Godrej interio

GREENCO SUMMIT 2016

ABOUT GODREJ

118 YEARS OLD- EMPHASIS ON CUSTOMER CENTRICITY & OTHER STAKEHOLDERS NEEDS

An Industrial Garden Township of 3000 acres in Mumbai, India

14 SBUs with Corporate Offices & Manufacturing Facilities

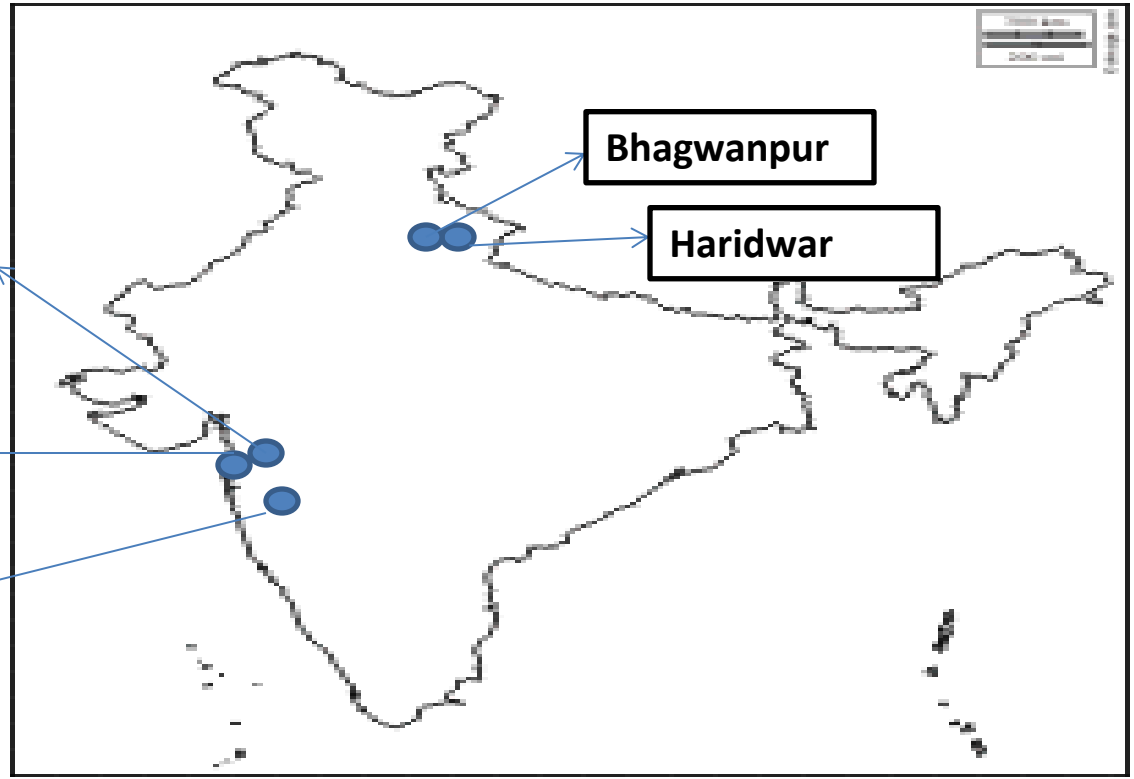
Employee Welfare through Residential Facilities

Employee Welfare through Company Schools

Commitment to Society through Godrej Memorial Hospital

Commitment to Sustainability through 1800 acres of Mangrove Plantation

OUR FIVE MANUFACTURING LOCATIONS



Mission : Enriching life by transforming home and work spaces

Vision : Godrej – The choice for home and workspace solutions





Touching lives of over 228 million people




OUR VALUES

Integrity

Trust

To Serve

Respect

Environment

STEERING BUSINESS TOWARDS SUSTAINABILITY

Top management champions the cause of sustainability both within the group and outside.

Mr. J. N. Godrej
Chairman & MD, G & B

- Involved in 9 Committees at National & International level
- Chairs Good & Green Governing Council across Godrej Group

Mr. Anil Mathur
COO, Godrej Interio

- Chairs Good & Green Products Council across Godrej Group
- Chairs Furniture & Fittings Skill Council (CII)
- Chairs Association of Furniture Manufacturers of India (AFMI)

ABOUT OUR GREENCO CERTIFIED PLANTS

GREENCO PLATINUM RATED

Shirwal plant

(Relocated from Vikhroli, Mumbai in 2011)

Total Area – 24,420 SQM

Total Strength

- Management Staff : 119
- Total Workers: 298

GREENCO GOLD RATED

Plant 13&14, Vikhroli

Total Area – 38,734 SQM

Total Strength

- Management Staff : 183
- Total Workers: 1070

GODREJ INTERIO PRODUCT PORTFOLIO

Meeting the needs of changing lifestyle …Transforming life … Everyday , Everywhere …

Kal bhi

Aaj Bhi

176 product solutions for home and institution spaces

STRATEGIC DIRECTION – GODREJ INTERIO

6 focus areas to achieve market leadership & profitable growth with innovations and sustainability as the central focus

FOSTERING A CULTURE OF SUSTAINABILITY

National and International Green certifications

Green Buildings

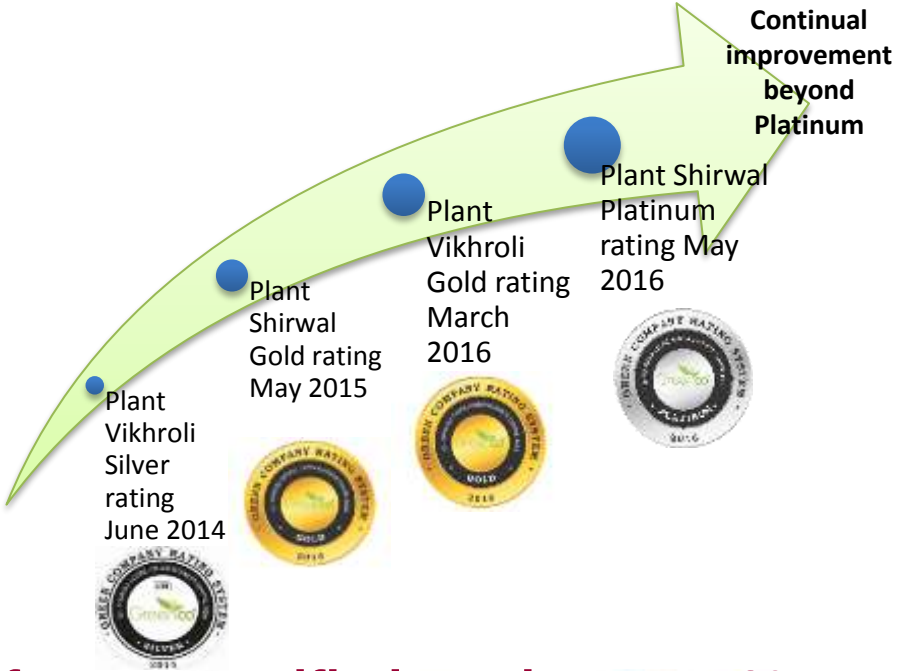
IGBC GOLD certified showroom

IGBC GOLD pre - certified factory – Shirwal Phase 2

Green Products

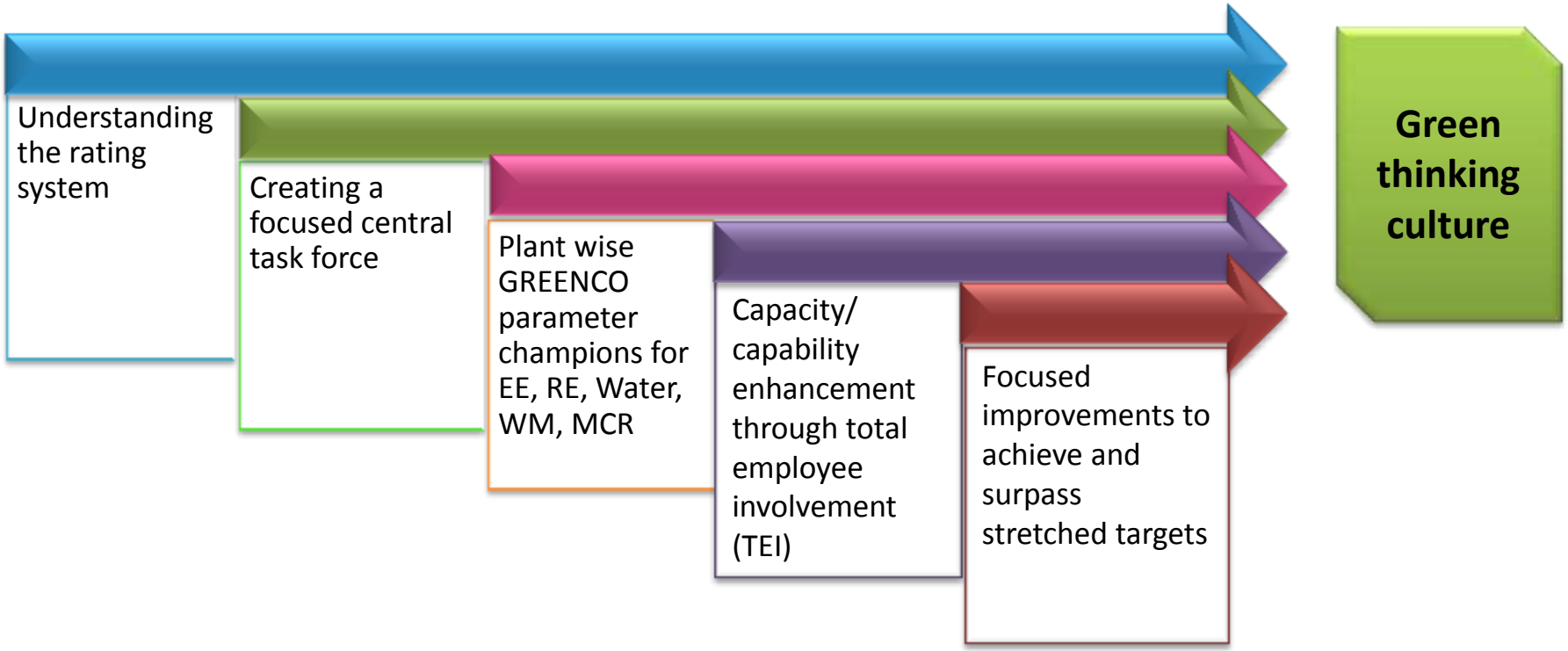
3 BIFMA Level certified products	**35 GREENGUARD certified products**	**6 GRIHA certified products**

Green Company Rating



For FY 15-16 revenue contribution of green certified products = 16%

OUR GREENCO PLATINUM JOURNEY

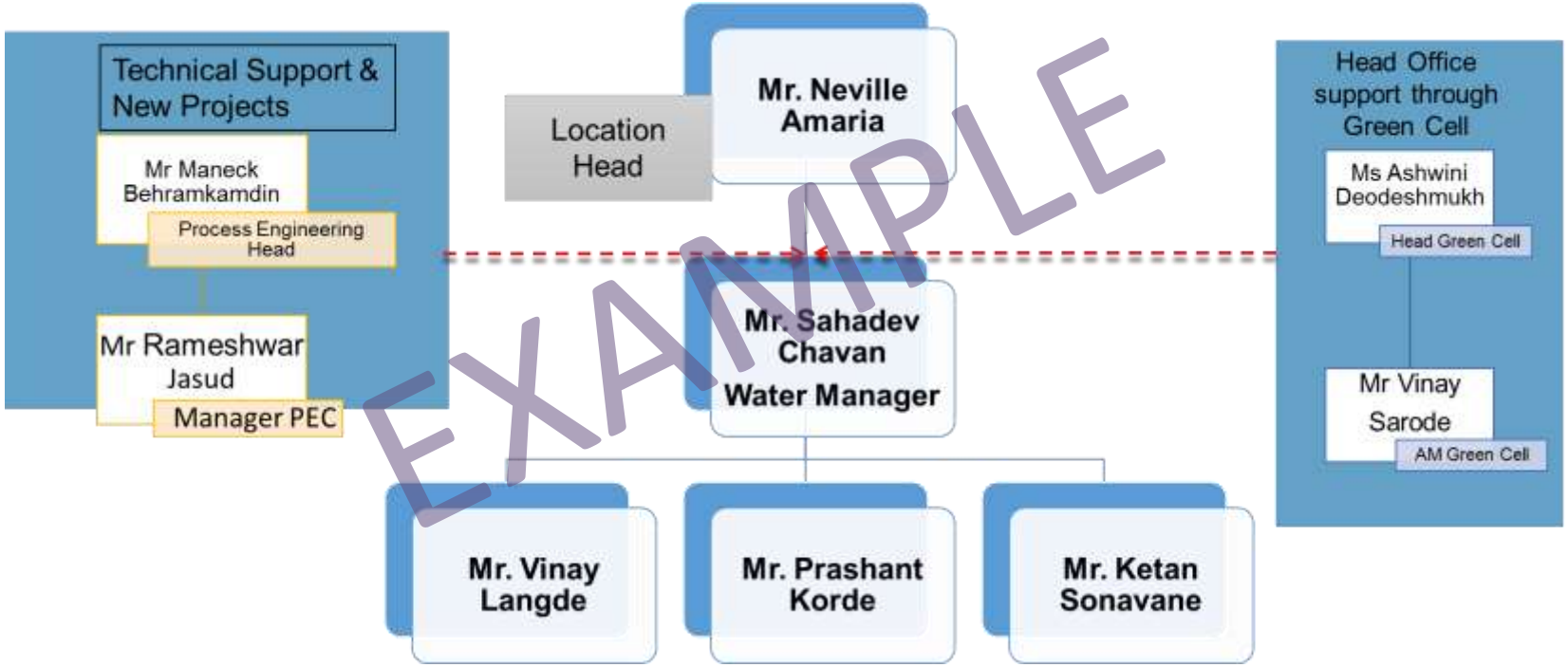


CAPACITY BUILDING AND EMPLOYEE INVOLVEMENT

ORGANIZATION STRUCTURE

TO ENABLE PROCESS CHAMPION AND FOCUS ON THE GREENCO PARAMETRES

Example- Water Management structure



COMMUNICATION STRATEGY FOR AWARENESS CREATION

- **Visual Communication**
  1. Posters
  2. Department wise / machine wise display.
  3. Real time display of Energy/ air consumption via LCD
- **Internal Communication**
  1. Key parameters like energy, water, material, waste conservation, ***behavioural*** training included in the Induction program for all contract employees.
  2. Training & Short film screening for workers on energy efficiency through activity.
  3. Green events and quiz for workers and staff.
  4. Communication on achievements
  5. Encouragement for green kaizens.
  6. Special points for green Initiatives in interdepartmental Brighter Workplace Contest.
- **External Communication**
  1. External training through CII & other programs.
  2. Awareness programs in nearby schools for beyond the fence communication
  3. Encourage employees to participate in external case study/kaizen competitions.

EMPLOYEE INVOLVEMENT

Training programs

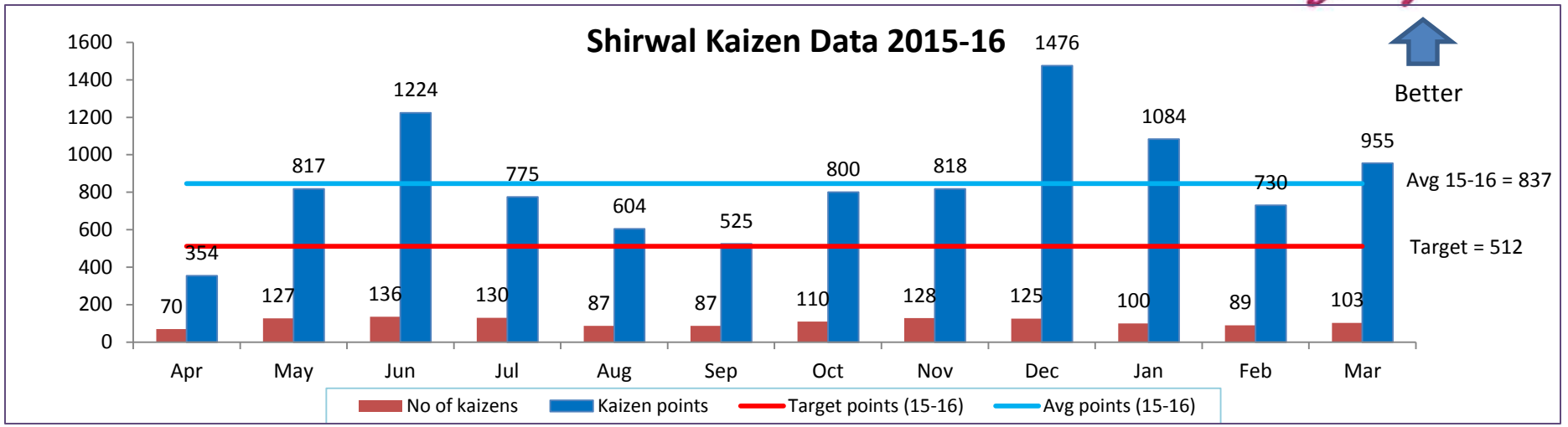
Waste management display board

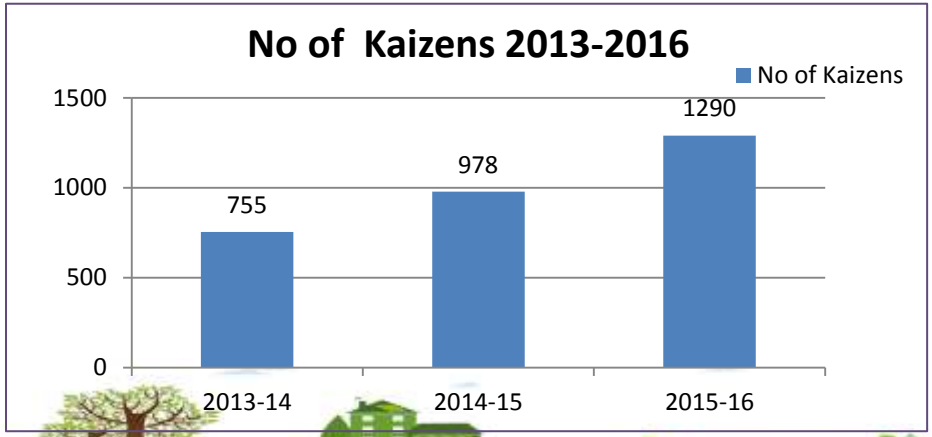
Plant heads address to all employees on Energy Conservation Week

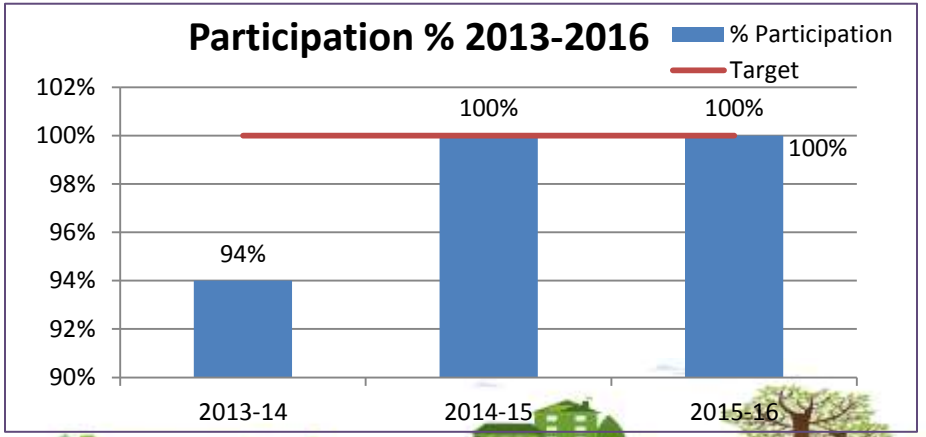
Poster and Slogan competition themed “Save Energy Save Future”

Takshashila training centre

INNOVATION – KAIZENS

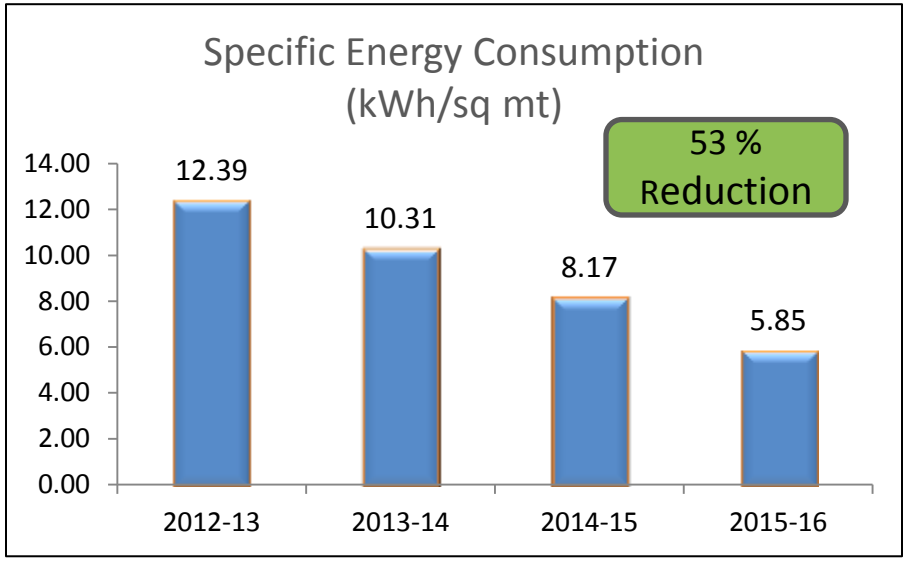




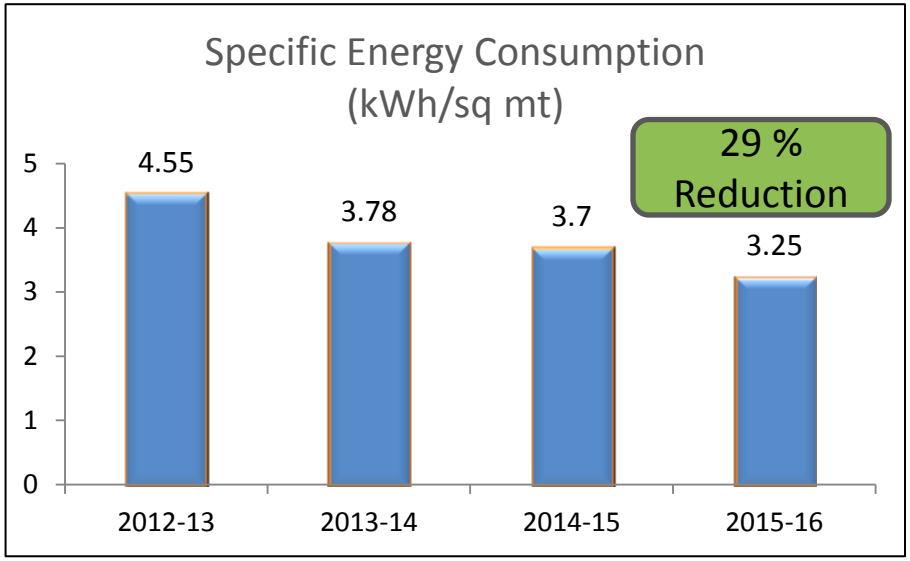


energy efficiency

ENERGY PERFORMANCE



Specific Energy Consumption- Shirwal



Specific Energy Consumption- Vikhroli

Godrej Interio Vikhroli plant is also ISO 50001 certified

ONLINE MONITORING OF ELECTRICAL ENERGY AND AIR CONSUMPTION ON CLOUD BASED SYSTEM

Features of Smartsense

- Cloud based system with storage space up to 3 years of data
- Data provided is
  - kWh
  - Voltage
  - Current
  - Consumption
  - Department wise consumption
  - Machine wise consumption
  - Daily reports to all energy cell Members.
- 96 % Electrical Energy monitored by 51 meters inside the plant

ENERGY SCORE CARD

Dept	Node name		Unit	2-Mar	3-Mar	5-Mar	7-Mar	8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	14-Mar	15-Mar	16-Mar	27-Mar	29-Mar	30-Mar	31-Mar	failure coun
Powder coating	HotWater Generator+3 Ton Lift		kWh	20	15	30	20	20	20	10	20	20	20	20	30	25	20	20	20	0
	POWDER COATING BOOTH		kWh	30	31	30	28	27	29	27	28	27	31	31	31	35	34	29	30	0
	CYCLONE		kWh	120	177	220	200	239	270	220	230	170	300	270	300	300	280	230	0	1
	PT LINE 11		kWh	960	895	1230	1310	1180	1400	1160	1300	980	1500	1400	1590	1600	1510	1360	25	1
	1 ton lift + Packing line		kWh	80	55	60	80	60	80	80	80	100	80	50	80	70	70	60	40	0
Lamination	SCL		kWh	450	595	690	580	470	660	710	710	690	870	690	890	900	720	590	170	0
	IMPREGNATION LINE		kWh	40	50	40	50	40	50	30	60	50	50	50	40	40	40	12	10	0
	FLAT LINE LAMINATION		kWh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RESIN PLANT		kWh	150	220	300	220	239	220	239	290	300	220	220	220	200	170	240	210	2
	BOARD STORAGE AREA		kWh	34	33	34	34	31	28	31	31	31	31	32	35	29	30	30	30	0
	F14 Thermic Heater		kWh	520	670	750	660	600	670	650	600	610	830	620	890	640	640	580	100	0
	HOT PRESS		kWh	20	50	40	40	10	20	10	20	60	100	50	60	55	10	40	10	2
Utilities	COMPRESSOR + Dryer		kWh	2800	3275	3550	2880	2590	2860	3250	2850	3400	2560	2820	3130	3440	2690	3150	3200	2
	FIRE PUMP		kWh	300	320	300	300	310	140	310	10	40	30	60	20	20	10	10	10	8
	OFFICE+STREET LIGHTING		kWh	390	405	500	430	410	410	400	450	500	400	400	410	405	450	400	400	2
	Vodafone tower + Paper storage area + Lighting		kWh	160	160	300	150	150	160	120	180	200	140	120	160	135	120	100	100	2
	ETP		kWh	160	140	220	130	150	120	200	150	300	210	200	210	200	220	130	200	3
	COOLING TOWER		kWh	240	200	300	250	220	200	250	200	300	240	220	270	275	270	200	200	2
Wood Working	HKL UPS		kWh	100	89	110	120	120	100	110	130	140	100	120	120	130	100	80	100	1
	WEEKE		kWh	160	170	220	190	180	170	170	170	200	140	160	180	180	130	140	140	2
	BHT		kWh	130	140	200	170	160	140	170	180	180	150	140	170	170	160	160	140	0
	BHX		kWh	11	16	15	6	11	7	8	7	9	13	15	17	9	9	10	7	1
	NBX+Skipper		kWh	11	24	16	28	34	16	32	40	24	16	18	16	18	25	24	14	1
	BAZ + HOLZMA + WEEKE DUST collector		kWh	570	590	700	580	560	560	630	570	650	580	700	600	600	600	540	670	3
	FTT		kWh	140	155	220	160	240	240	300	300	270	190	200	270	220	230	300	220	5
	VANTAGE 200		kWh	150	140	200	160	140	150	160	170	200	180	170	150	170	40	80	170	2
	BAZ LOADER		kWh	22	19	28	21	29	19	15	47	30	11	18	22	21	27	24	34	0
	HKL DUST EXTRACTOR		kWh	280	290	310	280	290	270	280	300	300	290	300	290	305	240	230	290	0
	SEB		kWh	100	115	150	120	130	110	120	110	150	120	100	120	110	110	100	110	2
	HOLZMA		kWh	90	75	100	100	100	90	90	80	120	90	90	90	80	80	90	70	1
	COMBIMA 1		kWh	110	145	140	100	100	160	160	190	160	120	130	160	155	120	160	120	0
	COMBIMA 2		kWh	130	165	160	200	200	180	180	200	170	130	140	210	170	140	180	120	0
	BAZ		kWh	200	260	350	300	300	260	240	270	1400	310	210	140	295	280	280	200	2
	IMA + BHT + FTT Dust collector		kWh	980	1070	1090	1260	1120	1040	1140	1130	1210	1070	890	1220	1140	1030	1090	1200	0
	NBX/BHX	ISOLATOR PANEL	kWh	13	24	15	18	21	17	24	30	18	15	19	17	14	16	17	7	1
Metal Working	SPOT	SPOT WELDING F6	kWh	30	20	40	30	30	30	20	40	20	40	40	40	35	30	30	30	1
	ARM	ARM WELDING	kWh	33	43	50	52	54	45	56	42	60	43	45	45	34	0	13	11	2
	100 TON	100 TON	kWh	11	18	18	2	1	0	4	21	8	24	10	20	0	0	4	0	2
	HP 2	HP 2	kWh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HP 3	HP 3	kWh	7	1	0	20	0	11	7	12	0	9	0	20	1	1	7	0	3
	HP 8		kWh	11	20	14	3	21	12	8	8	7	7	3	0	0	0	1	0	3
	LVD		kWh	70	80	70	100	70	100	110	70	120	80	80	90	95	60	60	80	1
	PB 3		kWh	10	7	20	5	15	7	5	8	12	10	20	20	2	1	0	0	5
	160 TON		kWh	20	30	100	30	30	30	30	30	30	30	30	30	5	0	0	0	6
	40 TON		kWh	5	4	15	10	10	0	0	0	11	0	0	0	7	4	1	0	2
	FASCIA M/C		kWh	3	75	100	80	54	40	45	54	70	110	90	100	10	7	10	0	7
	HP 1		kWh	10	5	10	10	10	0	10	10	10	10	20	0	0	10	10	0	2
	KDM 2 & 3		kWh	8	22	30	20	20	18	19	20	17	18	18	19	2	0	0	0	1
	MULTIFOLD		kWh	28	35	40	40	30	30	30	30	40	30	30	40	35	30	30	10	0

Legend

- Failure Count (below 7 ok)
- Failure Count (above7 NOT ok)
- Consumption Normal
- Consumption increased

FOCUSSED APPROACH TO REDUCE ENERGY CONSUMPTION

CURRENT FIXED ENERGY CONSUMPTION IS 54 % AND VARIABLE ENERGY CONSUMPTION IS 46 %.

Projects done to reduce energy consumption .

1. VFD installed on all major equipments and optimisation done (56 VFDs incl. 2 constant torque VFD)
2. Improvement of compressor KWH / CFM to from 0.19 to 0.14
3. Machine wise mapping of air consumption.
4. Improvement of thermic fluid efficiency by maintenance and changing insulation (50 % fuel consumption reduced)
5. Use of energy efficient LED lighting
6. Improvement of OEE of bottleneck machines by 8 % for better capability improvement
7. Installation of light pipes in Vikhroli powder coating booth

MAJOR PROJECTS DONE IN FY 15-16

VFD for air compressor

Machine wise cfm meter

Use of energy efficient lighting

Installation of pipe lights

4 PER HOOK

15 PER HOOK

3 PER HOOK

17 PER HOOK

Hook Optimization

RENEWABLE ENERGY

ON- SITE RENEWABLE ENERGY

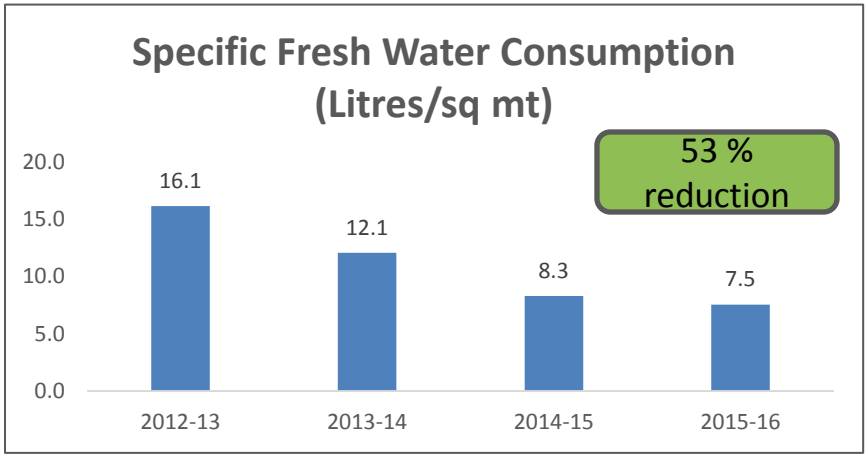
Renewable Energy Share At Shirwal: 27% of Total Energy

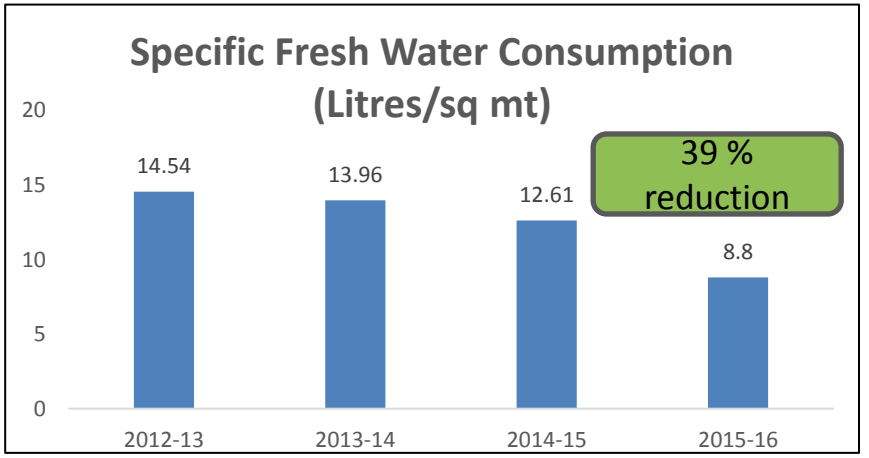
Roof top Solar panels – 250 KW plant

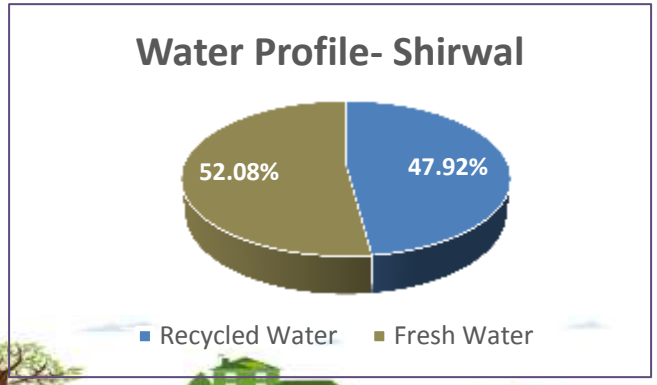
Briquette made of agri waste & reused saw dust

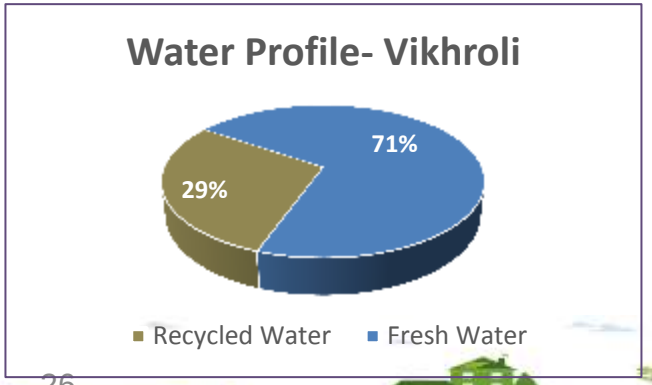

Water Conservation

REDUCTION IN SPECIFIC FRESH WATER CONSUMPTION









WATER CONSERVATION ACTIVITIES

Use of recycled water

1. In toilets, gardening & process recycled water is used.

Dripper system for Garden

1. Started from Month of Dec-14.
2. 16% of total water consumption is saved.

Rain Water Harvesting

1. Rain water harvesting initiative is started.
2. 96% of actual potential is captured of Plant

RO Plant

ETP or STP treated water is used in RO

RO water is used for major water consuming process i.e. Pre-treatment line

Installed Water free Urinals in the plant
Total 6 Nos of urinals are replaced with Water free urinals

BEYOND FENCE- WASTE WATER MANAGEMENT PROJECT

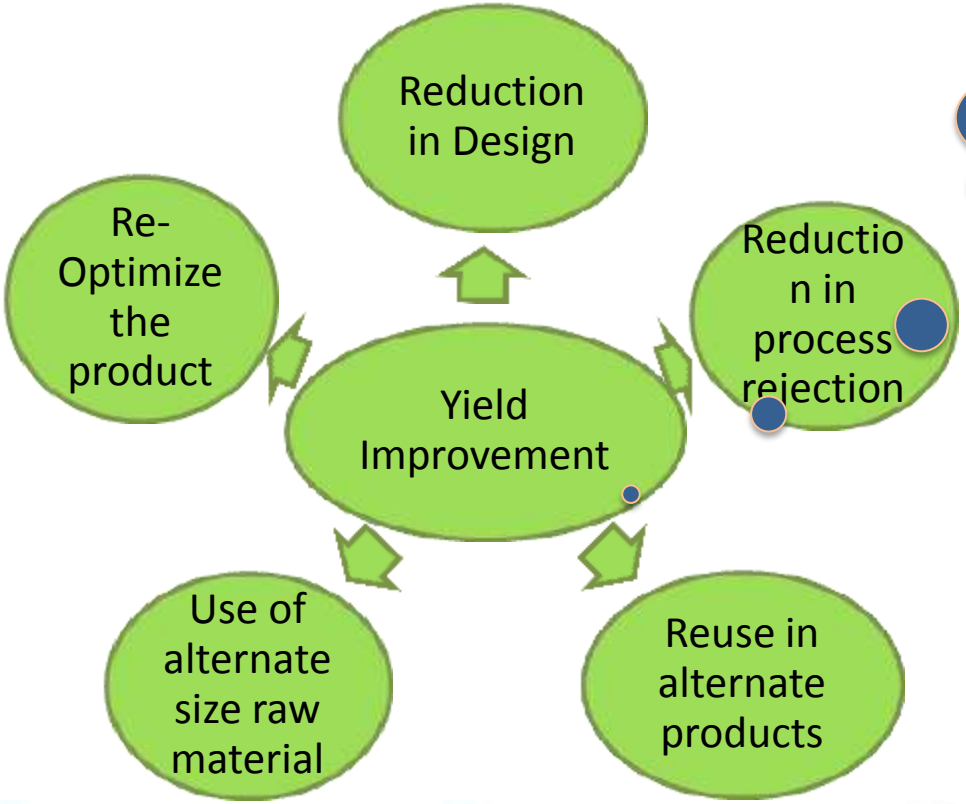
Palshi – Satara (treatment of 5 lac Ltr /day)

Activities Involved In project

- Capacity Building
- Implementation of the waste water/sewage water recycling unit
- Repairs and maintenance of the existing internal drainage line
- Promotion of sanitation activities through school children by repairs/construction of new individual toilets
- Developing a healthy, attractive and clean village for living
- Cleaning and widening the entire brook bed and planting Bamboo trees on the both sides of water stream
- Making recreational areas near water stream

Material Conservation and Recyclability

APPROACH ADOPTED FOR MATERIAL CONSERVATION



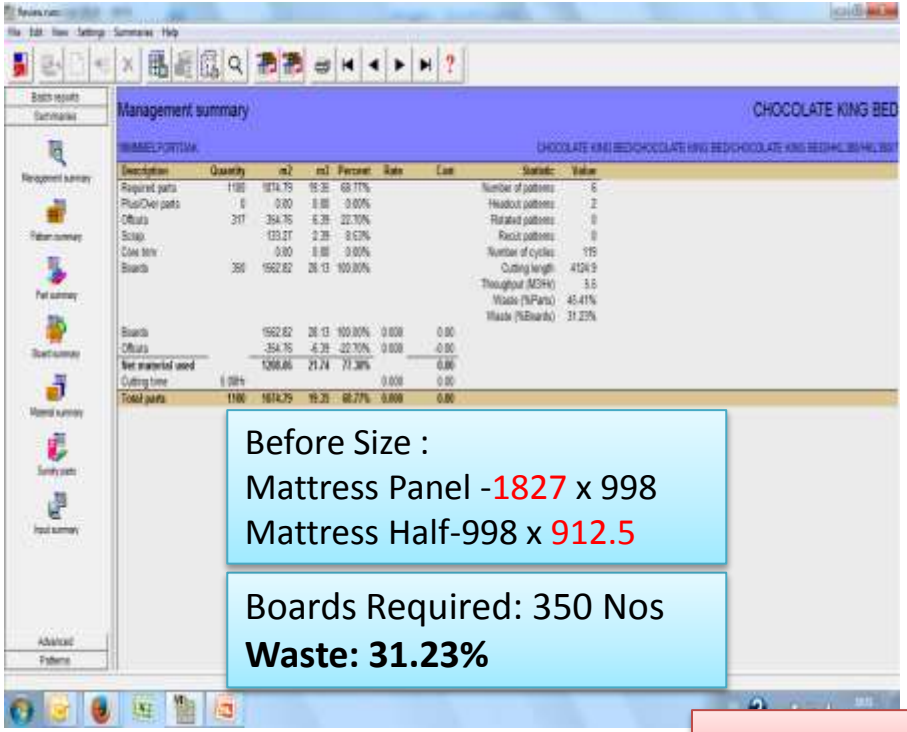
Approach towards enhancing yield improvement

5 R Approach-
Reduce
Reuse
Recycle
Recover
Redesign

EXAMPLE OF RE- OPTIMIZATION

- Reducing Panel Size by 2mm & Utilizing off-cuts for Bed Side Table

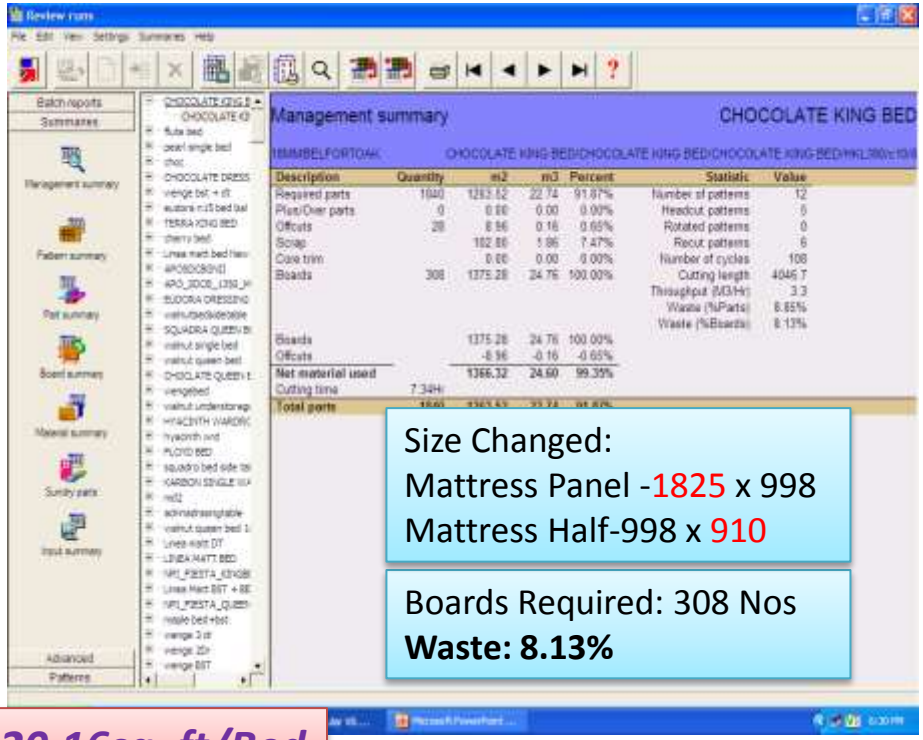
BEFORE



Before Size :
Mattress Panel -1827 x 998
Mattress Half-998 x 912.5

Boards Required: 350 Nos
Waste: 31.23%

AFTER



Size Changed:
Mattress Panel -1825 x 998
Mattress Half-998 x 910

Boards Required: 308 Nos
Waste: 8.13%

Savings of 20.16sq. ft/Bed

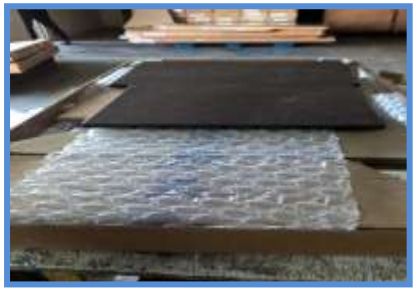
REPLACEMENT OF PACKAGING MATERIAL

– Mirror panel packaging

Before

Thermocol for Dressing unit glass

After

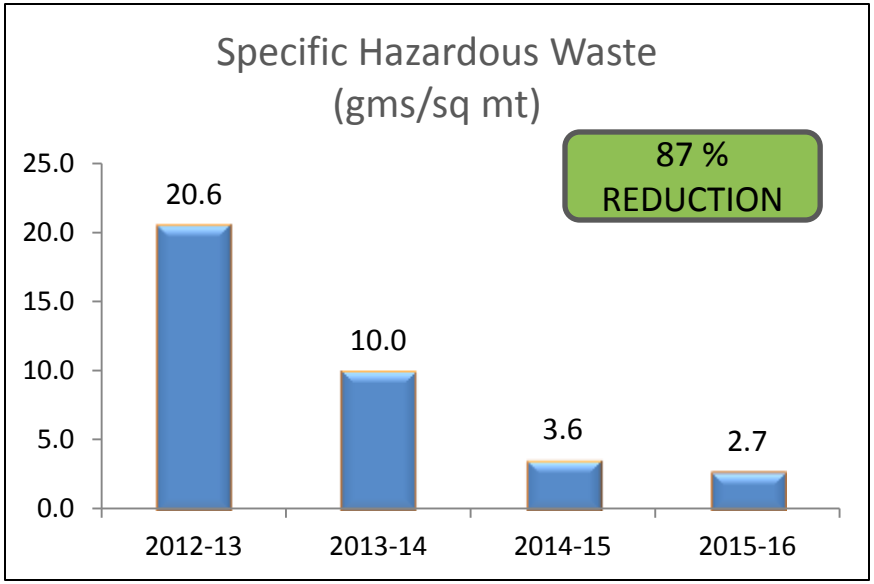


AIR plus Bubble

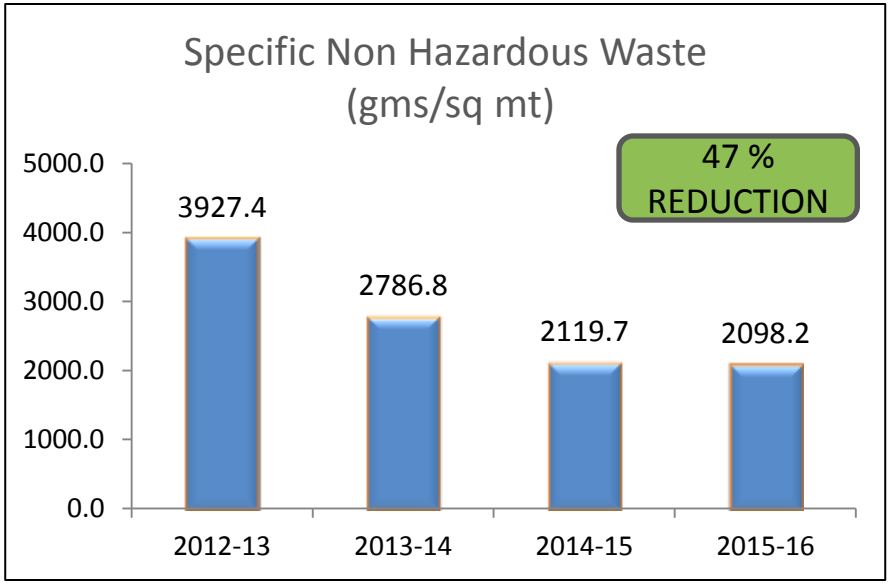
- Glass are packed with AIR plus bubble for protective packaging to sustain transit impacts.
- Corrugation buffer is used for cushioning and avoid abrasion in transit

Waste Management

REDUCTION IN SPECIFIC WASTE – INTERIO SHIRWAL

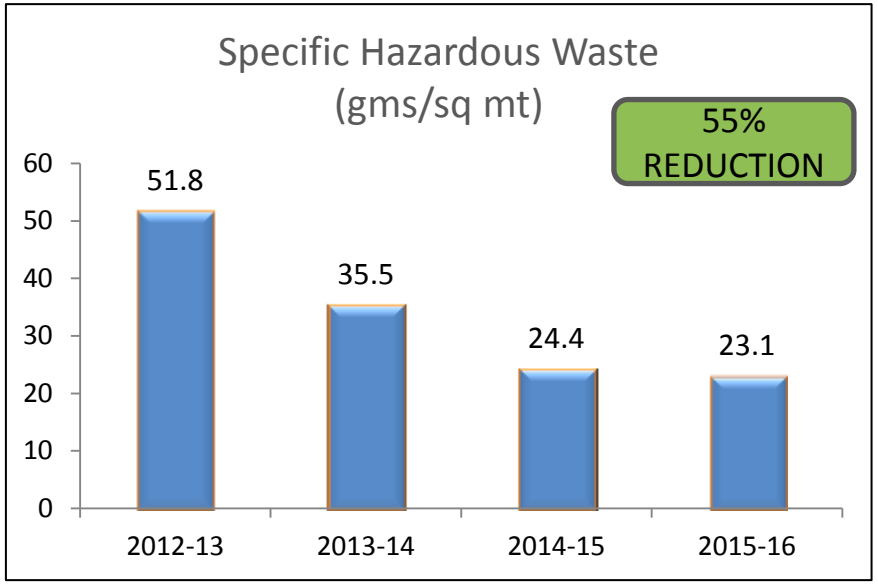


Specific Hazardous Waste Generation

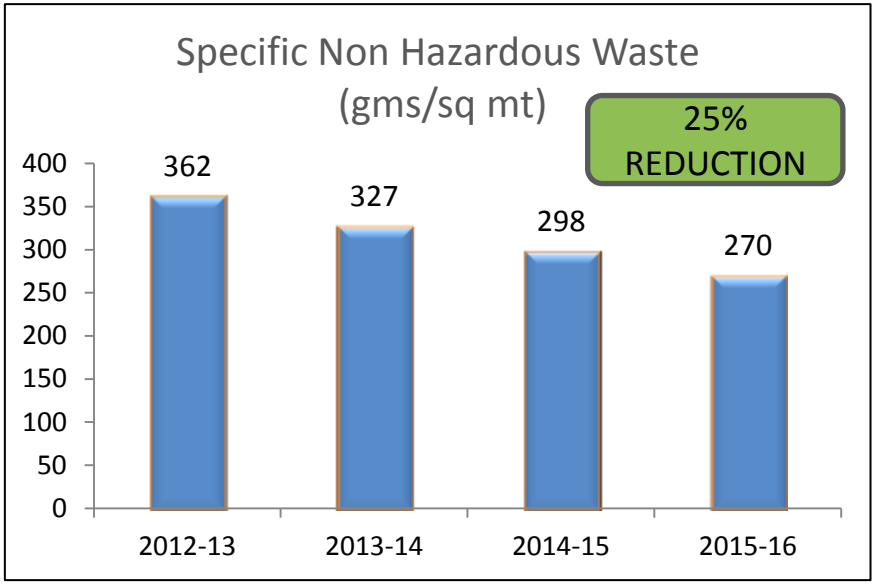


Specific Non- Hazardous Waste Generation

REDUCTION IN SPECIFIC WASTE – INTERIO VIKHROLI



Specific Hazardous Waste Generation



Specific Non- Hazardous Waste Generation

SOME OF KAIZENS IMPLEMENTED..

Kaizen - Elimination of Sources of Hazard waste generation / Reuse of waste Material

Before

Resin transferred through barrels resulting in oil spillage

After

Pipe line done for transfer of resin

Before

Left over resin was stored in barrels and mixed manually leading to improper mixing of hardner and thereby wastage

After

Left over resin in impregnation bath is now blended mechanically in blender for homogeneous mixing of hardner

Before

Earlier online oil filtration mechanism was not available

After

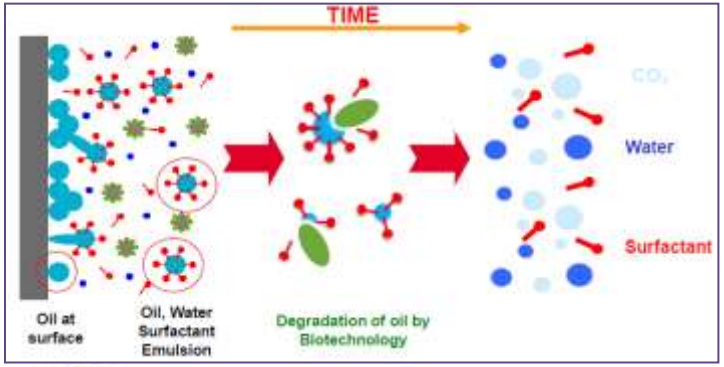
IMPROVEMENTS IN PRE-TREATMENT LINE

IN ASSOCIATION WITH – M/S ATOTECH IND. PVT. LTD.

Initiative : - To initialize Bio-remediated Cleaners for pre-treatment process

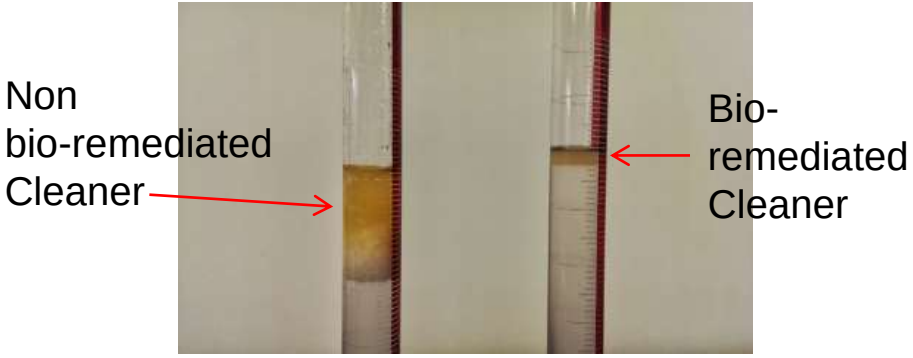
-Bioremediation is natural process by which biotechnology converts complex organic molecules into simple, non-hazardous substances such as carbon dioxide and water.

- Combines elements of modern aqueous cleaning technology and natural bioremediation .Part is cleaned utilizing a cleaner with a highly emulsifying surfactant system.



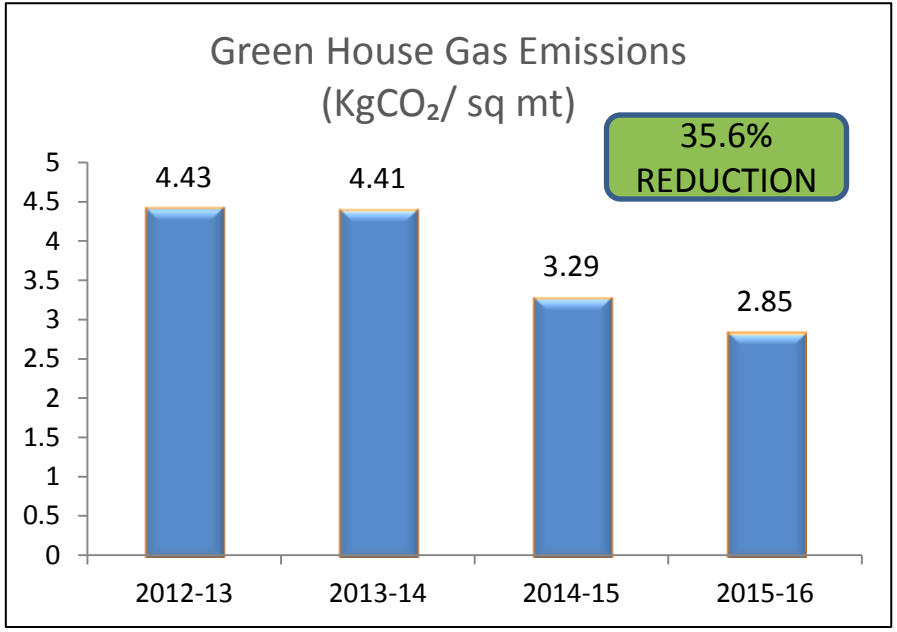
Benefits:

- Energy & Water Saving
- Completely phosphorous-free
- Reduce Sludge Formation
- Reduce tank dump frequency
- Less line maintenance require to clean clogged nozzles and risers
- Estimated saving / Sq Mtr in INR: 0.15

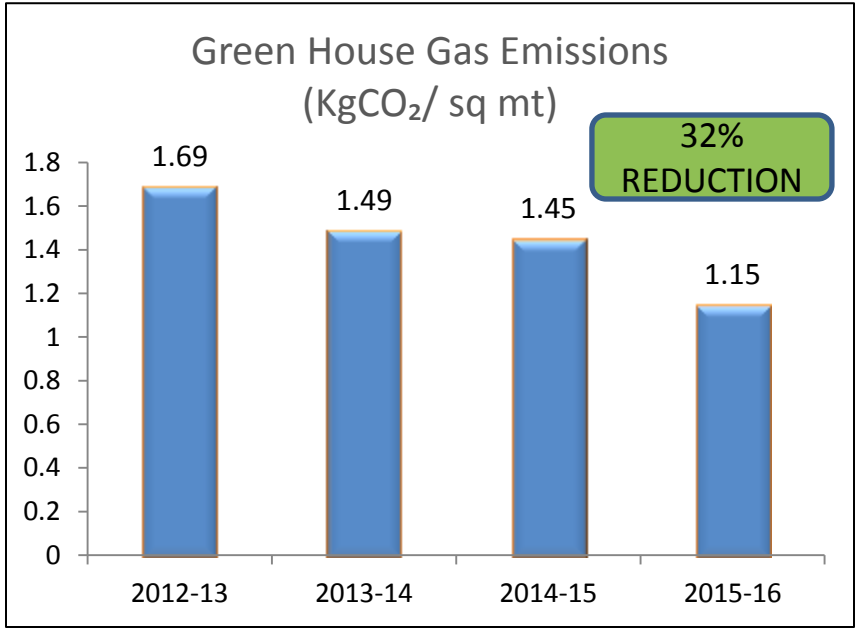


GREEN HOUSE GASES EMISSIONS

GHG EMISSION INTENSITY REDUCTION

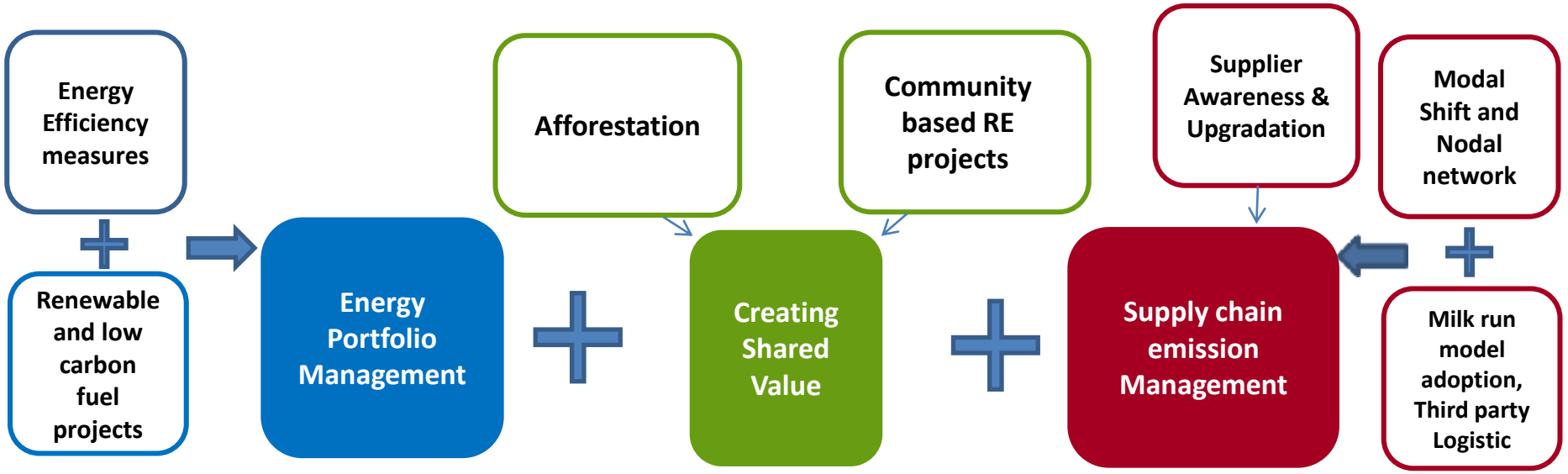


Specific GHG Emission- Shirwal



Specific GHG Emission- Vikhroli

CARBON NEUTRAL APPROACH



GI aims to be become Carbon Neutral for Scope 1 & 2 by FY 2020

OPTIONS UNDER CONSIDERATION FOR AFFORESTATION

Inventorization of all plants in G&B campuses

Working with board suppliers for Afforestation

Working on Mangroves Projects

Advantages- Internal Expertise, High CO2 offsetting potential

GROW-TREES.com
greet with trees, offset with trees

Local Community based plantation

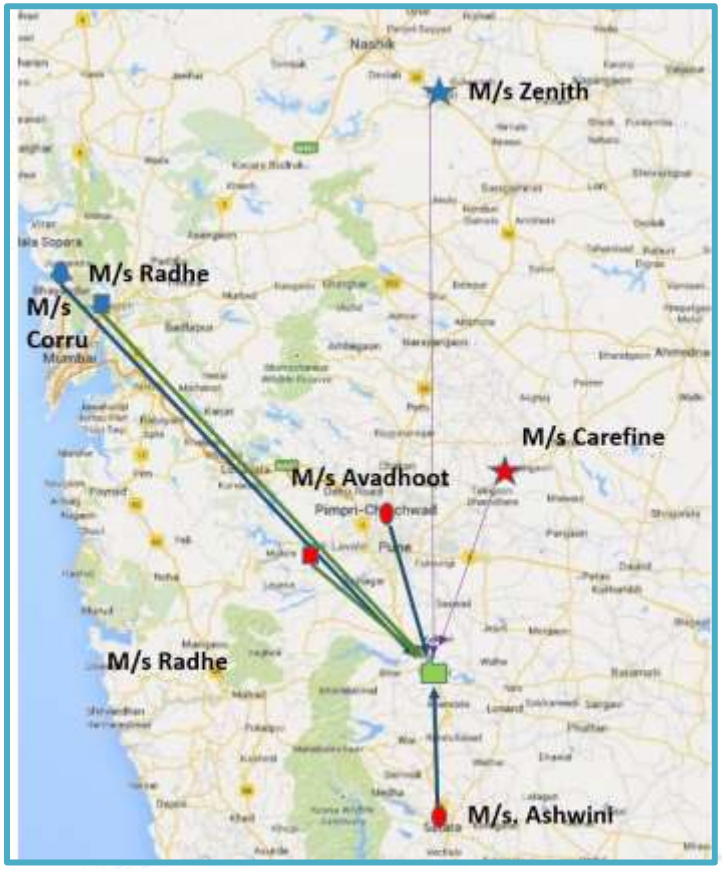
Win Win situation for G&B and Community

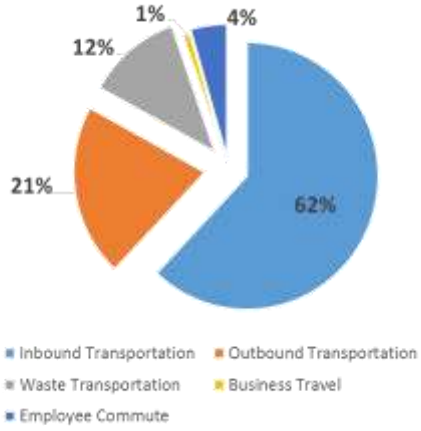
WRI Forest Land Restoration

WORLD RESOURCES INSTITUTE

Augmenting Govt initiatives

SCOPE 3 REDUCTION IN INBOUND TRANSPORTATION



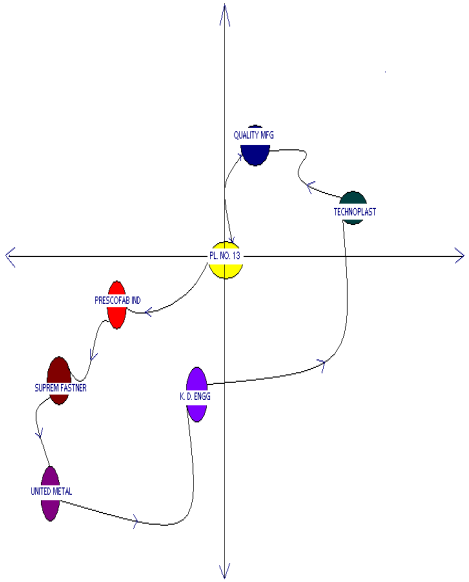


Inbound Transportation

- Accounts for 60 % of total scope 3 emission.
- Focus area to reduce scope 3 emissions
- Initiatives taken to reduce emissions due to inbound transportation;
  1 . Vendor relocation
  2. New vendor Development within Shirwal proximity

Scope 3 reduction Initiative	Total Saving in $MTCO_2$ emission in 2015-16
Vendor relocation	46.1
New Vendor developed	338
Total	384

SCOPE 3 REDUCTION IN INBOUND TRANSPORTATION



ROUTE MAP

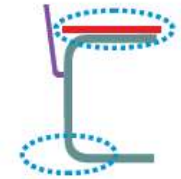
MILK RUN SYSTEM PLANT-13 STORES

Sr No	Suppliers Covered	Location	Kg*Km without milk van	Kg*Km with milk van	Reduction in kg*km
Route 1	Quality Mfg	Vikhroli	11,70,000		
	K D Engg	Goregaon	60,75,000		
	United Metal	Goregaon	66,15,000		
	Pressco Fab	Oshiwara	86,40,000		
	Total		**2,25,00,000**	**1,72,80,000**	**52,20,000**
Route 2	Genesis	Vikhroli	8,68,000		
	Rushabh	Ghatkopar	17,36,000		
	Total		**26,04,000**	**19,84,000**	**6,20,000**

Total reduction in carbon emissions= 3570 $KgCO_2$ per annum

PRODUCT  STEWARDSHIP

KEY IMPERATIVES FOR CONTINUAL PRODUCT INNOVATION

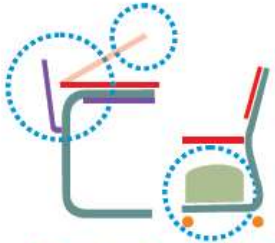


Superior Product

Develop an offering of exceptional design, quality, and/or experience

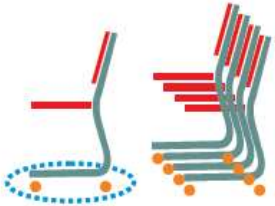
Innovation Tactics

Product Performance
(Offering)



Engaging Functionality

Provide an unexpected or newsworthy experiential component that elevates the customer interaction



Added functionality

Add new functionality to an existing offering

Styling

Impart a style, fashion or image

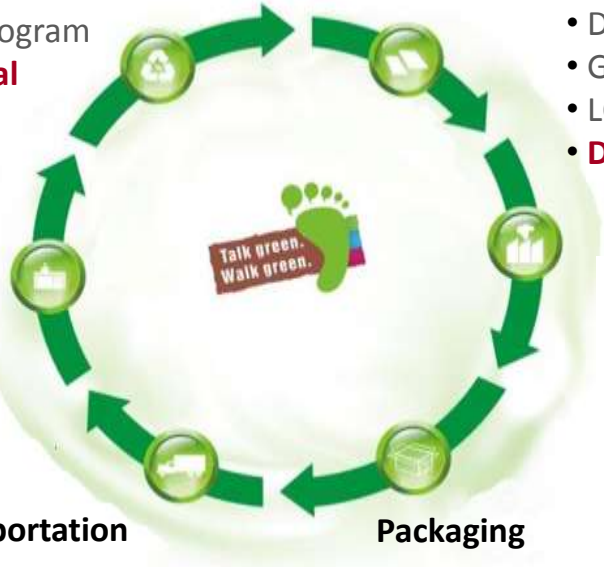
- Continued Consumer Immersion
- Lifestyle, Work-style Relevance
- Health and Wellbeing
- Reduce Environment Impact

LIFE CYCLE APPROACH TO PRODUCT STEWARDSHIP

Commitment to Product Stewardship at various stages of product life cycle

End of Life
- Recycling program
- **Safe Disposal**

Product Design & Development
- Design for Environment
- Green Materials
- LCA
- **Design for safety**



In Use
- Green Awareness
- AMCs
- **Right Product usage**

Manufacturing
- Energy efficiency
- Zero waste water discharge
- Renewable energy
- Zero waste to landfill
- **Use of Safe & Green Chemicals**

Transportation
- Green Modes of Transportation
- **Right Product handling**

Packaging
- Flat packing
- Green Packing alternatives
- **Right packing for product safety**

Enforcing Green at Every Step...
Ensuring Green at Every Conclusion...

Enabling Green & Wellness At every Step...

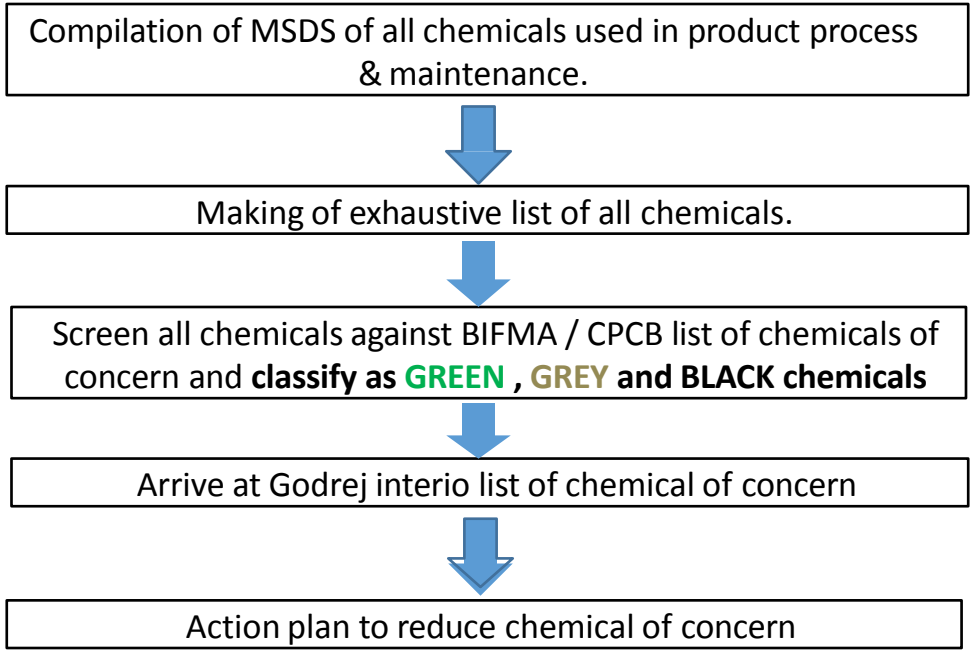
IMPROVEMENTS IN TOXIC MATERIAL DETECTION PROCESS

Intent of Chemical management plan

- Avoiding harmful chemicals at Product level
- Reduce hazardous chemical in process
- Keep information of unavoidable chemicals & to use it carefully (MSDS)

Chemicals of Concern (Shirwal)	CPCB rule	BIFMA rule	Application area
Acetylene	Y	-	fabrication
Benzene Trace	Y	Y	Maintenance
Naphthalene Trace	Y	Y	Maintenance
Formaldehyde	Y	Y	Lamination
iminodiethanol	-	y	Lamination
Titanium Dioxide	-	Y	Powder
Bis phenol	Y	Y	Powder

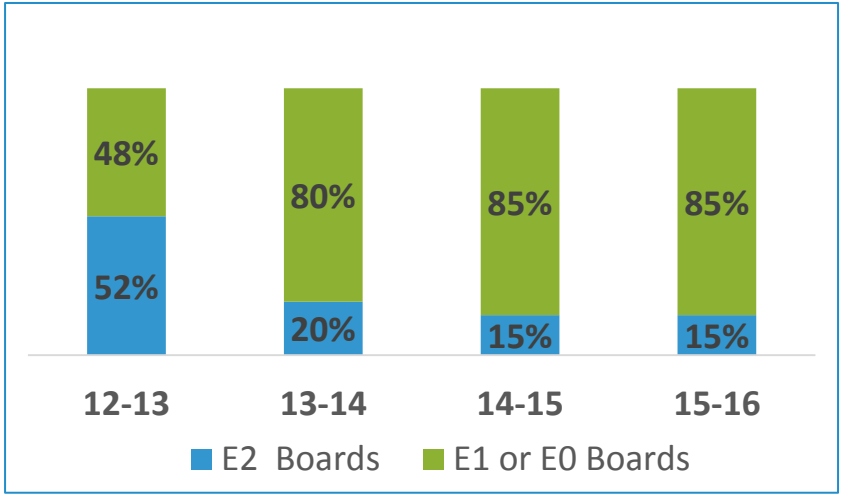
Flow chart for chemical management plan



REDUCTION OF TOXIC MATERIAL - PRODUCT

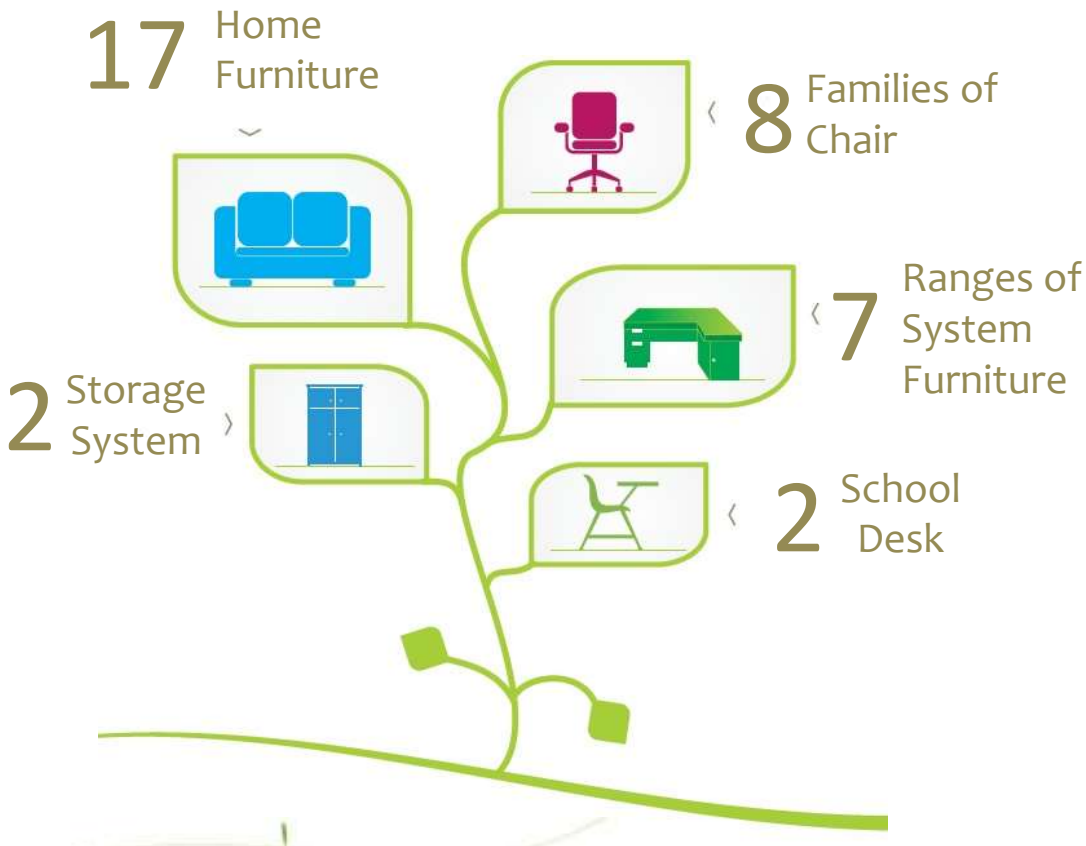
Boards

With the initiative of GREENGUARD Certification for OPOS and Home furniture there is drastic reduction (37%) in use of high emitting commercial grade boards.



In three years the formaldehyde emission for system furniture category has reduced from 0.016 ppm to 0.006 ppm (@63%reduction)

TOWARDS A GREENER PRODUCT PORTFOLIO



36 product ranges have International Green certifications

16% of revenue comes from green products

LIFE CYCLE ASSESSMENT

Recognition of G&B for conducting maximum number of LCA studies applying GaBi software in India, at Sustain 2016- Thinkstep Annual Meet

Sustain 2016

thinkstep

Certificate of Recognition

Godrej & Boyce Mfg. Co. Ltd

Recognition for Conducting Maximum Numbers of LCA Studies Applying GaBi Software in India

27 April 2016

Dr. Rajesh Kumar Singh
Managing Director
Thinkstep Sustainability Solutions Private Limited
Mumbai

LIFE CYCLE MANAGEMENT FOR PRODUCTS

Basis for Product Selection for LCA

New product	Existing Product	Product Enhancement or VE
• NPI process criteria (Sales volume more than 10000 / year)	• Products taken up for BIFMA Level Certification • GREENCO LCA coverage criteria	• Products with sales volume more than 10000/ year • Products where material substitution is there

LCA initiative coverage for Shirwal products	LCA initiative coverage for Vikhroli products
53.4%	**55%**

LCA STUDIES CONDUCTED AT GODREJ INTERIO

Office Systems

WISH
GWP: 1985 $KgCO_2$

STALLION PLUS
GWP: 960 $KgCO_2$

LCA studies of Wish, Ace and Versa are third party reviewed as per ISO 14044

Home Products

WARDROBE H
GWP: 98.8 $KgCO_2$

FLUTTER
GWP:50.91 $KgCO_2$

Seating

ACE- 147.2
GWP: $KgCO_2$

VERSA
GWP: 73.47 $KgCO_2$

KEY LEARNINGS FROM LCA

- Material phase contributes to 70 to 75% of the total impact for furniture products
- Aluminium is one of the highest impacting material and needs to be used judiciously
- Increase use of biogenic materials which have less GWP impact
- Explore use of low embodied energy plastics

ENVIRONMENTAL IMPACT REDUCTION

NOVA pedestal

Total Weight : 30.5 kg

ENCASE pedestal

Total Weight : 21.4 kg

Changes Made in Nova pedestal:

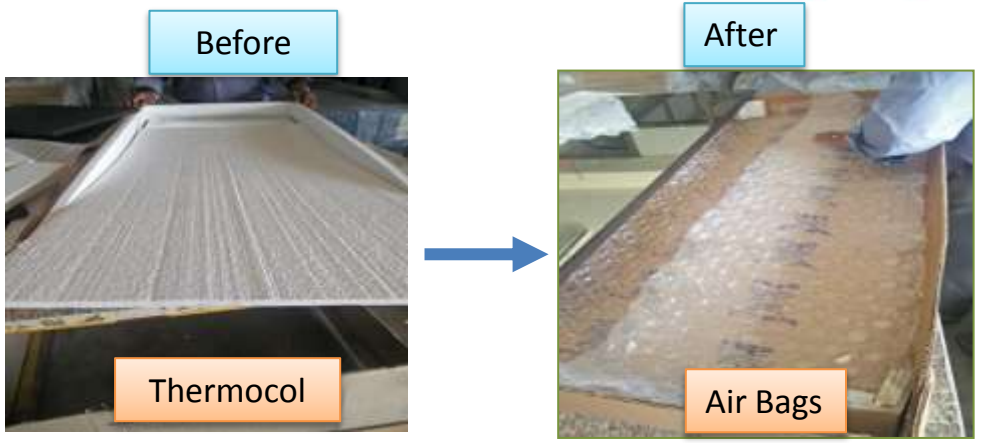
- Thickness reduction In drawer from 0.6 mm to 0.5 mm
- Thickness reduction in drawer front from 0.8 mm to 0.6 mm
- Ball slides changed to channel type slides
- Thickness reduction in drawer shell from 0.8 mm to 0.6 mm

Actual material reduction achieved in FY2015-16 = 38304 Kg of steel

Impact categories (Impact per pedestal)	For NOVA	For Encase	Impact Reduction
Acidification Potential (AP) [kg SO_{22}-Equiv.]	0.283	0.251	11.06%
Eutrophication Potential (EP) [kg Phosphate-Equiv.]	0.021	0.016	23.53%
Global Warming Potential (GWP 100 years) [kgCO_2-Equiv.]	71.815	59.293	17.44%
Ozone Layer Depletion Potential (ODP, steady state) [kg R11-Equiv.]	0.000	0.000	0
Photochem. Ozone Creation Potential (POCP) [kg Ethene-Equiv.]	0.033	0.029	11.54%

LIFE CYCLE ASSESSMENT FOR PACKAGING INITIATIVE

Change of Thermocol to AirPlus bags



Impact reduction

Environmental Impacts	Global Warming Potential kgCO_2-eq	Acidification Potential KgSO_2-eq	Eutrophication Potential kg phosphate-eq	Primary Energy MJ
Thermocol 1 kg	2.26	0.00459	0.00479	76.2
Air Plus Bags 0.44 kg*	0.704	0.00161	0.000154	30.36
% reduction in Impacts	69%	65%	97%	60%
Reduction in Absolute terms	2800.8	5.36328	8.3448	82512

INTRODUCTION OF QUICK LCA AT EARLY DESIGN PHASE

Material Classification		Weight	Embodied Environmental Impact: Global Warming Potential	Acidification Potential	Eutrophication Potential	Primary Energy
		kg	kgCO2- Eq	kgSO2-Eq	kg Phosphate-Eq	MJ
Aluminum	Cast	1	10.8	0.0553	0.00334	183
	Extruded	1	6.56	0.0401	0.0019	102
	Hardware	1	6.56	0.0401	0.0019	102
Plastics	PP(Polypropylene)-Injection Molding	1	1.86	0.0036	0.00036	73.2
	PP Talk filled	1	1.86	0.0036	0.00036	73.2
	Nylon6	1	9.2	0.0296	0.00678	121
	30% GF Nylon6	1	7.01	0.0255	0.00472	109
	Polyethylene	1	1.59	0.00366	0.00035	69.6
	Polystyrene	1	2.26	0.00459	0.00479	76.2
	ABS	1	3.16	0.00642	0.000981	89.6
	PVC (Injection Molded)	1	2.12	0.00371	0.000516	57.4
	PVC (Edge Band)	1	2.12	0.00371	0.000516	57.4
	LDPE	1	1.9	0.00336	0.00035	73.7
Steel	Bar & Rod	1	1.94	0.00713	0.000646	20.1
	Pipe / Tube	1	2.54	0.00545	0.000369	26
	Sheet CR	1	1.98	0.0073	0.00064	23.6
	Sheet HR	1	2.02	0.0051	0.000337	21.6
	Sheet- Galvanised	1	2.57	0.007	0.00045	28.2
	Stainless	1	4.48	0.0514	0.00219	64.8
	Spring	1	1.94	0.00713	0.000646	20.1
	Hardware (in kg)	1	1.94	0.00713	0.000646	20.1

Quick LCA

Objective- To evaluate material phase (embodied) impacts at early design phase and take actions to reduce environmental impacts

Actions taken-

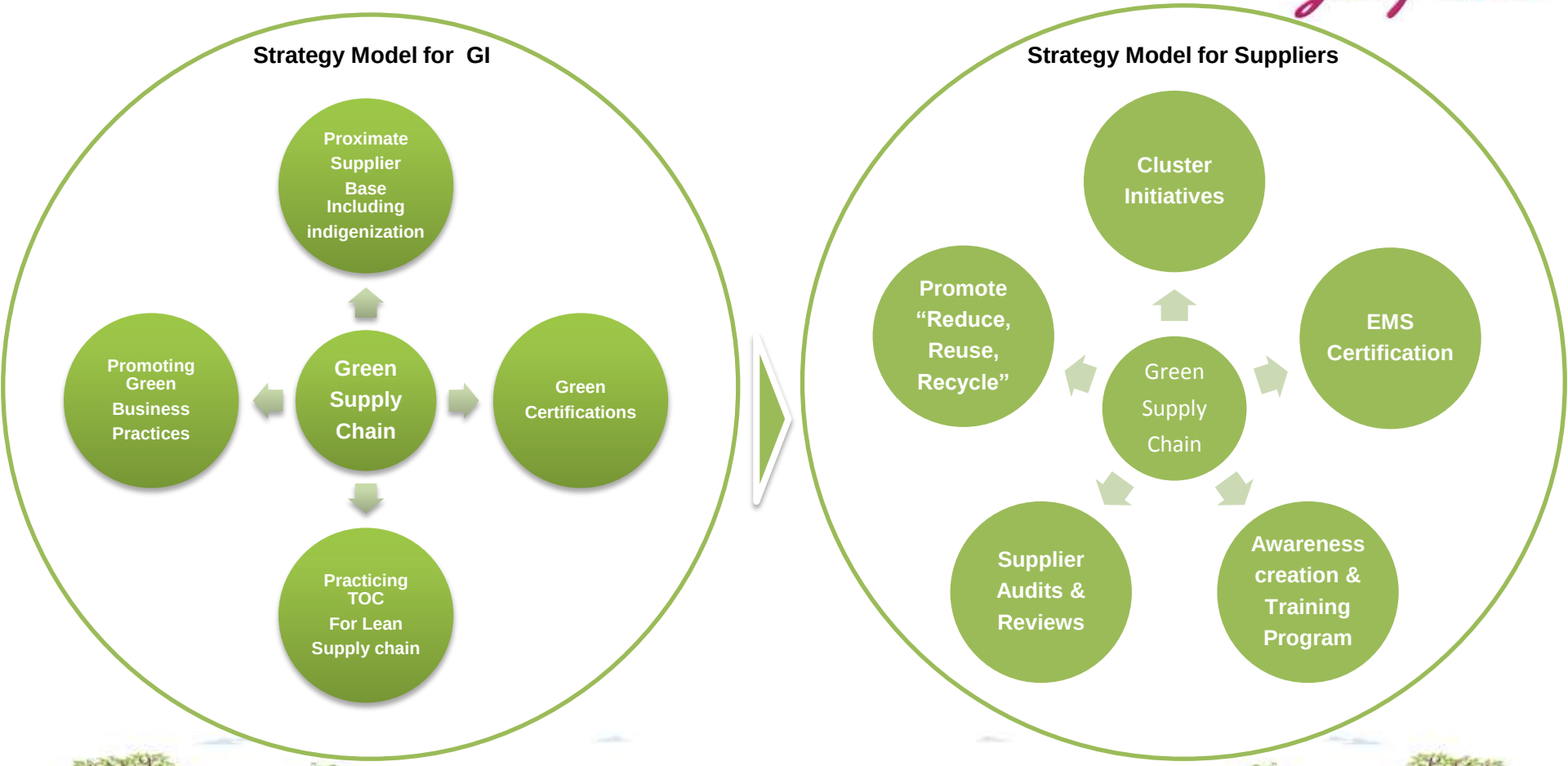
1) Discussion held with design team
2) Decision to shift LCA from Phase 2 to Phase 1
3) Done per kg material impacts calculation for all types of material used in Interio products
4) Incorporation of these impacts in Green Assurance Card Material Analysis
5) Benchmarking with competitor LCA results

Further Actions-

1) Revision of NPD cycle to include LCA in Phase 1

GREEN SUPPLY CHAIN

GREEN SUPPLY CHAIN STRATEGY



INITIATIVES & TARGETS FOR GODREJ INTERIO SHIRWAL

Levers	Initiatives	Current Status 2015-16
Education & Awareness Creation for Suppliers Promoting Green Business Practices	To increase environmental awareness among suppliers through Training , Audits, Reviews and meeting	> 80% of Suppliers are covered for Awareness
		70% of Critical Suppliers are covered through Audits
	Selecting the suppliers who are compliant with the laws and regulations	5 Suppliers certified with ISO 14001.
Resource Intensity Reduction in the Supply Chain	Reduction in Consumption of Resources (Energy, Water, Waste)	23 % Reduction achieved by 4 Critical Suppliers (40 % of critical suppliers)
Proximate Supplier Base Including indigenization	To increase supplier base within 200 Km area from Mfg.	71% supplier base within 200 Km area from Mfg.
Practicing TOC For Lean Supply chain	To implement TOC for B2B & B2C business to optimize material consumption & to reduce carbon Foot prints.	Implemented for B2C & B2B business

IMPLEMENTATION OF GREEN PROCUREMENT GUIDELINES THROUGH CLUSTER….

Confederation of Indian Industry

CII-AVANTHA Centre for Competitiveness for SMEs

ZED Road Map for CII- GODREJ (Interio) 5th Basic Vendor Cluster															17th Oct 2014
Month	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Deliverables
1. SOP for Sustenance 2. Training Module														Sustenance Management			Knowledge Management Holding Gains
1. Waste Management and Control 2. Energy Conservation 3.Water Conservation											Zero Effect on Environment						Reduction in Scrap Generation and Disposal Reduction in Energy Consumption & Use of Renewable Energy Reduction in water consumption and Reharvesting
1. Autonomous Maintenance Step 1 ,2 and 3 2. SMED										Production Management							Machine - Breakdown / Defect / Accident -Reduction Set up Time reduction / Batch Size reduction / Improve productivity
1. QC / QA Concepts 2. Problem Solving Steps & Tools 3. Poka-Yoke							Zero Defect through Quality Management										Zero defects at Customer end Reduction in Customer Complaints Reduction in In-process rejection
1. Waste Identification & Elimination 2. Kaizens 3. Key Indicator			Waste Identification														Creating Improvement culture / Total Employee Involvement Cost Reduction MIS Generation / Review Mechanism
1. Basic 5S 2. Red Tag Campaign 3. Must be Requirement 4. Safety		5S / TEI															Decluttered Shops / 1S, 2S Score Search Time reduction Employees Enjoying the Work Reduce Accidents and Near Miss / Absentiseem Reduction
Month	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Deliverables

IMPLEMENTATION OF GREEN PROCUREMENT GUIDELINES THROUGH CLUSTER….

Confederation of Indian Industry

CII-AVANTHA

Road Map for CII Cluster for Competitiveness - Godrej (Interio) Advance Vendor Cluster
Revn : 4, 13th Jan, 2015

Time in Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Deliverables
1. Sustainance Plan 1.1. Clarifications,refreshing Learnings 1.2-Creating own Training Material 1.3- (Conducting Internal MRMs																**Sustenance Culture**			Holding the gains
1.Flow Manufacturing 1.1-PQ Analysis- Runners,Repeaters & Strangers 1.2-Map Through Put Time- and Identify Wastages/Losses-- Identify Projects 1.21 -Creat Natural Marerial Flow-Improve Layout 1.22 SMED 1.23- My machine 1.24 -Low cost automation 1.25- Line balancing																			**Focussed Improvement - 2** **Productivity Culture** Improve Delivery Schedule Adherance Improve Labour Productivity Improve Value added per employee. Floor space utilization Reduce Breakdowns Reduce Through put time
1. QA -QC Inegrated Approach 1.1- QA-QC Organization 1.2 -Capturing 100% Customer Complaints 1.3- Deciding CTQs																			**Focussed Improvement -1** **Quality Culture** Redction in Customer Complaints and Returns Redction in Inhouse Rejection Creation of Quality Culture- Right First time
1.4 - 100% Inspection of CTQs-by system 1.5- Pokayoke 1.6-Projects on Quality Issues,using 7QC steps and tools																			
1. Prerequisites of Inventory Management 1.1- Rack Removal 1.2 -Material Handling/Stores Management 1.3 -Mapping Quality Of Inventory																			**Inventory Management** Improving ITR
1. Waste Management and Control 2. Energy Conservation 3.Water Conservation																			**Zero Effect on Environment** Reductional in Scrap Generation and Disposal Reduction in Energy Consumption & Use of Renewable Energy Reduction in water consumption and Reharvesting
1. 4S & 5S- Institutionalize 5 S. 2. Daily Review on Zonal Board																			**Sustainance 5S** **(Sustenance Culture Through Discipline)** 5S : Audit Score
1.Must be Reqirements 2.Weekly Contact program 3. CEO Address 4.Implemented Suggessions 5.Kaizens																			**TEI** **Continuous Improvement Culture through TEI** Total Employee Involvement Improvment Culture
Time in Months :	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Road Map

REVIEWS

Monthly reviews are conducted by rotation with cluster suppliers.

Suppliers present their ideas and thoughts including those on green manufacturing.

Supplier's progress is monitored on Green as well as other initiatives during these meetings.

P M ELECTRO-AUTO PVT LTD - INITIATIVES

Optimized compressed air thru centralized unit

Polycarbonate Transparent Sheets & Turbo Ventilators

Organizing PUC camp for employees vehicles

15 Tanks "Pretreatment Process" Which Optimized... Process Water Consumption LPG Gas Consumption Chemical Consumption a)Electricity Consumption

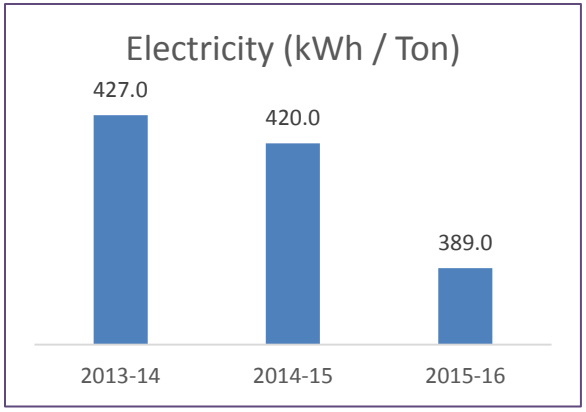
Gas Fired Burner For "Hot Water Generator" To Run Pretreatment Line.

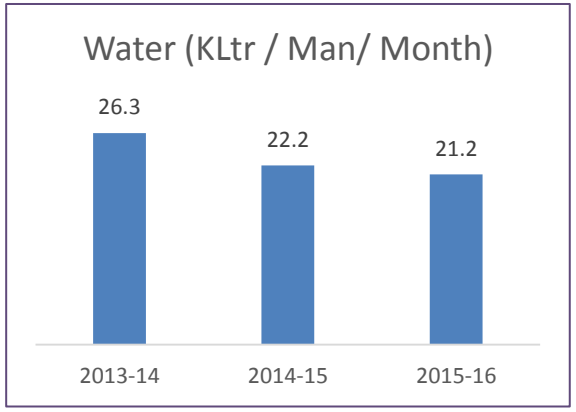
Green Initiative : - More than 300 Nos. plantation done in 3 Acres land.

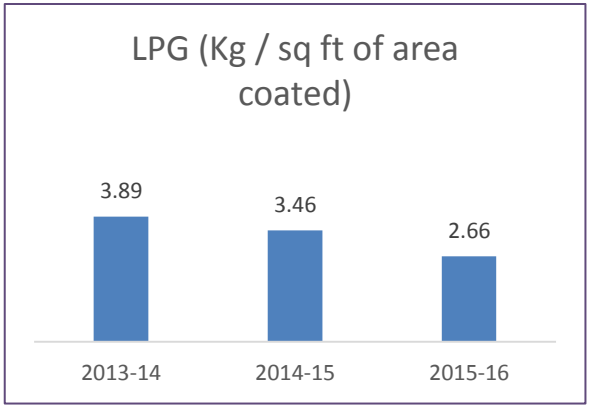
Godrej Interio's Role – 1. Trainings 2. Green initiatives implementation through ISO14001 and ZED cluster 3. Reward & Recognition at MRM as well as at National Level

P M ELECTRO-AUTO PVT LTD - RESULTS

Area	2013-14	2014-15	2015-16	Reduction	Weighted Reduction
Electricity (kWh / Ton)	427	420	389	8.90 %	**14.85 %**
Water (KLtr / Ton)	26.29	22.24	21.16	19.51 %	
LPG (Kg / sq ft)	3.89	3.46	2.66	31.62 %	

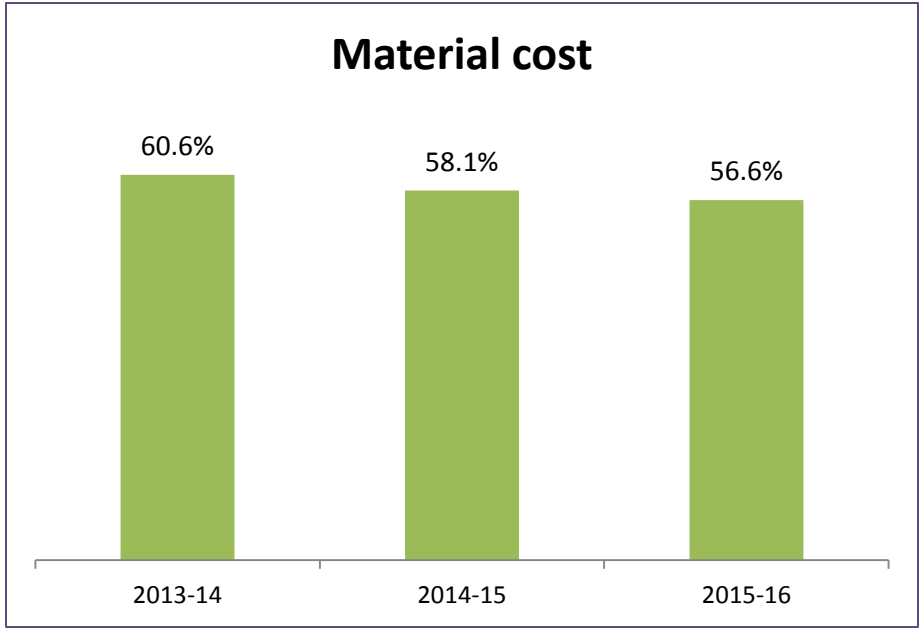


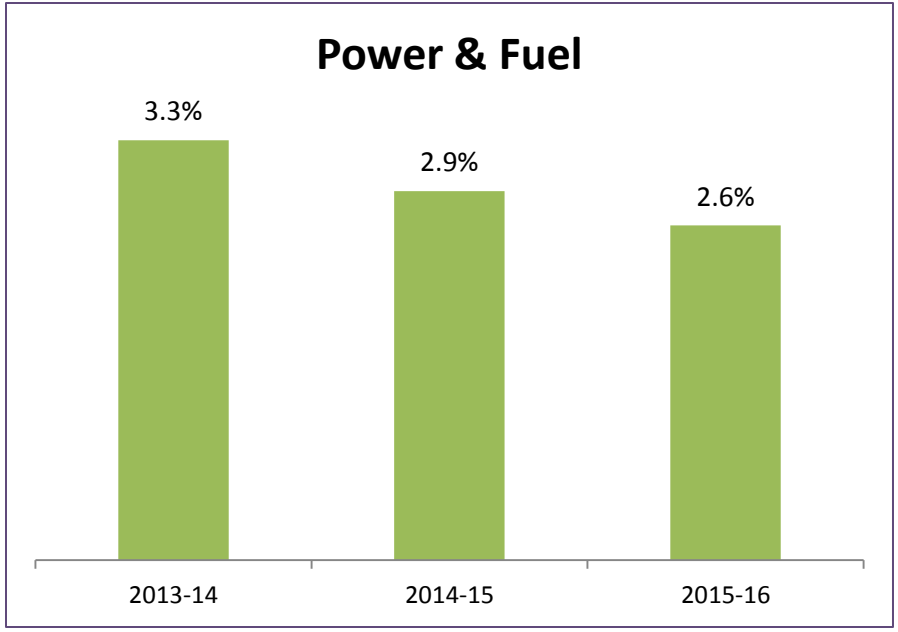




SAVINGS DUE TO GREENCO

Green makes business sense

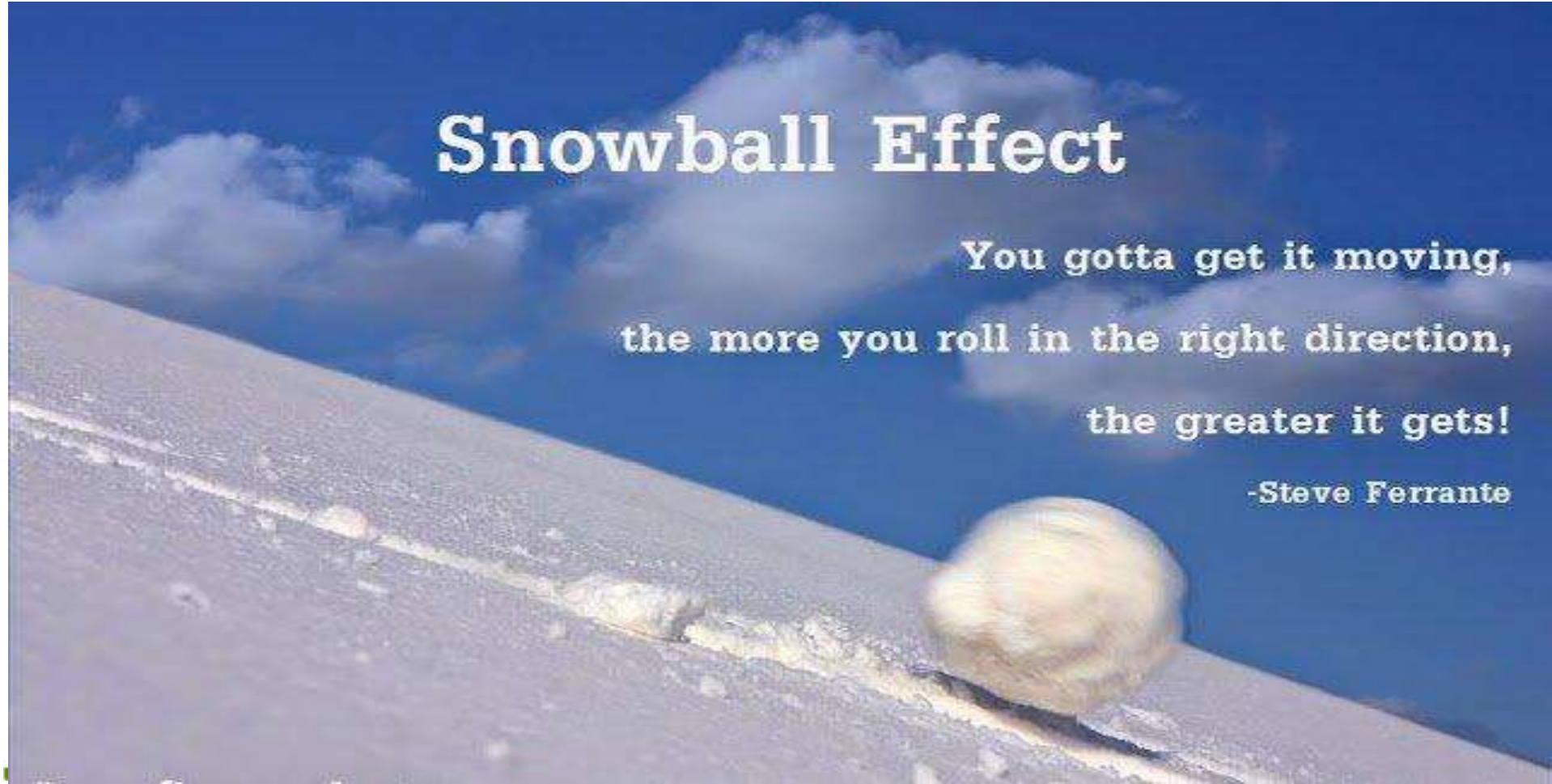




Avg 6.6% saving in material cost on sales over a period of 3 years

Avg 21.2% saving in energy cost on sales over a period of 3 years

GREENCO EFFECT…



WAY AHEAD

Towards Platinum
Plant Vikhroli

- Benchmarking and exploration of technology change to achieve excellence in energy efficiency.
- Work towards utilization of captured rain water in processes.
- Increasing share of onsite and offsite renewable energy.
- Popularize use of LCA tool to validate environment benefits/impact due to process change.
- Network other GreenCo Rated companies for best practice sharing and accelerate replication of best practices.

Beyond Platinum
Plant Shirwal

- Achieve world class status in energy efficiency over a period of 3 years.
- Collaborate and learn from educational & institutional bodies like Indian Plumbing Society, SPCB.
- Focussed efforts towards achieving carbon neutrality .
- Create community leaders for effective water conservation and waste management in nearby villages.
- Facilitate GreenCo certification for minimum 3 vendors .
- Prepare and share 3 LCA case studies and publish 2 EPDs.

Above all...

For Interio its about teamwork

Thank You