product.

Share Of Harvested Rainwater In The Overall Annual Use Of Water
- Increase by 5% every year over next ten years

Life Cycle Assessment Criteria For New Products.
- Incorporate Life Cycle Assessment in alternative technologies and products.

Adopt Green Purchase Policy
- Adopt Green Purchase policy & incorporate clean technologies at design stage

Product Stewardship Program
- Promoting and managing Product Stewardship Program, By forging partnership with business and communities.

Depletion Of Natural Capital
- Reduce by 5% every year over next ten years

Power & Fuel Expenditure 2014_15
% of Energy Cost to Sales Turnover

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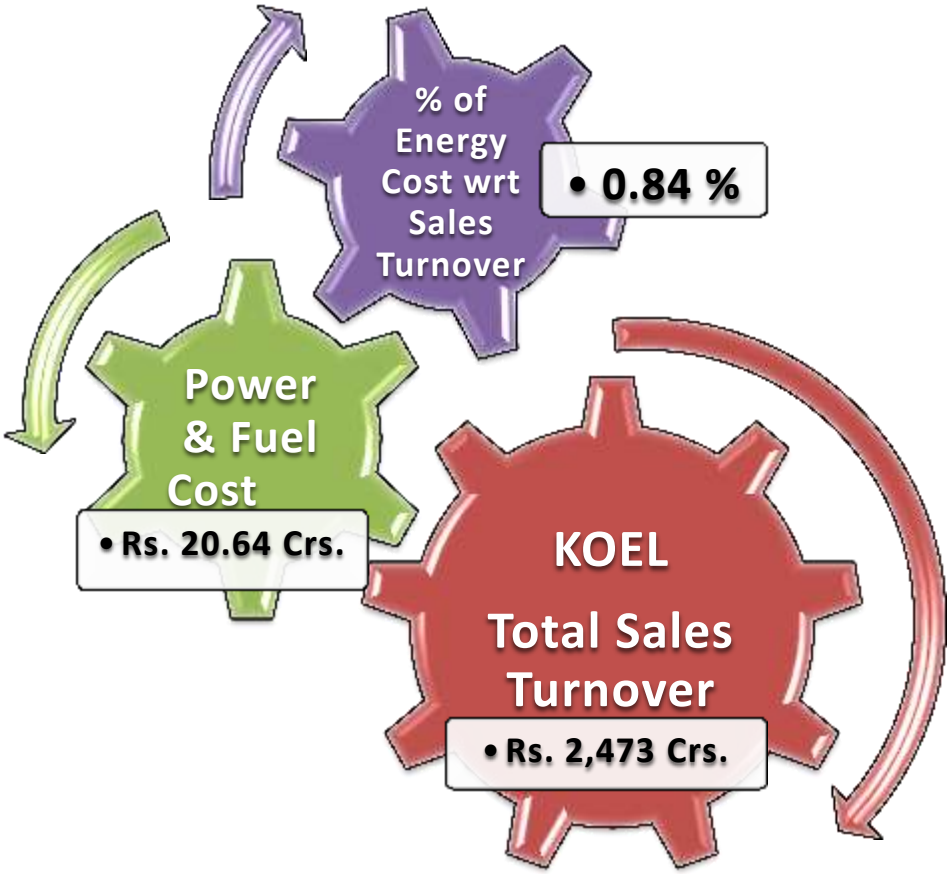
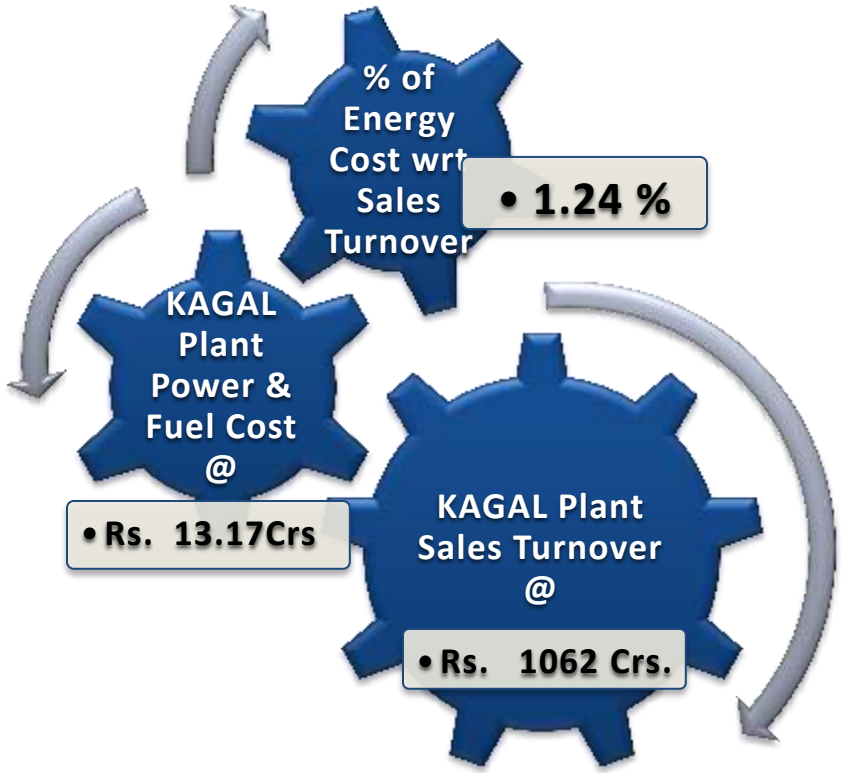
KOEL – All Plants



KOEL – Kagal



KOEL- Energy Policy

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KIRLOSKAR OIL ENGINES LIMITED

Enriching Lives

ENERGY POLICY

We, the KOEL, leading manufacturer of Diesel Engines, Gensets, and Pumpsets in the country are committed towards Nation's Mission for Enhanced Energy Efficiency by making continuous efforts to optimize use of energy and to bring about improvement in the energy efficiency in all our manufacturing processes and products.

We shall strive to achieve the above by:

- Benchmarking all our products for energy consumption by comparison with the regional and national best.
- Procuring and Using highly energy efficient products and technologies in our operations to reduce carbon footprint.
- Eliminating wastage of energy and promoting reuse and recycling of resources, and be environmental friendly in our operations.
- Promoting and increasing use of renewable energy resources, within and outside KOEL.
- Adopting national energy conservation norms and codes in new Building constructions as well as in existing buildings.
- Conducting periodic energy efficiency improvement studies and implementing all improvement measures and continuously monitoring gains obtained through Energy Management System.
- Involving all stake holders including employees in the energy conservation efforts through training & awareness programs. Recognizing employee's efforts through competitions and schemes.
- Sharing and enriching our experiences on energy conservation with our group of companies and other organizations
- Complying with National Energy legislations and other related legislations.

KOEL, as a part of our energy efficiency improvement strategy, will make every effort to reduce our specific energy consumption by 2-5% per year by promoting culture of innovation, creativity and aligning commitments at all levels.

Issue No: 3
Issue Date: 01.08.2003.
Review Date: 14.12.2011.

Atul Kirloskar
Chairman & Managing Director

Executiv

Kirloskar signed Energy Policy -

indicates

Top Management towards

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Key Highlights of Policy

- Benchmarking of products with the regional and national best.
- Procurement of high energy efficient products and technologies
- Eliminating wastage of energy and promoting reuse and recycling of resources
- Promoting and increasing use of renewable energy resources, within and outside
- Adopting New Building Norms
- Involving all stake holders in the energy conservation
- Sharing and enriching our experiences on energy conservation within & Outside group

Reduction in Specific Energy Consumption

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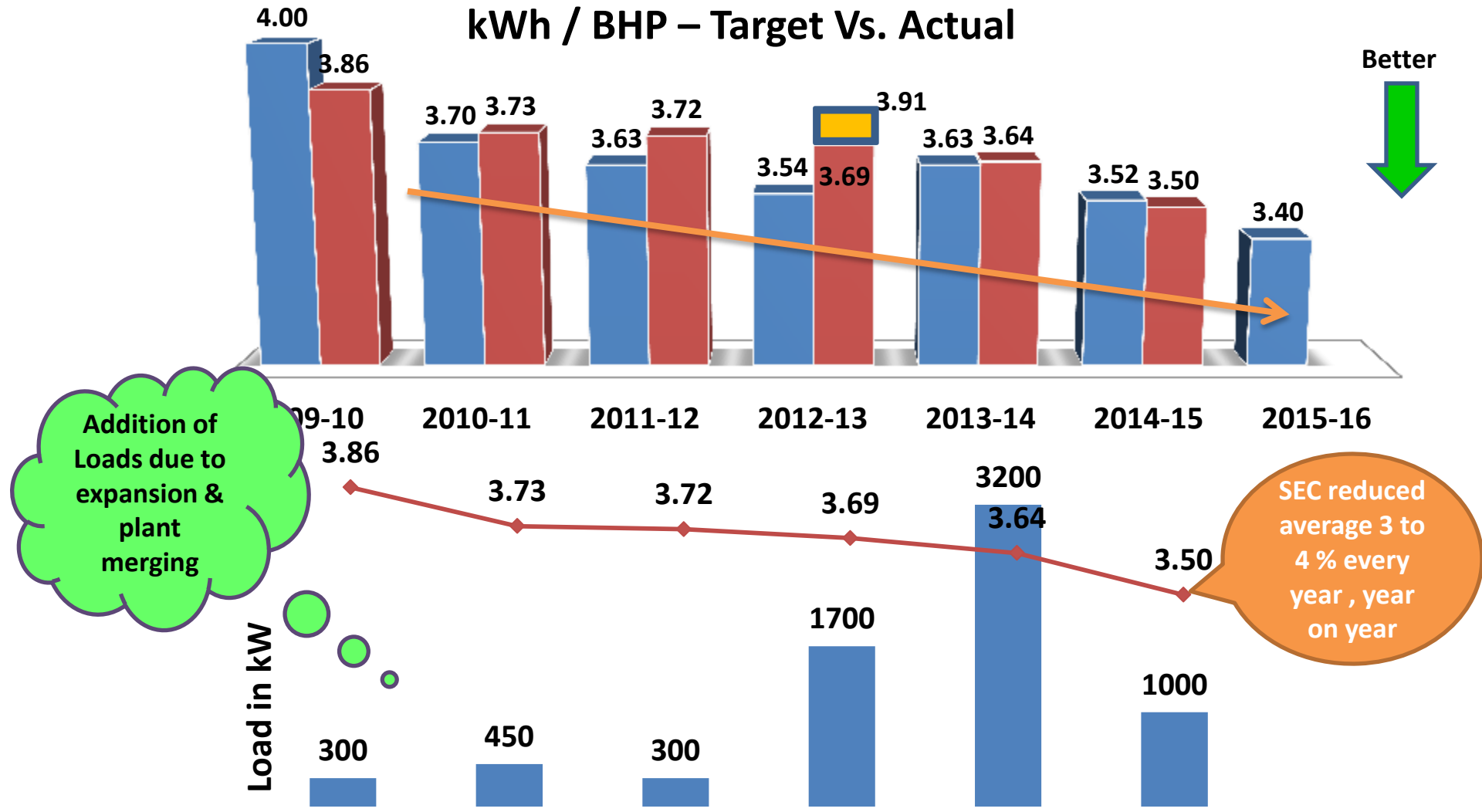
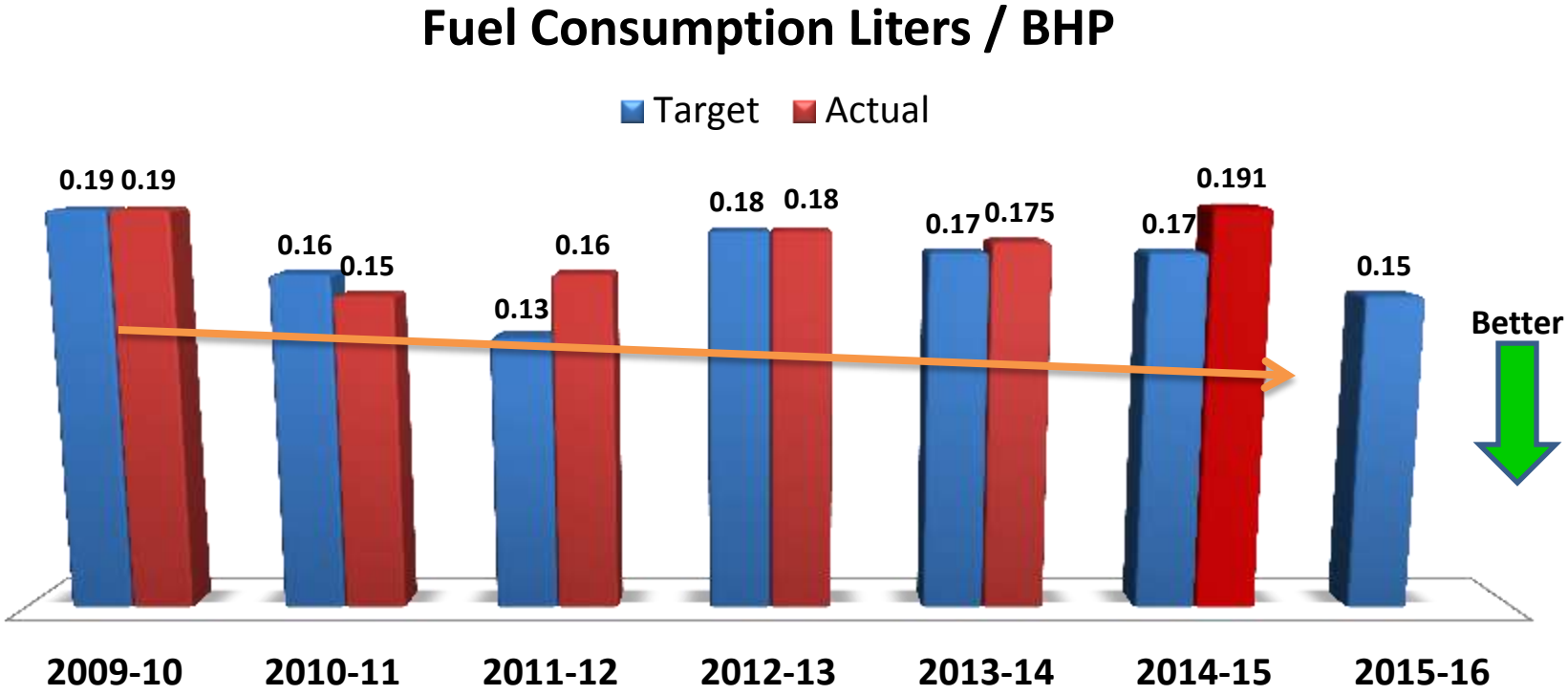


Reduction in Specific Fuel Consumption

Enriching Lives



For New Environmental Norms Few Applications points added in the process, resulted in increase in Fuel Consumption in past years

Thru committed ENCON efforts has helped to maintain the Specific Fuel Consumption

Benchmarking

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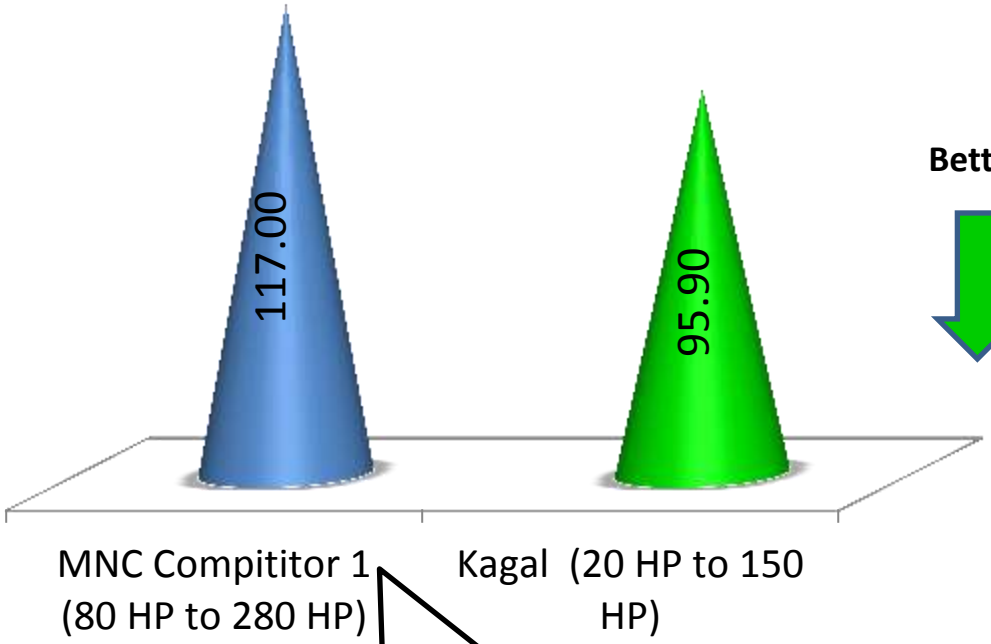
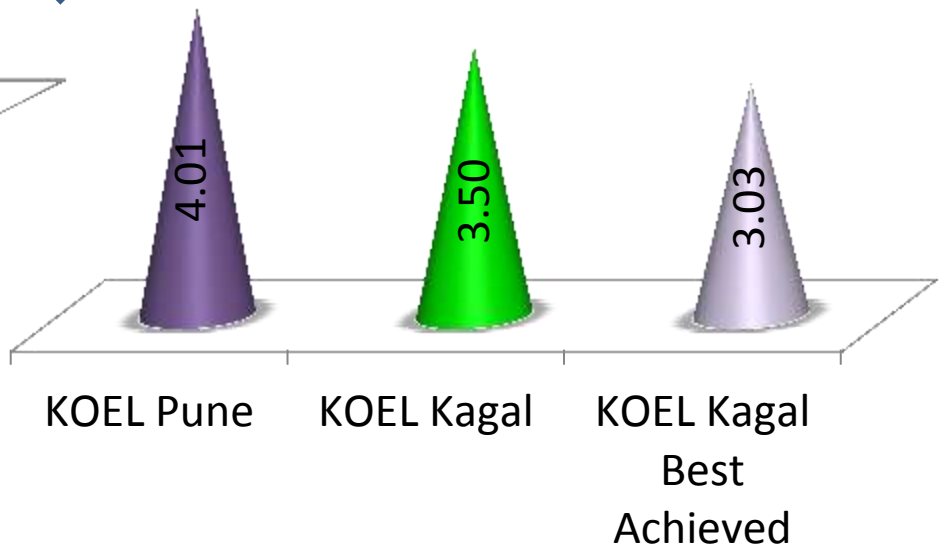
Energy Consumption per Engine (ATP)



Better

kWh / BHP (Internal)



For Benchmarking kWh / Engine is available from a Close Competitor product range. Equivalent Conversion taken for KOEL engines

*** Source Data : MEDA**

Benchmarking (International)

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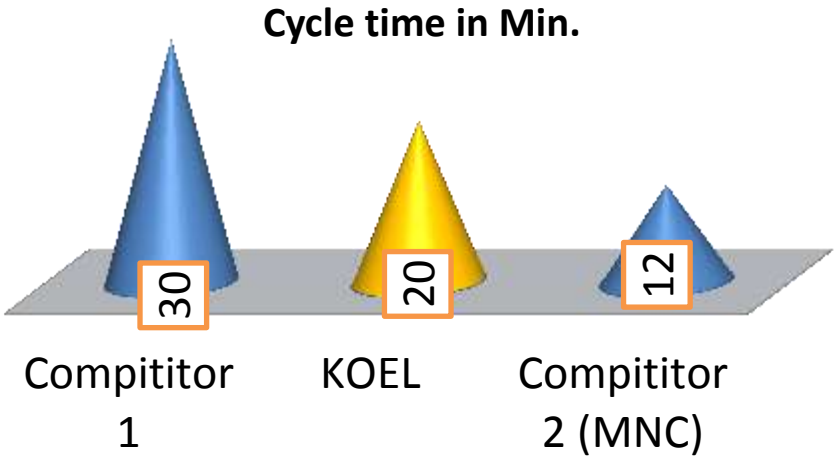
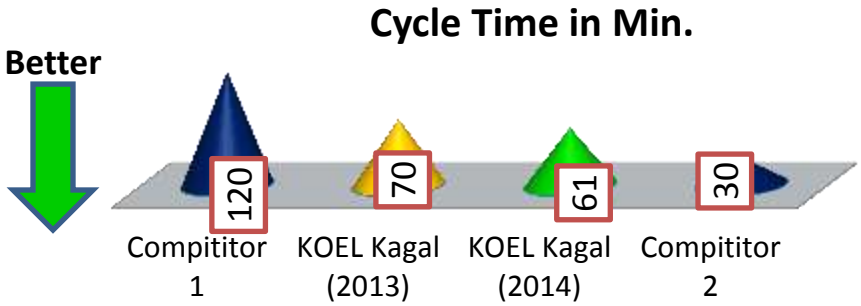
Engine Testing Cycle Time



DG Set Testing Time



Involvement of People

Initiated

Advanced EMS for Data Analysis

Installed

Bull's eye on Load-Center Consumptions & Stringent Control Mechanism

Initiated

Processes Improvement & Alternative Technologies

ISO 50001 EnMS Certification for Standardization

Certified Lead Auditor - EnMS

- **Santosh Parab**
- **Sunil Doshi**

Project Summary
Energy Saving in Years 13 – 15 (3 Years)

Enriching Lives

Numbers of ENCON Projects

100

Total Cost Saving

Rs 309.69 Lakh

Annual Energy Savings

kWh Units

28.45 Lakh

Annual Fuel Saving

(K Liters)

47.49

Investment Rs. 150.31 Lakh

Simple Payback

6 Months

ROI

106 %

Project Summary
Energy Saving in Years 13 – 15 (3 Years)

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Category	No. of Projects	Units Saving In Lakh	Fuel Saving in K Liters	Cost Saving in Rs. Lakh	Investment in Rs. Lakh
Zero Investment	57	6.35	47.89	120.24	Nil
Low Investment	35	8.5		71.93	15.9
Moderate Investment	5	1.28		15.98	17.07
High Investment	3	12.32		101.54	123.69

Out of total savings, 62 % of Saving thru 92# no investment or small projects

ENCON Savings Year on Year

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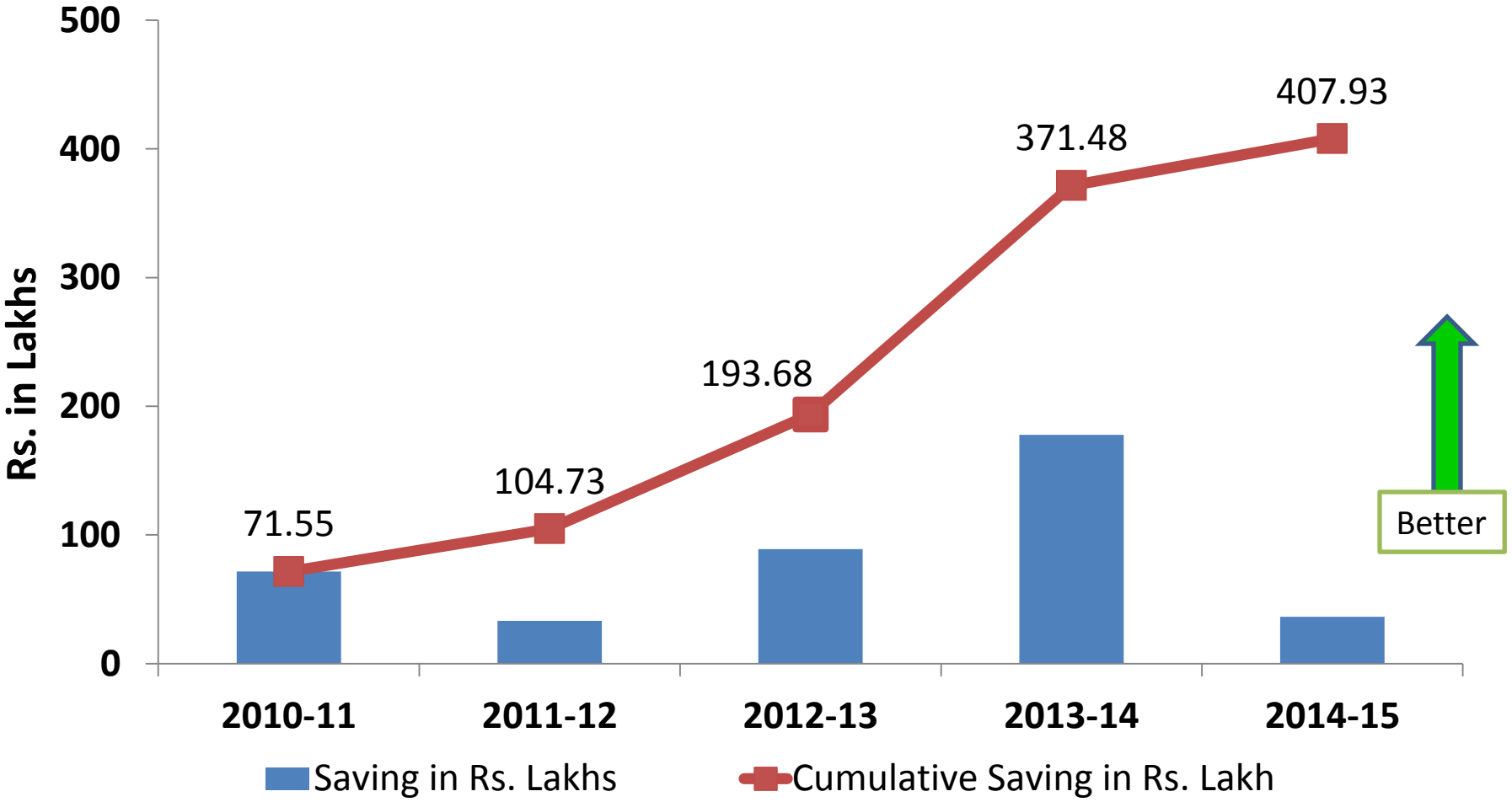

Water Conservation

Specific Water Consumption Reduction

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Units	FY 2012-13	FY 2013-14	FY 2014-15		FY 2015-16
	Actual	Actual	Target	Achievement	Target
Total water consumption (cubic meters)	1,20,476	1,37,188*	1,35,816	1,32,696	1,30,705
Specific water consumption (L/BHP)	36.59	48 (3%)	46.56	39.62 (17.5 %)	38.43

- *(2013-2014)Addition of Genset Expansion & EP-II shed Activities & Allied Processes such as Construction , Industrial, Domestic & Gardening Activities.
- *(2014-2015) Shifting ,Erection ,Commissioning of Plant & Machineries from Khadki plant, Deployment of man power , Green belt development for EP-II & Genset Expansion.

Water Conservation

Installation of auto sensor to the urinal & wash basins

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475 m3 of water saved / year

Water Conservation

Use of Hand washing Waste Water for Gardening.

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936 m3 of water saved / year

Water Conservation

Using of Stored Water for Garden.

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829 m3 of water saved / year

Water Conservation

Rain Water Harvesting

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- Water requirement for the Landscape Area reduced due to Increased Humidity
- Increase in Water Table in surrounding area

Water Conservation

Rain water Harvesting Design (Aerial View)

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Renewable Energy

Short & Long Term Action plan to Achieve Targets

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Units	Present Renewable energy generated off - site (2013)	Present Renewable energy generated off - site (2014)	Target for 2015	Achievement In 2015	Target for 2016	Target for 2016 (if available)
kWh	4,851,465	6,069,197	3,000,000	1,785,625	**6,350,000**	6,800,000
% of total Energy consumption	35.78 %	51.01 %	* SEM Meter installation	**14.05* SEM installed in Aug 14**	**Targets are set to increase share by 5%**	

Units	Present Renewable energy generated on - site (2013)	Present Renewable energy generated on - site (2014)	Target for 2015	Achievement In 2015	Target for 2016 (if available)	Target for 2016 (if available)
Kgs in terms of LPG (Solar+ Biogas Plant)		3421.5	3000	2786.17	3000	3000
%of total Energy consumption		2.08%		1.85%		

Renewable Energy

Off-site renewable energy systems installed

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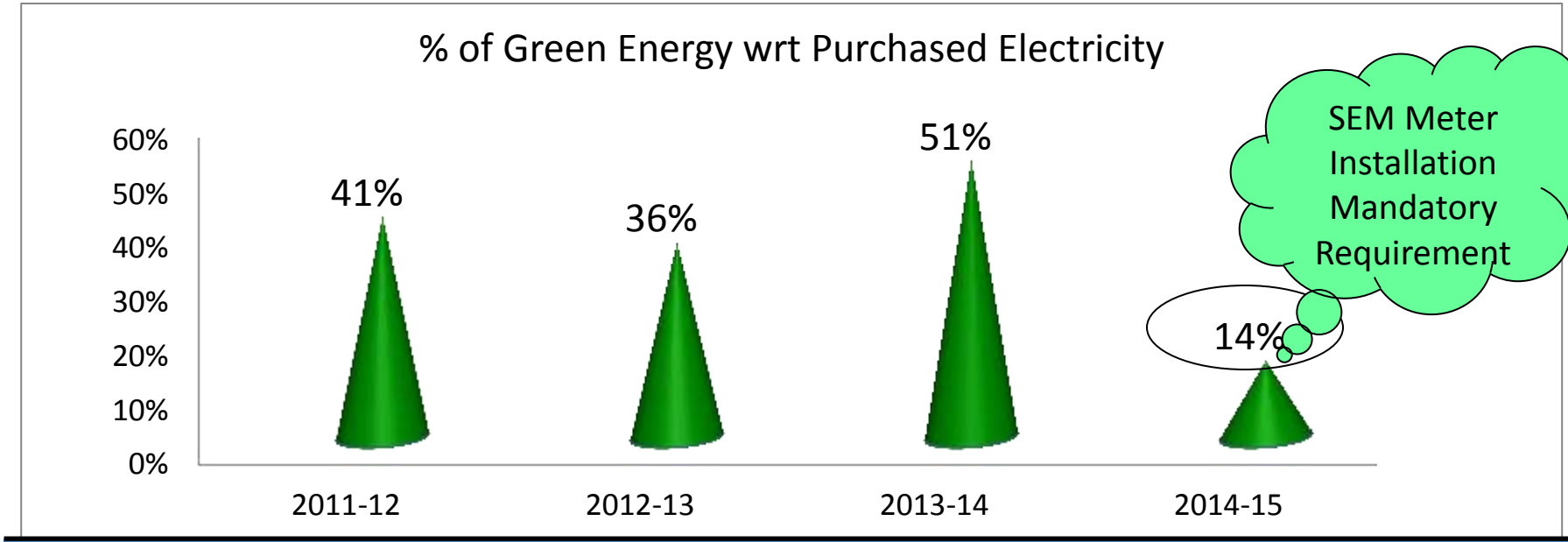

	2011-12	2012-13	2013-14	2014-15
1 Electricity Purchased	12,224,920	14,420,880	11,909,160	12,704,223
2 Electricity from Windmill Renewable	4,966,285	4,886,176	6,069,197	1,785,625
% of Green Energy	40.62%	33.88%	50.96%	14.06%
Windmill Unit Generation Actual				6,443,831 @51%

Renewable Energy

On-site Renewable Energy Systems

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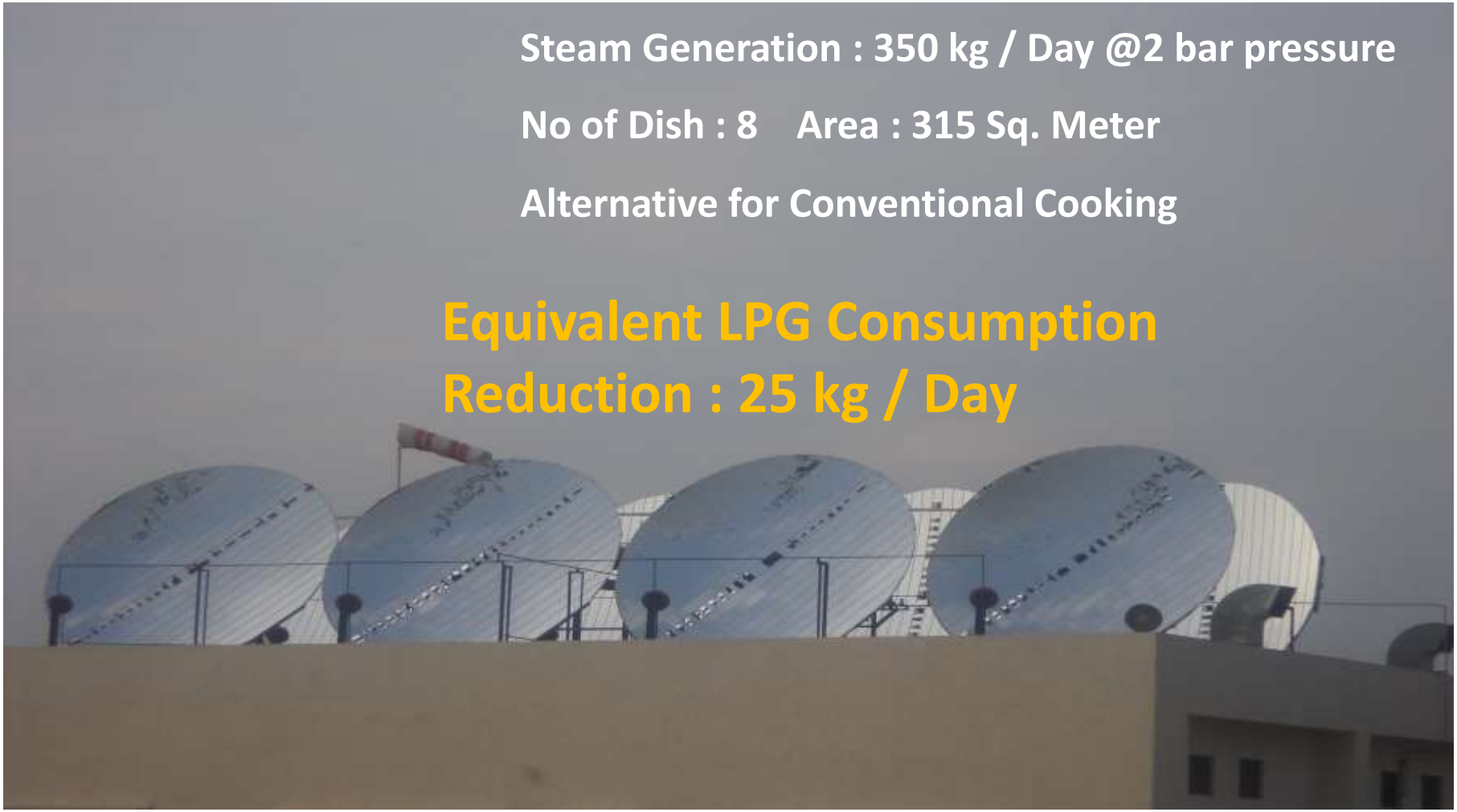
Renewable Energy Solar Steam Generation System for Canteen



Renewable Energy

On-site Renewable Energy Systems

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Biogas Plant Processes the Kitchen & Canteen Food Waste

Plant Capacity	• Waste 350 – 400 Kg / Day
Biogas Generation	• 25-30 Cubic Meter
LPG Replacement	• 10 -12 Kg / Day
Manure Generation	• 50 Kg / Day

Greenhouse Gas Mitigation

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% Reduction in GHG Emission Intensity

Sr. No	GHG Emission Intensity		Present Status Specific GHG emission (tCo2/BHP.)			% Reduction
			FY 13	FY 14	FY 15	
1	**Scope 1** – Direct GHG emission occur from sources that are owned or controlled by a company		0.718	0.684	0.689	**4.03 %**
2	**Scope 2** – GHG emissions from the generation of purchased electricity consumed by a company.	w/o Windmill	3.997	3.903	3.171	**20.66 %**
		With Windmill	2.642	1.914	2.725	**-3.141 %**
3	**Scope 3** – Emissions are a consequences of the activities of company, but occur from sources not owned or controlled by the company.		**Started interaction but not tracked in our record**			

% reduction in GHG emission intensity = [(0.718-0.689) / 0.718] *10 = 4.03%

Greenhouse Gas Mitigation

GHG Emission in tCO2

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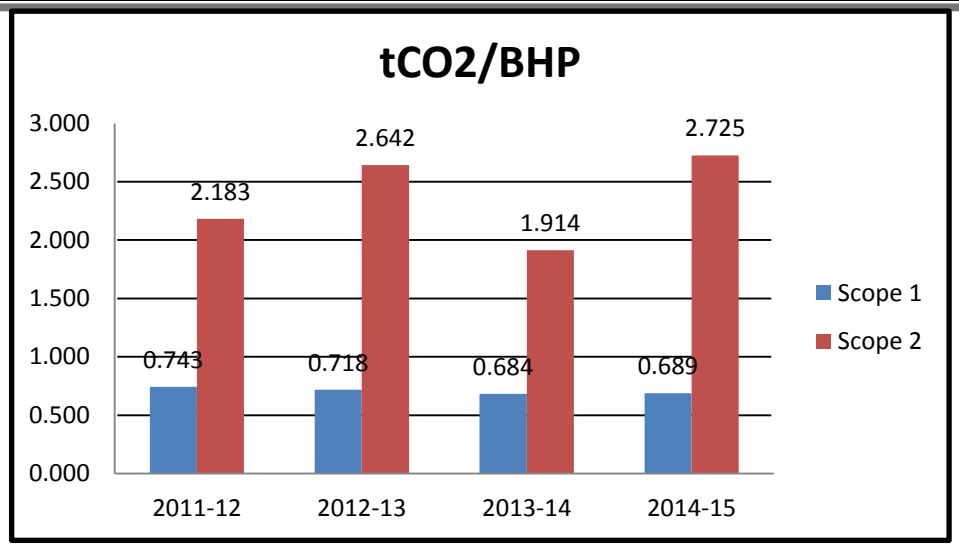
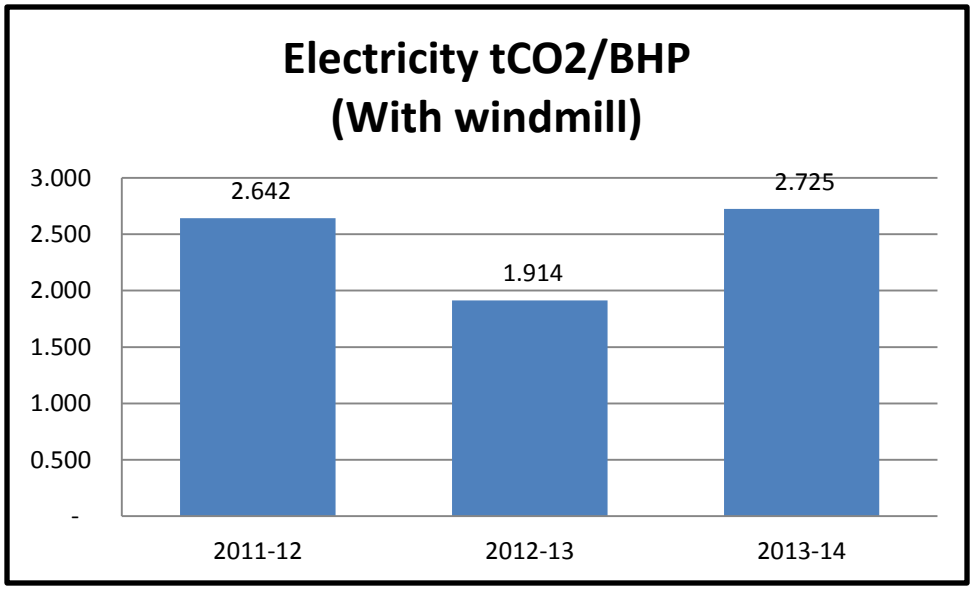
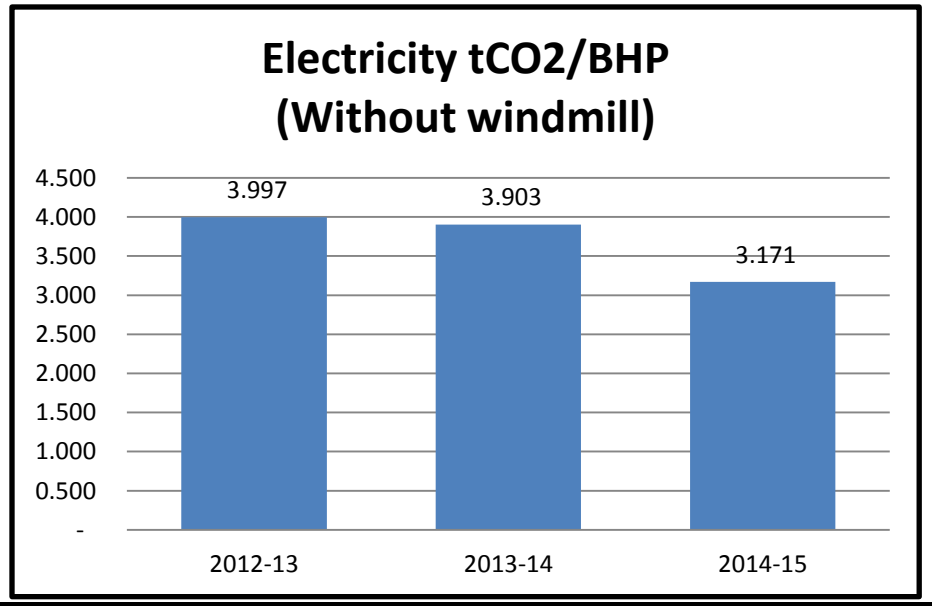


Better





Waste Management

Waste Disposal Hierarchy

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At source Segregation

- Color Coded Bins for identification & Segregation at point of generation
- Area Wise List of Hazadous Waste
- Characterization of Hazardous Wastes

Storage

- Dedicated Scrap Yard area approx. 512Sqmt.
- Scientific storage of Hazardous as well as Non-Hazardous Waste

Transportation

- Transportation of All wastes through SPCB/CPCB Authorized transporters.
- Display of Waste Labeling for education to transporters people & employees handling Hazardous Wastes

Disposal

- Scientific Landfill & Incineration of Wastes at Authorized Facility.

Waste Management

% of Total Hazardous Waste Recycled

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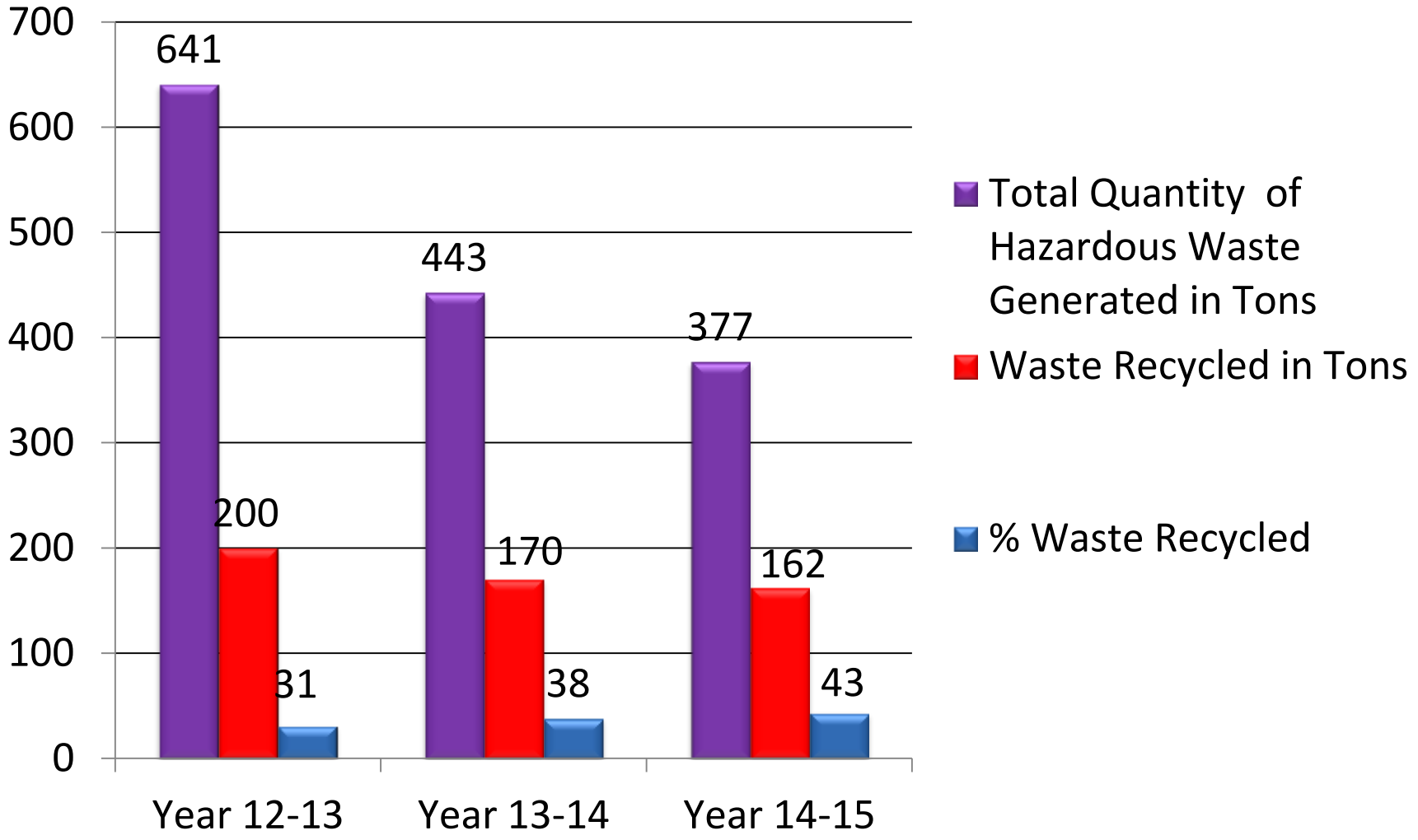

Waste Management

% of Non Hazardous waste Recycled

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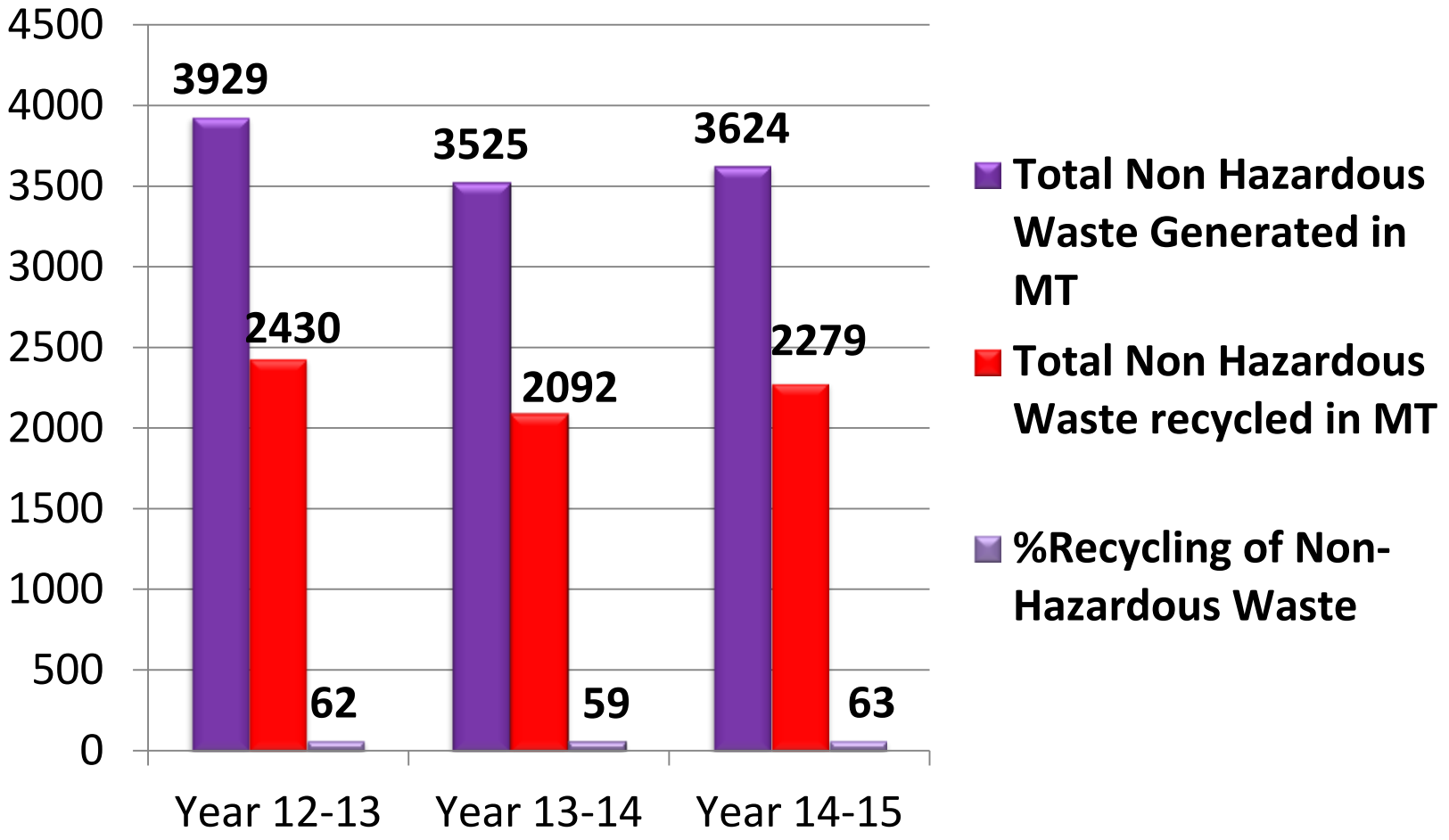

Waste Management

Solid Waste Reduction Project at ETP

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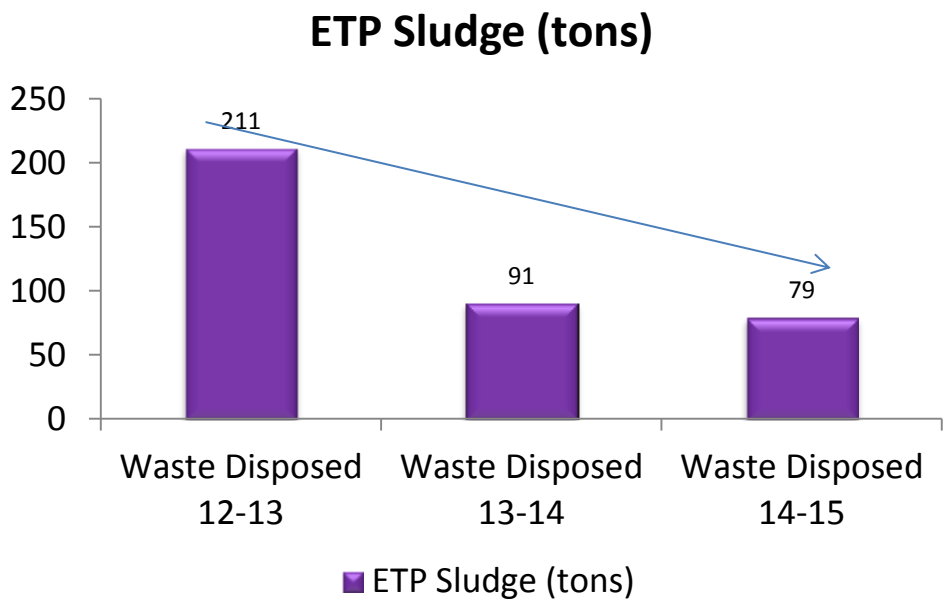
Installation of filter press machine for sludge drying



55% reduction achieved

Waste Management

Solid Waste Reduction at E Series Engine

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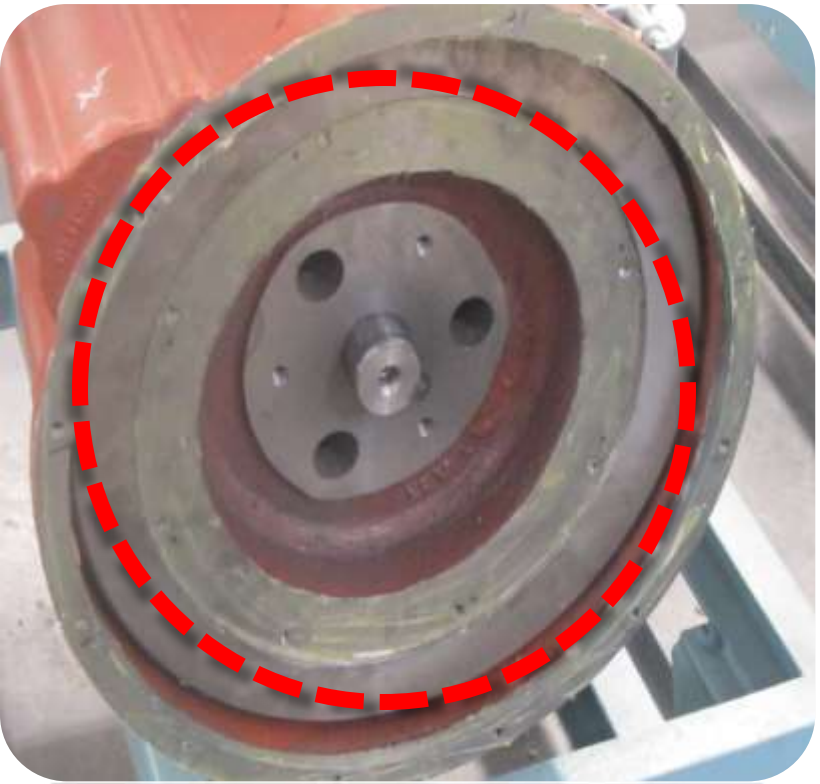
Before



For painting E-Series Engines previously using Grease to avoid paint to flywheel and bell housing

After

Templates prepared for painting E-Series engines which saves wastage of Grease

Waste Management

Solid Waste Reduction at Medium Engine

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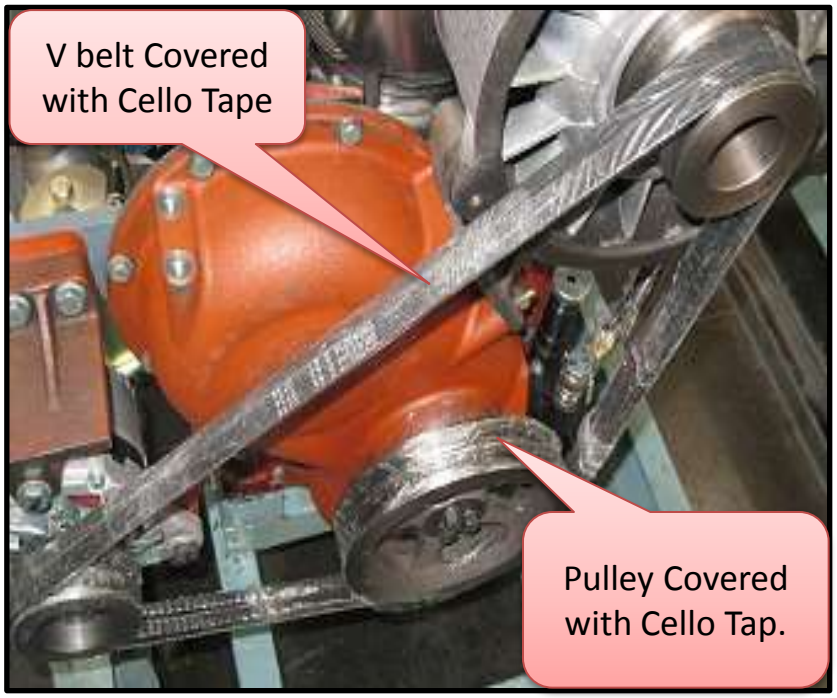
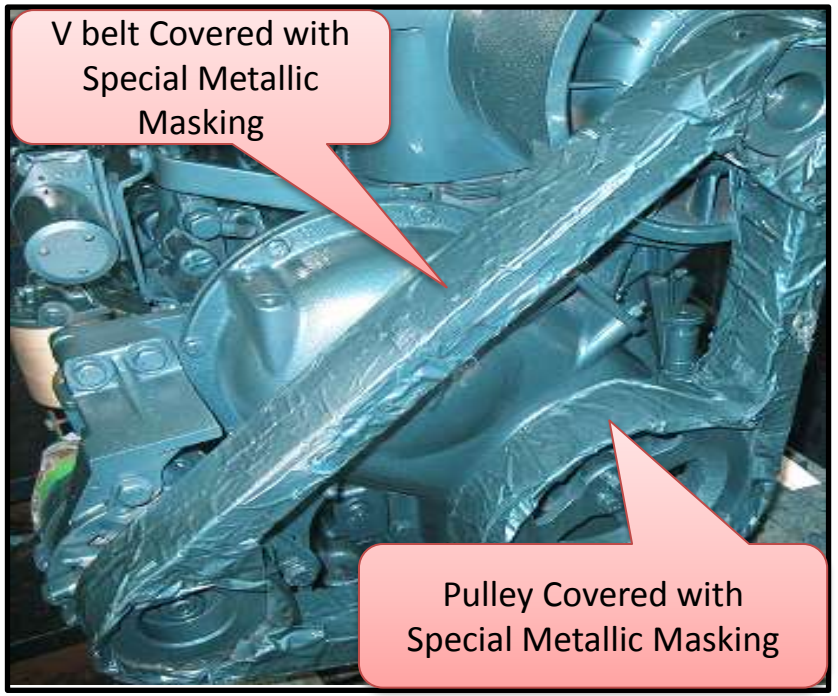
Before



Cello tape use for covering the belt,crank pulley & fan body pulley groove

After



By using modified masking covering the belt,crank pulley & fan body pulley groove

Waste Management

Solid Waste Reduction at GENSET packing

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Before

0.19 Tons Reduced

Foam Sheet used for Genset Packing

Wastage's

After

Edge Board used against Foam Sheet for Genset Packing

No Waste Generation

Material Conservation Recycling & Recyclability

Material Saved in Quantity

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Sr. No.	Projects	Targets	10-11	11-12	12-13	13-14	14-15	Total	UOM
1	Elimination of Foot	Short Term	***	***	131.4	57.9	68.7	258	Tons.
2	Elimination of drain cock & adaptor from Acc. Box Scope.	Short Term	***	***	2.175	2.175	2.175	6.53	Tons.
3	Weight reduction of Crank case.	Short Term	***	886	931	742	682	3241	Tons.
4	Weight reduction of Crank shaft.	Short Term	***	77	68	62	48	255	Tons.
5	Reduction in Structural steel.	Short Term	***	***	1573	***	***	1573	Tons.
6	Foam sheet reduction.	Short Te		**	***	0.19	0	0.19	Tons.
7	Use of water base chemical instead of 'K' cool coolant.				***	35000+ 35000	60000+ 60000	95000+ 95000	Ltrs.
8	Loctite 5060 Optimization In R 1040 Assembly				54	2.46	0.46	6.7	Tons.
9	7 ply laminates				54	2.054	2.054	8.214	Tons.
10	Integration of bearing cum oil sea housing for Varsha Engine.					27.60	27.6	55.2	Tons.
11	Varsha Engine side cover weight reduction.				***	7.15	7.15	14.35	Tons.
12	Wooden packing elimination using returnable skid.				***	***	74	74	Tons.
13	Hydraulic oil Recycle at M/C shop	Short		500	8500	8500	8500	42500	Ltrs.
14	Wooden packing elimination using corrugated box.	Short Term	***	***	***	***	1095	1095	Tons.
15	Reduction in oil consumption.	Short Term	***	219799	146303	133600	117568	617270	Ltrs.

Saving of 6587 Tons / Annum of Material from 12 projects

Material Conservation Recycling & Recyclability

Enriching Lives

Material Conservation Cost Saved

Fig in Cr.

Sr. No.	Projects	Targets	10-11	11-12	12-13	13-14	14-15	Total
1	Elimination of Foot	Short Term	***	***	1.34	0.59	0.7	2.6
2	Elimination of drain cock & adaptor from Acc. Box Scope.	Short Term	***	***	0.24	0.24	0.24	0.72
3	Weight reduction of Crank case.	Short Term	***	4.6	4.8	3.9	3.54	16.8
4	Weight reduction of Crank shaft.	Short Term	***	0.73	0.64	0.6	0.45	2.44
5	Reduction in Structural steel.	Short Te	***	***	1.6	***	***	1.6
6	Foam sheet reduction.	Short		***	***	0.03	0	0.03
7	Use of water base chemical instead of 'K' cool coolant.			*	***	0.16	0.24	0.43
8	Loctite 5060 Optimization In R 1040 Assembly				0.27	0.43	0.08	1.16
9	7 ply laminates				0.12	0.12	0.12	0.49
10	Integration of bearing cum oil sea housing for Varsha Engine.				***	0.18	0.18	0.36
11	Varsha Engine side cover weight reduction.				***	0.04	0.04	0.07
12	Wooden packing elimination using returnable skid.	Sh			***	***	0.27	0.27
13	Wooden packing elimination using corrugated box.	Short Term		***	***	***	1.42	1.42
14	Hydraulic oil Recycle at M/C shop	Short Term	0.13	0.13	0.13	0.13	0.13	0.65
15	Reduction in oil consumption.	Short Term	***	0.16	0.11	0.10	0.78	1.16

Thus Cost Saved Rs. 30 Crores

Material Conservation Recycling & Recyclability

Enriching Lives

Reduction in Raw material consumption.

RM Consumption Through Foot Elimination

Material saved
Steel
258 Tons

Out of that flywheel end side two removed & scrapped at customer end.

Engines supplied with four transportation foots.

To avoid the RM consumption, flywheel end side foots welded on returnable skid.

Cost saved:
Rs. 2.60 Cr .

Material Conservation Recycling & Recyclability

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Reduction in Raw material consumption.

Weight reduction of Crank Case (VAVE) .

BEFORE

Average weight of flat face crank case was approx. 107 Kg.

Material saved: Casting 3241 Tons

Cost saved: Rs. 16.84 Cr.

AFTER

VAVE crank case introduced & Weight reduced up to 88 Kg.

Material Conservation Recycling & Recyclability

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Reduction in Raw material consumption.

REDUCTION IN structural STEEL

Before

Material saved: Steel 1573 M Tons

After

MPI Building 165 m x 210 m : Structural steel excluding gantry girder for crane consumed was 2740 MT. it's a 49% of construction cost. Structural steel consumption 7.35 kg/sq. ft.

Cost saved: Rs. 1.6 Cr.

EPII Building 125m x 180 m : Structural steel consumed is 1167 MT. Structural steel consumption 4.82 kg/Sq. ft. It's a 35.7% of construction cost.

Total Material Saved 66 % With Respect To EP1 Structural Work

Material Conservation Recycling & Recyclability

Enriching Lives

Reduction in Raw material consumption.

Varsha casting Side covers

After implementation sheet metal side covers with reduced weight

Material saved:
Casting 14.35 Tons.

Cost saved:
Rs. 0.07 Cr.

Material Conservation Recycling & Recyclability

Enriching Lives

Reduction in Raw material consumption.

Material Conservation Recycling & Recyclability

Enriching Lives

Reduction in Raw material consumption.

Use of Treated Oil

Green Supply Chain

Enriching Lives

Baseline and Target SCM BSC FY 13-14 Results

Perspective	Performance Parameters	UOM	Measure	13-14 Target	13-14 Actual
Financial	Annualized Cost Reduction	Rs Cr	Project Completion & Accrual	25	21.12
	Inventory Control	Rs Cr	Reduction	58	56
Customer	On time delivery -'Project Unlock'	% on time	On time Availability	98%	98%
	Cost of Poor Quality – Internal Rejection / Warranty Cost	Rs Cr	Timely project completion	50 % reduction	52 % reduction
	CPCB Project - Ensure QCD	% On time	Project Completion	100 %	100 %
	New Product development – Project Unlock	% On time	Timely project completion	As per Lead time	As per plan
	GOEM Common Sourcing	% Completion	Cost Reduction	100 %	90%
Internal	Quality Measures - PPM Reduction	PPM	PPM Reduction	3500	5830
	Capacity Assurance for AOP Volumes	Per Day Capacity	Timely Completion	DV- 5 4R810- 20	DV- 5 4R810-20
People	Skill Gap	No. of Gaps	Gap Identification	No Gaps	7 improvement areas
	Job Descriptions for all	% Completion	No's of JDs	100 %	100%

Green Supply Chain

Eliminating Use of Natural Resources

Enriching Lives

- Objectives:
  - Reduction/Elimination of Natural resources like Wood, Energy, Water, Sand etc.
- Initiatives taken:
  - ❑ Conversion of Sand Casting to Aluminum Die Casting for over 30 components thereby reducing Silica Sand consumption.
  - ❑ Reduction of Power Consumption per Unit of castings produced.
  - ❑ Supplier PPAP document in soft form instead of Hard copy.
  - ❑ Re-designing packaging & forwarding method for base plates of Genset.
  - ❑ Introduction of Metal Skids in stead of wooden packaging for radiators higher KVA engine models & alternators.
  - ❑ Milk Van routes for Kolhapur & Pune based suppliers.

Green Supply Chain

Enriching Lives

De-featuring and weight reduction

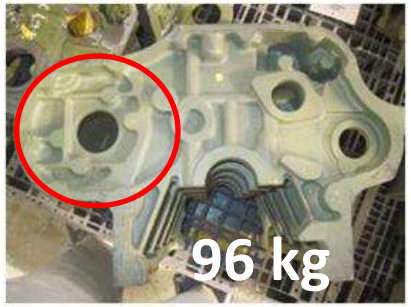
HA2 Crank case

BEFORE

AFTER

HA4 Crank case

BEFORE



AFTER

RB33 Crank case

BEFORE

AFTER

VAVE Project plan

4R1040 Crank case

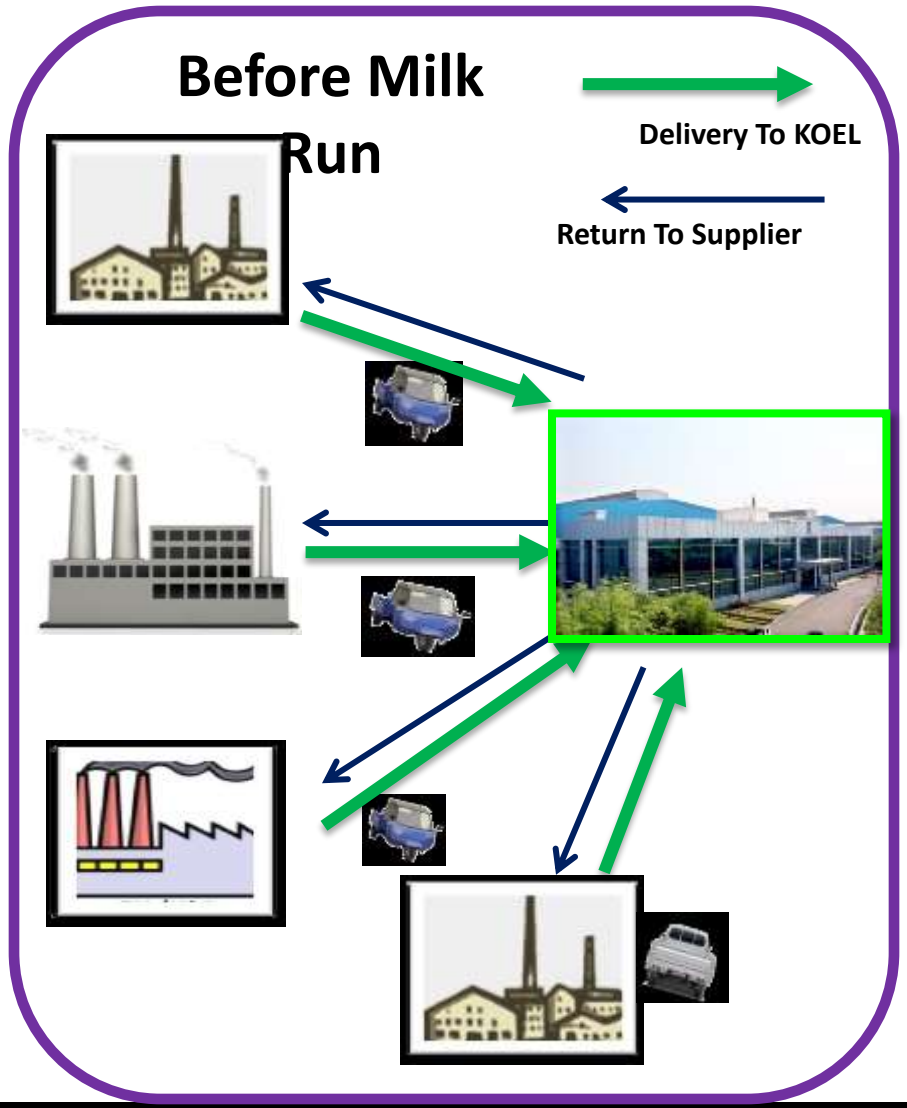
BEFORE

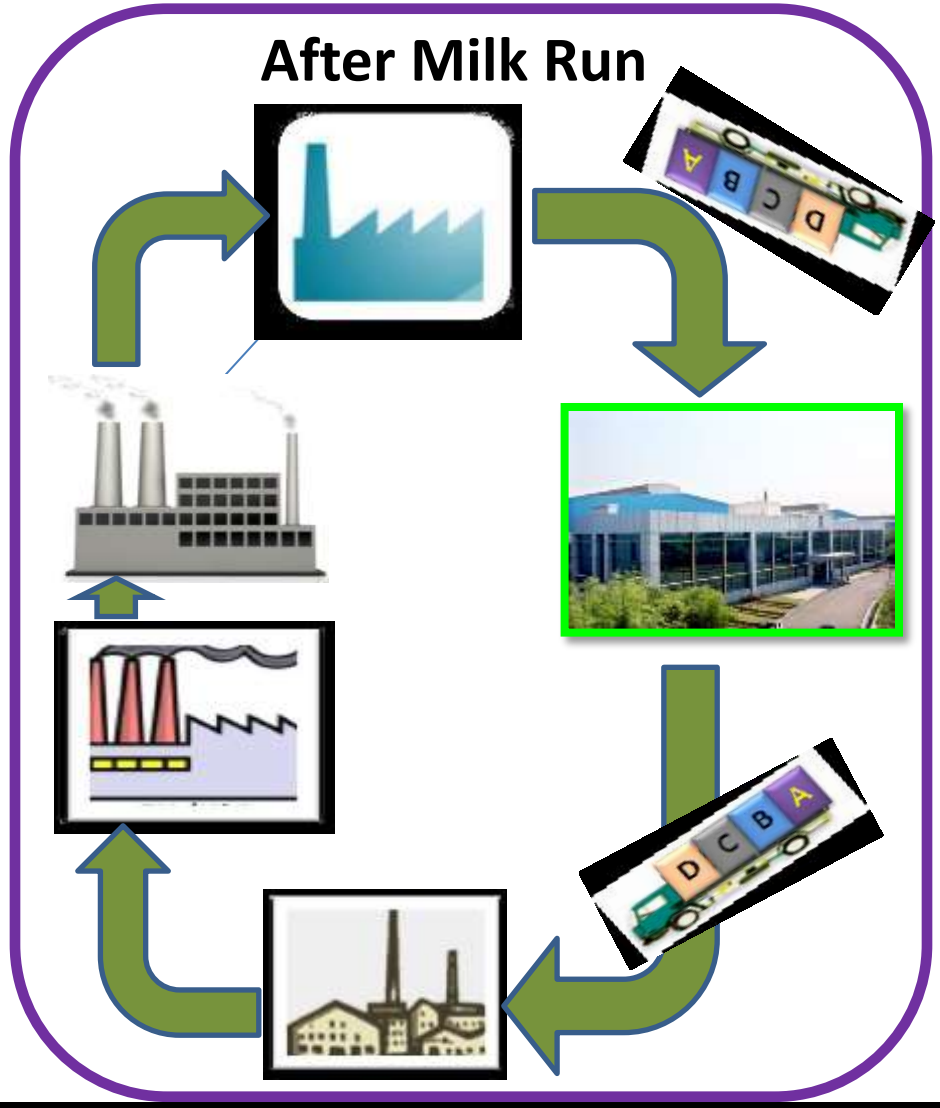
AFTER

Green Supply Chain

Enriching Lives

Vehicle Trip Optimisation - Milk Run -Model





Green Supply Chain

Supplier Quality Improvement Contest

Enriching Lives

Success Story '2014:-

Some Glimpses of the event

Green Supply Chain

Enriching Lives

Recognition Programs for suppliers

Supplier felicitation for green initiatives during Vasundhara Sanvedana Puraskar

Product Stewardship

Reduction in Toxic or Hazardous substances in product

Enriching Lives

Paint Consumption Reduction For PG Engines

Before

1. Paint Supplier for PG Engine M/S Cougar Paints
2. Paint Shade for PG Engine – Primer – AD Gray & Top Coat - Rivera Blue
3. In Paint & Primer up to 70 % Volatile material is used

After

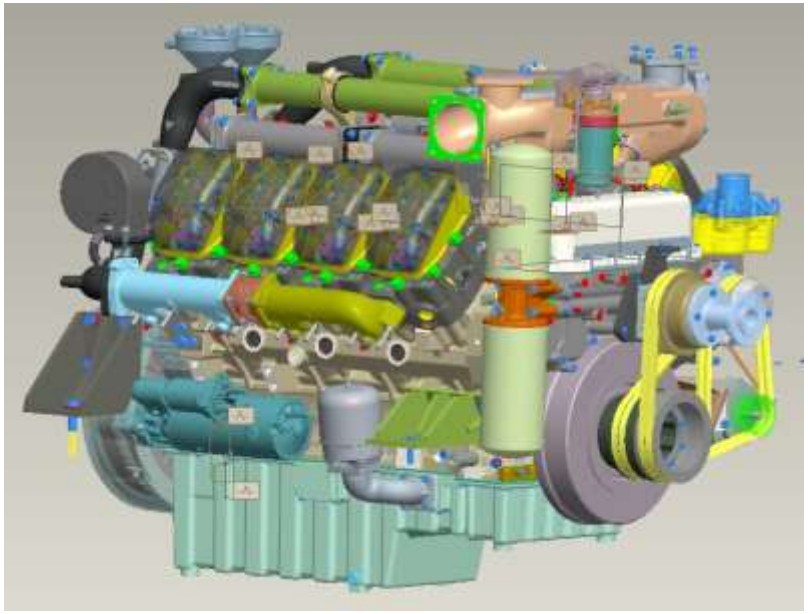
1. Paint Supplier for PG Engine M/S KNPL
2. Paint Shade for PG Engine – Primer – AD Gray & Top Coat - Perl Night Blue
3. Volatile material is reduced by 26 %.
4. **In FY 14-15 Primer consumption is reduced by 3315 liters**
5. **In FY 14-15 Top Coat consumption is reduced by 8628 liters**

Product Stewardship

Design for Environment Program

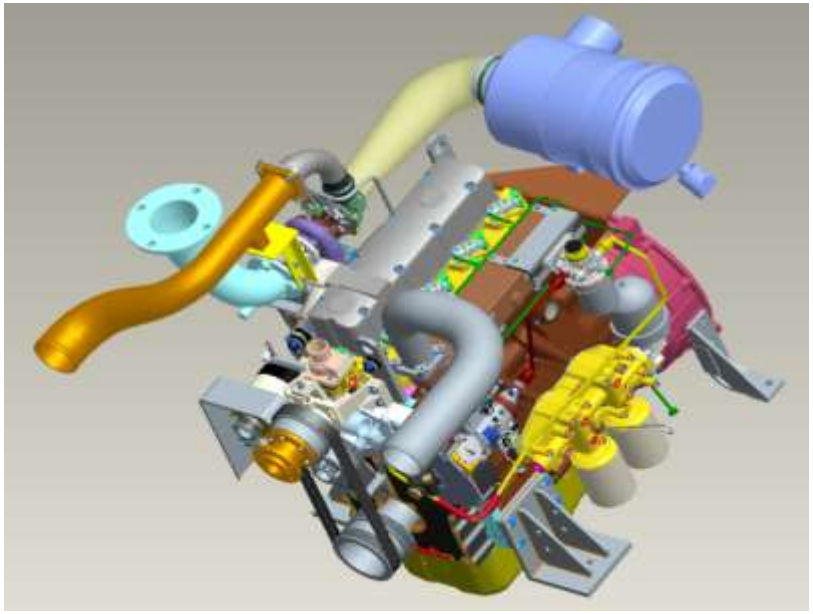
Enriching Lives

- **All Industrial Engines are converted from BS II emission norms to BS III norms**



Industrial Engine

- **All Power Generation Engines are converted from emission norms CPCB I to CPCB II norms**



Power Generation Engine

Life Cycle Assessment

Life Cycle Management for Products/Service

Enriching Lives

Management strategies adopted to minimize the environmental impact of the product during its life cycle:

Raw Material

- Foot Elimination.
- Drain Cock Elimination.
- Rain Cap Elimination.
- Wooden Box Elimination.
- Acc. Box size Reduction

R & D operations.

- Energy efficient product designs
- Flywheel Weight Reduction.
- Integral Crankshaft.
- Crankcase Weight Reduction.
- Implementation Of Aluminium Header, Rocker Cover & Inlet Manifold.
- All in-house Gensets are converted compatible for bio-fuel.

Manufacturing operations.

- Reduction In Loctite Consumption .
- Reduction In Diesel Consumption.
- Reduction In Oil Consumption.
- Use Of Water Base Chemical instead Of Coolant.

Life Cycle Assessment

Life Cycle Management for Products/Service

Enriching Lives

Management strategies adopted to minimize the environmental impact of the product during its life cycle:

Impact	Raw material extraction	R & D operations	Manufacturing operations	Usage phase	Disposal
Environmental	---	• Design of optimum weight components • Emissions Reduction • Upgrading technology • Bio-Fuel project		Product is useful through out life cycle.	90% of Engine & Genset parts are recyclable.
Energy	Energy audits and suggestion to suppliers		• Renewable Energy Project • New technologies to save energy		
Resources	• Foot Elimination. • Drain Cock Elimination. • Rain Cap Elimination. • Wooden Box Elimination. • Acc. Box size Reduction	• Improving Power To Weight Ratio • Flywheel Weight Reduction. • Integral Crankshaft. • Crankcase Weight Reduction. • Implementation Of Aluminium Header, Rocker Cover & Inlet Manifold.	• Reduction In Loctite Consumption . • Reduction In Diesel Consumption. • Reduction In Oil Consumption. • Use Of Water Base Chemical instead Of Coolant.		

Life Cycle Assessment

Enriching Lives

KOEL Constant Endeavor to Develop Efficient and Environment Friendly Products, & Our Typical Focus on the Following Areas –

Upgrading Technology

- Improving Present Designs to Reduce the Consumption of Naturally Available Fuel and Lubricating Oil

Improving Power To Weight Ratio

- Reducing Required Raw Material, to Develop the Same Power Output From the Engine.

Emissions Reduction

- All Engine Series Comply With the Currently Applicable Emission Norms
- The Process of Being Ready for the Next Generation of Emission Norms.

Life Cycle Assessment

Energy Efficient Products to Market

Enriching Lives

- ✓ KOEL had set a new benchmark in the Power Generation market by launching of 32 kVA / liters Power Density Engine
- ✓ 4R-1040 Engine series with 4 valves / cylinder to meet forthcoming Emission Norms with improved Fuel Efficiency.

100 kVA	6R1080TC – 6 cylinder Turbocharged, inline, 6.32 Liters	4K1080TA – 4 cylinder Turbo after cooled, inline, 4.32 Liters
125 kVA	6R1080TA – 6 cylinder Turbocharged, inline, 6.32 Liters	4K1080TA – 4 cylinder Turbo after cooled, inline, 4.32 Liters
140 kVA	6SL90TA – 6 cylinder Turbo after, inline, 8.86 Liters	6K1080TA – 6 cylinder Turbo after cooled, inline, 6.32 Liters
160 kVA	6SL90TA – 6 cylinder Turbo after, inline, 8.86 Liters	6K1080TA – 6 cylinder Turbo after cooled, inline, 6.32 Liters

OTHERS

Enriching Lives

Indian Green Building Certification (IGBC) for New Admin Building

We have applied for **IGBC certification** for one of our **Administrative building-II** On 17 Sept. 2014

Indian Green Building Coun

IGBC Green Existing Buildings Rating System (O&M)

Pilot Version

Registration Form

We are interested to register our project as a 'Pilot' for IGBC Green Existing Buildings rating system (O&M) and share the learning's for further development of rating system.

We are providing below the details of our existing building project for registration:

Name of the organisation	Kirloskar Oil Engines Ltd.
Name of the project	Administration Building II
Location	Plot No D1, Kagal Hatkanangale MIDC,Kolhapur
Built-up area (Sq.m)	2267.44
Building Type (Office / Retail / Hotel / Resort / Hospital / Airport / Bank / College / School, etc.)	Office
Building operational since (Please mention the year)	20
Is the project designed and rated as a green building earlie	
Please mention the rating system and rating level ac	NA
Contact Person	Vilas P. Kulkarni
Designation	General Manager, Corporate Utility
Telephone / Mobile number	9881009981
Email address	**Vilas.kulkarni@kirloskar.com**

Applied

(Note: Please e-mail your replies to padmanabh.subramanian@cii.in/rajesh.deenadayalan@cii.in or Fax the same to the number: **040 – 23112837)**

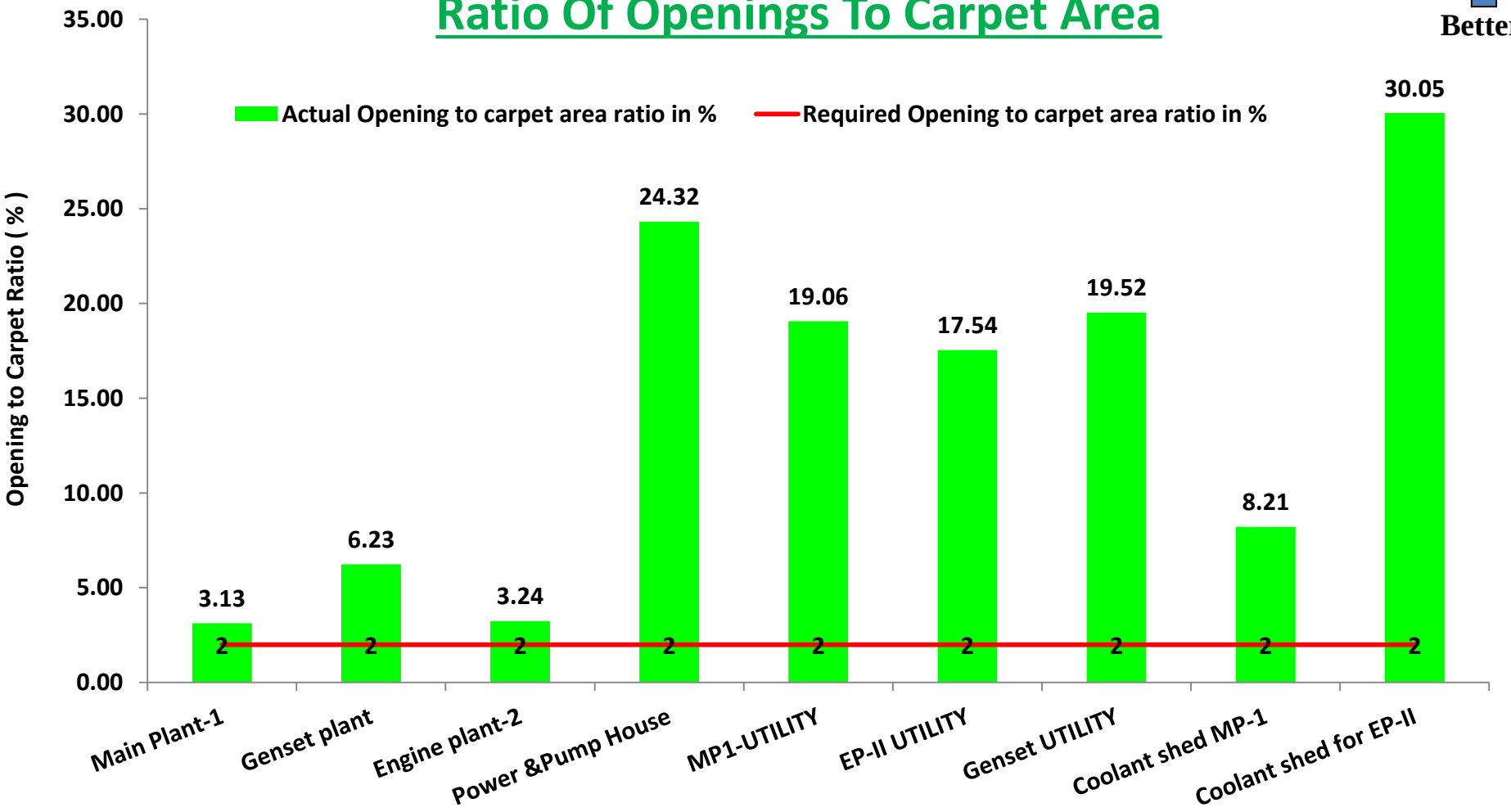
OTHERS

Fresh Air Ventilation

Enriching Lives

Naturally Conditioned

Better

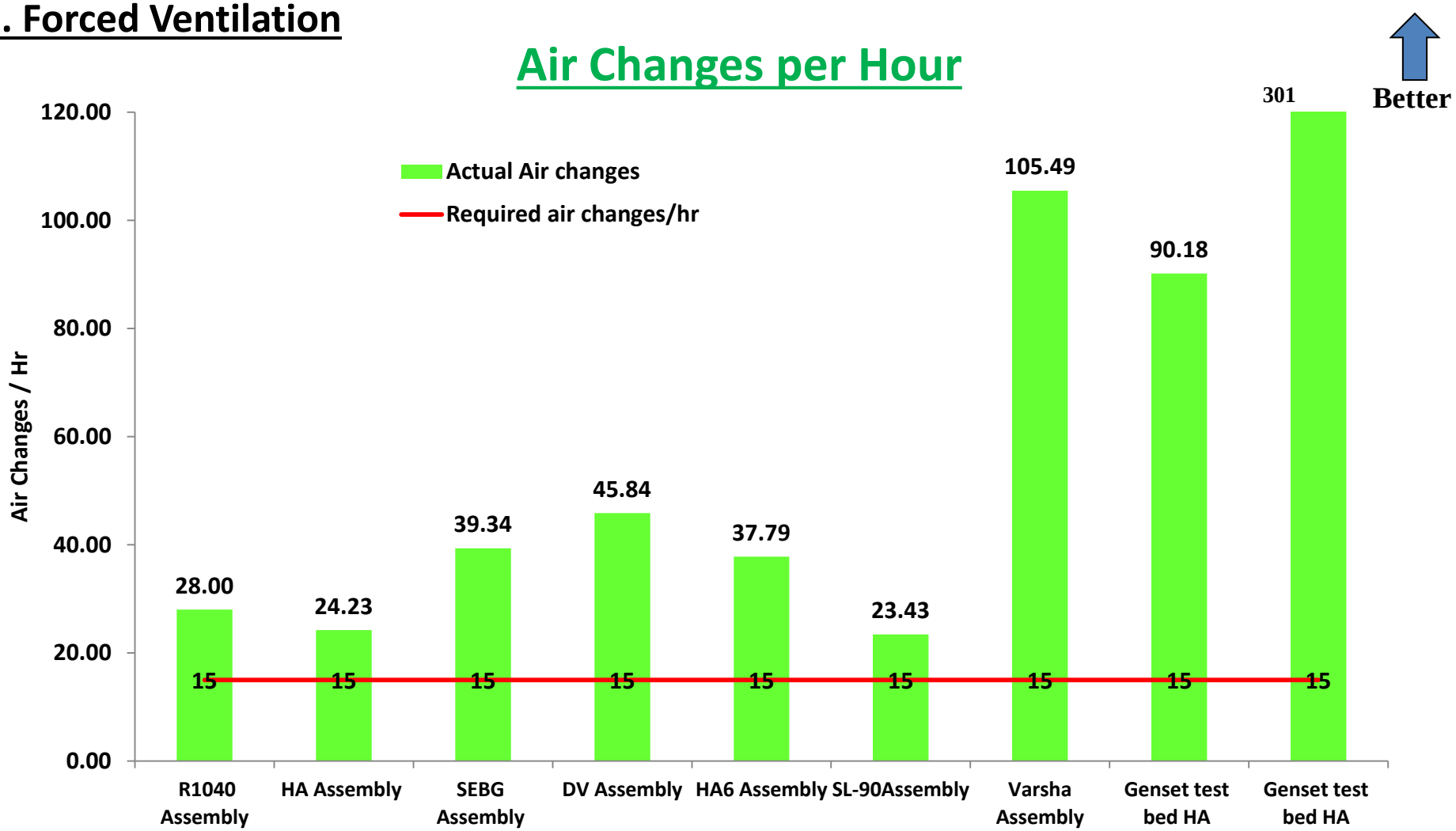


OTHERS

Fresh Air Ventilation

Enriching Lives

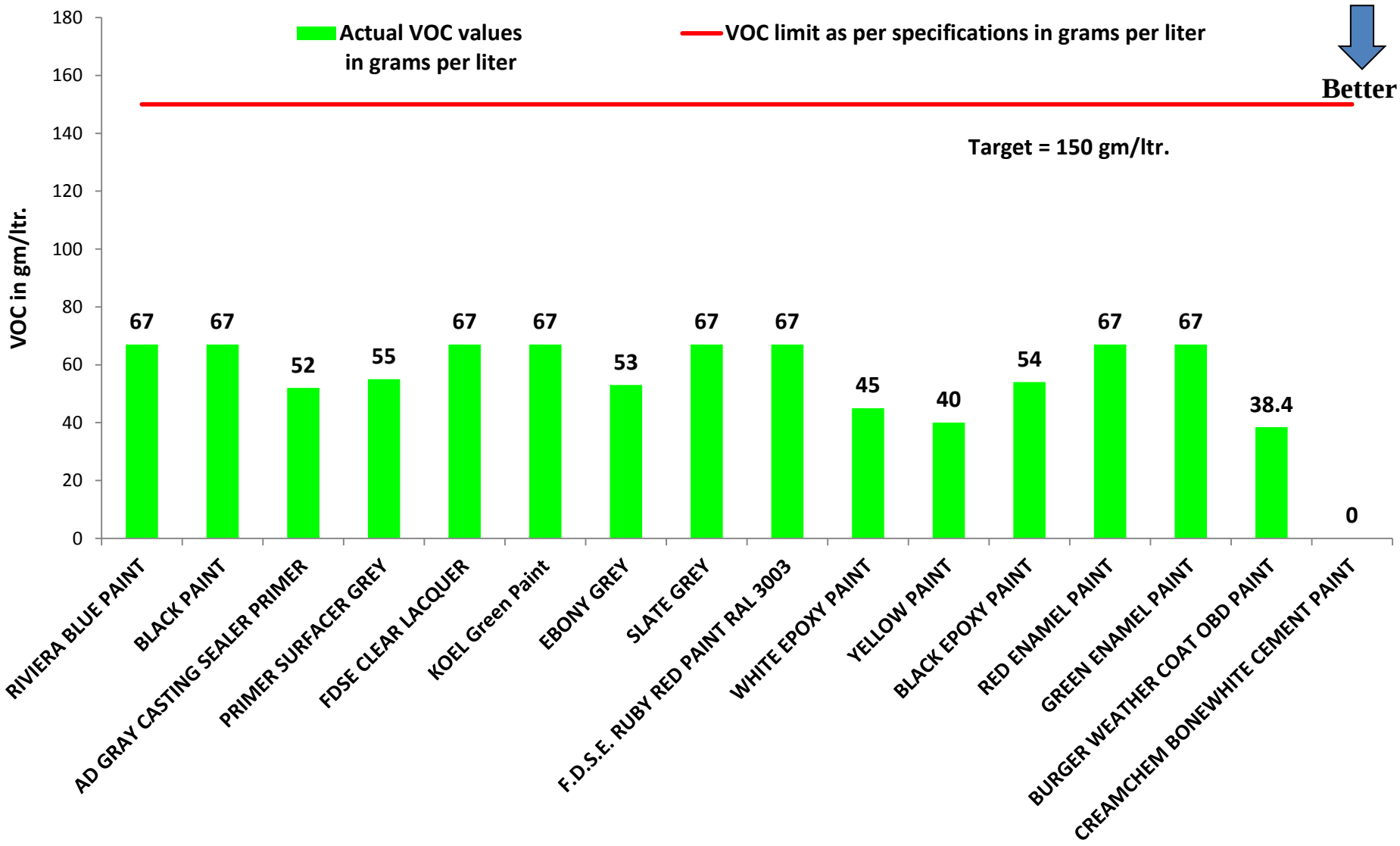
b. Forced Ventilation



OTHERS

Paints used in Plant with low VOC limits

Enriching Lives



OTHERS

Eco Friendly House keeping Chemicals

Enriching Lives

We are using following Eco Friendly products for Housekeeping and Maintenance

Name Of Chemical	Use	Make
1. TLC	Toilet Cleaning	MINITEK
2. Superdet	Multi purpose	MINITEK
3. Clodet	Toilet Cleaning	MINITEK
4. LAF	Air Freshener	MINITEK
5. Solvin 85	Floor Scrubbing	MINITEK
6. Marbolian	Marble Scrubbing	MINITEK
7. FP	Furniture Cleaning	MINITEK
8. SX	Steel Cleaning	MINITEK
9. Cleens	Glass Cleaning	MINITEK

- Minimizes exposure to concentrates
- Reduced bio-concentration factor
- Reduced flammability
- Reduced added dyes, except when added for safety purposes
- Reduced added fragrances
- Reduced skin irritants
- Reduced volatile organic compounds (VOCs)
- Reduced packaging


certificate of registration

This is to certify that the management systems of

MINITEK

have been formally assessed by International Certifications and found to comply with the requirements of

Eco Warranty:2010

Environmental Management Systems - Requirements

C29674

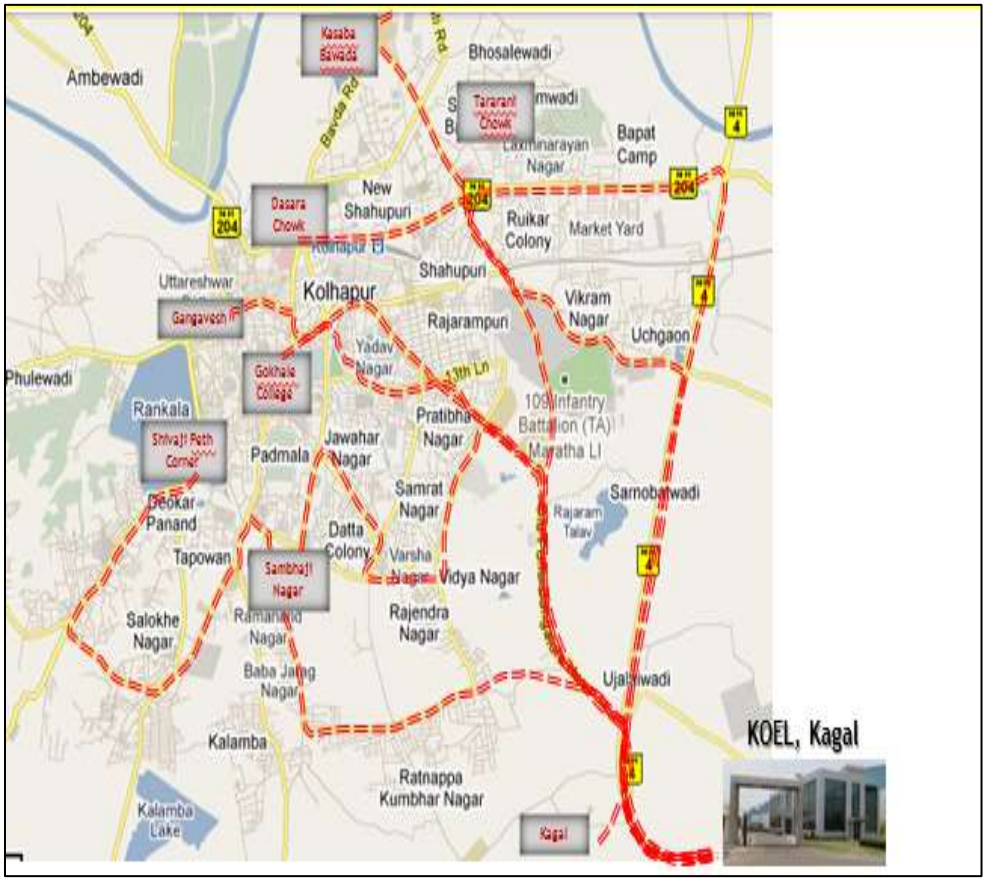
OTHERS

Access to Public Transport / Shuttle Services

Enriching Lives

Facility for Commuting Employees With Brand New Buses.

49 Seater – 7 Buses & 27 Seater – 3 Buses,
Carrying 1206 Employees from all parts of Kolhapur and Kagal
Also 3 company vehicles (Amaze, Sumo and Bolero) for internal transport



OTHERS

Percentage of Green belt in unused site area

Enriching Lives

2006-07

2007-08

2014-15

OTHERS

Percentage of Green belt in unused site area

Enriching Lives





- **Landscape Developed on Treated effluent**
- **Lawn – 3832 SQ.M. ; Grass Seeds – 12500 SQ.M**
- **Trees - 3484 Nos.**
- **Large Shrubs – 1647 Nos.**
- **Medium Shrubs – 7764 Nos.**
- **Creepers and Ground Covers – 4089 SQ.M.**












OTHERS

Efforts taken to Create and Maintain Bio-diversity

Enriching Lives

- Rain water storage tank (Kund), placing Gappi fish
- Lotus Pond – 6 Nos. (Algai and snail) Attract Birds.
- Vermicomposting plant
- Natural water ponds
- Plantation of Bamboos, Neem, Pimpal
- Mass Plantation
- Drip and sprinkler Irrigation
- Timely spraying of fertilizers

OTHERS

Efforts taken to Create and Maintain Bio-diversity

Enriching Lives

Bio-Diversity in the facility






OTHERS

Recreational and inspirational open spaces provided inside the facility

Enriching Lives

Volleyball

- Kabaddi ground 225 Sq.Mtr
- Volley ball ground 225 Sq.Mtr
- Cricket Ground base preparation is in planning stage 5625 Sq.Mtr
- Chess and carom area 374.37 Sq.Mtr
- Library area 49.63 Sq.Mtr

Kabaddi

Chess

Library

Carrom

OTHERS

Kirloskar Vasundhara International Film Festival

Enriching Lives

Innovative attempt in creating awareness in the society

Kirloskar Vasundhara International Film Festival creating awareness among society on environment through displaying international movies and posters on wild life, nature, energy and water, organizing poster competition for school children, conducting nature walk by employees and awards to the personalities who had significant work in this direction.

- **Save Tigers – FY 2010**
- **Save Bio diversity – FY 2011**
- **Sustainable Lifestyle – FY 2012**
- **Conserve Water..Safeguard Future – FY 2013**
- **5R – Reduce, Reuse, Recycle, Refuse & Recover – FY 2014**

Vasundhara Journey

GreenCo Certification
Kagal Plant

Enriching Lives