

## Best Practices in Product Stewardship, Extended Producer Responsibility & LCA

**Godrej Appliances - Mohali**



## THE GODREJ BRAND



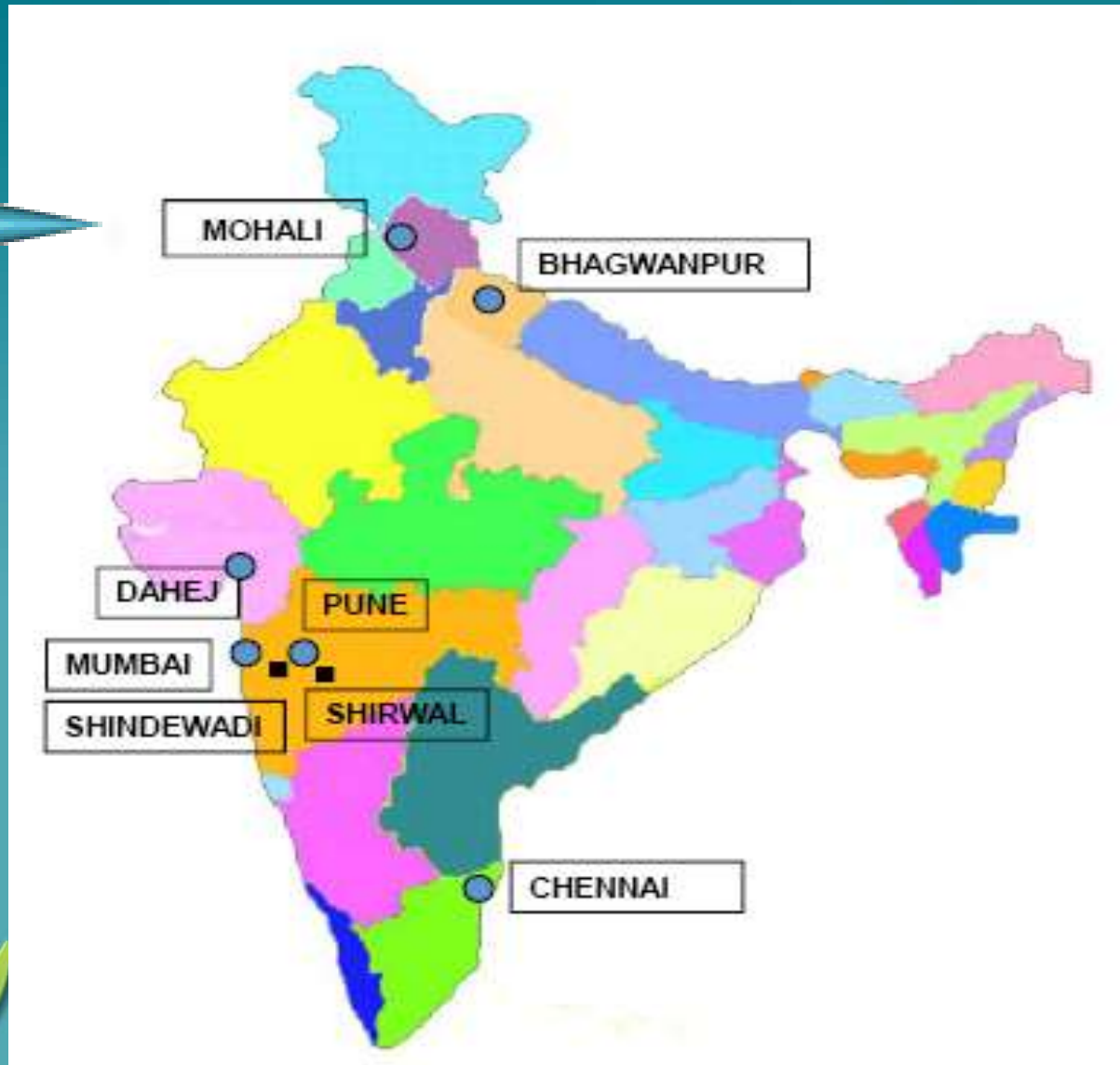
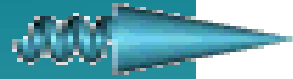
## Godrej in Every Home and Work Place

- India's largest privately business house.
- Started operations in 1897
- Annual turnover more than Rs.18000 Crores.
- Family of about 19000 employees.
- Product Spectrum Ranges from - Locks to Launchers

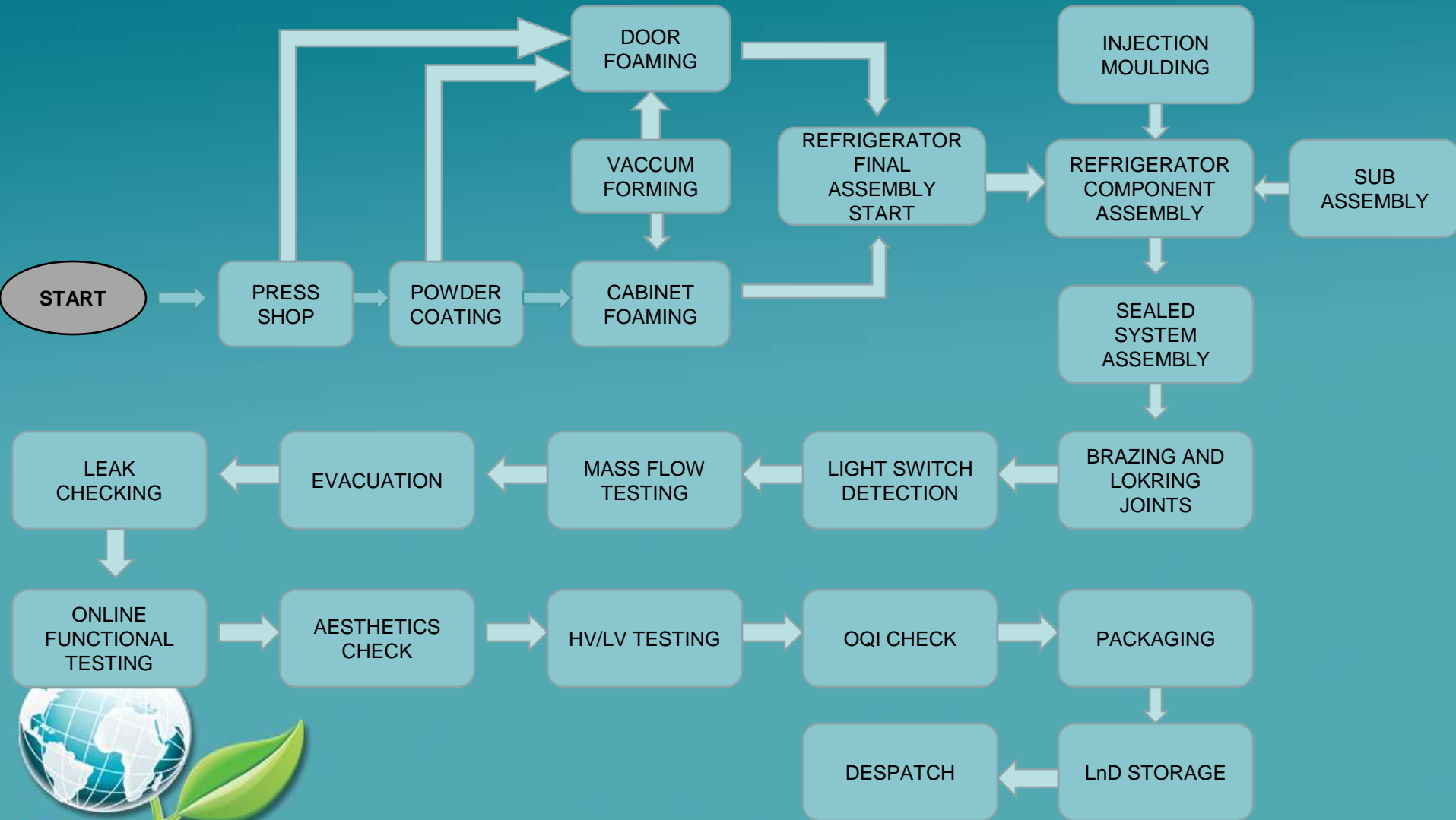


**Enriching Quality of Life  
Everyday Everywhere**

# DOMESTIC PRESENCE – MANUFACTURING LOCATIONS



# PROCESS FLOW – REFRIGERATOR PLANT



# DIVISIONAL POLICY – FOCUS ON GREEN

## Corporate Environment Policy

Godrej & Boyce Mfg. Co. Ltd.  
Corporate Environmental Policy

Godrej is committed to sustainable development and responsible corporate citizenship. It is our endeavour to pursue continual improvement towards the goal of environmental excellence in all facets of our business, from the forest to finished product. Accordingly, we have adopted the following Environmental Policy Statement for our business of manufacturing, marketing and servicing of locks, security equipment, home and office furniture, commercial and industrial storage solutions, communication solutions, home appliances, process plant and equipment, material handling equipment, tooling and precision engineering products, electrical & electronic services along with civil construction, property development, environment management including wetlands.

Whilst upholding our tradition of quality and craftsmanship built over more than a century, and meeting our commitment of profitability growth through sustainable development, we shall ensure that our operations comply with all local and national legislations and regulations, legal agreements and other requirements applicable to us, with emphasis on:

- > Institutionalization of environmentally responsible work practices.
- > Conservation of water, energy, raw materials and natural resources.
- > Application of waste management hierarchy of prevention of pollution, reduction of waste generation at source, reuse and recycling.
- > Disposal of waste in scientific and environmentally responsible manner.
- > Protection, conservation and enhancement of green cover and biodiversity.
- > Improvement in environmental awareness amongst all our employees, contractors, vendors, customers, neighbours and public.

We will assess the risk of our operations and implement systems to prevent and respond to emergencies. We will promote awareness by developing managers and employees who are empowered and accountable to ensure environmental protection.

This policy will be communicated to all our employees and business associates and made available to interested parties and public.

*J.N. Godrej*

J.N. Godrej  
Managing Director

Place: Mumbai  
Date: 01.01.2004



## Divisional IMS Policy



GODREJ & BOYCE MFG. CO. LTD.  
APPLIANCE DIVISION

### QUALITY, ENVIRONMENT, OCCUPATIONAL HEALTH & SAFETY POLICY

The business of Godrej Appliance Division is to provide consumers with 'World Class' Quality products of their choice that enhance their life styles in their homes and work place.

We are an environmentally responsible company and firmly believe in industrial growth through sustainable development in the areas of Quality, Environment, Occupational Health & Safety.

To continue our efforts in this direction, we commit ourselves to:

- Enhance customer satisfaction by offering innovative products and services that offer maximum value for money.
- Conserve all key resources such as water, energy, oil and other raw materials by optimizing their use and continuously improve our environmental performance by using pollution preventing processes, better waste disposal practices and recycling of material.
- Phase out the usage of Ozone Depleting Substances in our products and processes to meet or improve our country's overall compliance schedule under the 'Montreal Protocol'.
- Strive to eliminate hazards and associated risks by following Safe Operating Procedures in all processes so as to prevent injuries and ill-health.
- Comply with applicable local, national and other related legislations / regulations with regard to Quality, Environment, Occupational Health and Safety.
- Set and review objectives, targets and strive to achieve by continuously improving processes in all areas of operation through involvement of all.

We shall create and enhance awareness on sound Quality, Environment, Occupational Health and Safety practices amongst all our employees, suppliers and contractors.

This policy has been communicated and made accessible to everyone in our immediate organization and will be made available to our larger family of customers, suppliers, business associates and to other interested parties on request.



*George Menezes*

George Menezes  
Chief Operating Officer  
Appliance Division

Release Date : 01-06-2010

## Corporate Energy Policy



GODREJ & BOYCE MFG. CO. LTD.  
Corporate Energy Policy

GODREJ is committed to energy conservation, environmental protection, and profitable growth in business through sustainable development. We are in the business of manufacturing, marketing and servicing a wide range of appliances and other consumer durables, accessories, industrial products, high-pressure components, electrical and electronic products, and property development. We are committed to continuously improve the energy performance in all our activities, products and services. We will continue to ensure that our operations comply with all local, state and central policies, rules and standards, relating to energy efficiency and energy conservation.

We will continue to inculcate energy awareness amongst our employees, business partners and best opportunities through the process of communication, education and participation, and we will strive to:

- Comply & strive to exceed the National and International Energy Legislations and other statutory requirements.
- Ensure the use of energy efficient technologies to enable our customers to benefit from higher energy performance standards of our products and equipments.
- Adopt best possible energy efficient technologies, equipment and provide for all best practice.
- Appropriately monitor and control energy consumption through effective energy management systems.
- Benchmark energy consumption levels in different businesses with the best-in-class.
- Enhance the use of waste energy and productivity improvement.
- For periodic internal and external energy audits to identify potential energy saving opportunities.
- Recognize and reward the efforts of our employees in energy conservation initiatives, share and spread our experiences in energy conservation within the Company and the Group.
- Promote/Encourage use of Renewable Energy resources.
- Commit to address effective energy management systems towards sustainable development to future generations.

We are committed to reduce our specific energy consumption by at least 20% by 2020.

*J.N. Godrej*  
J.N. Godrej  
Chairman & Managing Director

April, 2007







## Corporate Vision

### Good & Green Vision

#### Good & Green Products

Goal - By 2020  
Having 1/3 rd portfolio of Good & green products

#### Creating Greener India

Goal - By 2020  
1) 30 % renewable resource  
2) Zero waste  
3) Water positive  
4) Carbon neutrality  
5) 20% reduction in SEC

#### Ensuring Employability

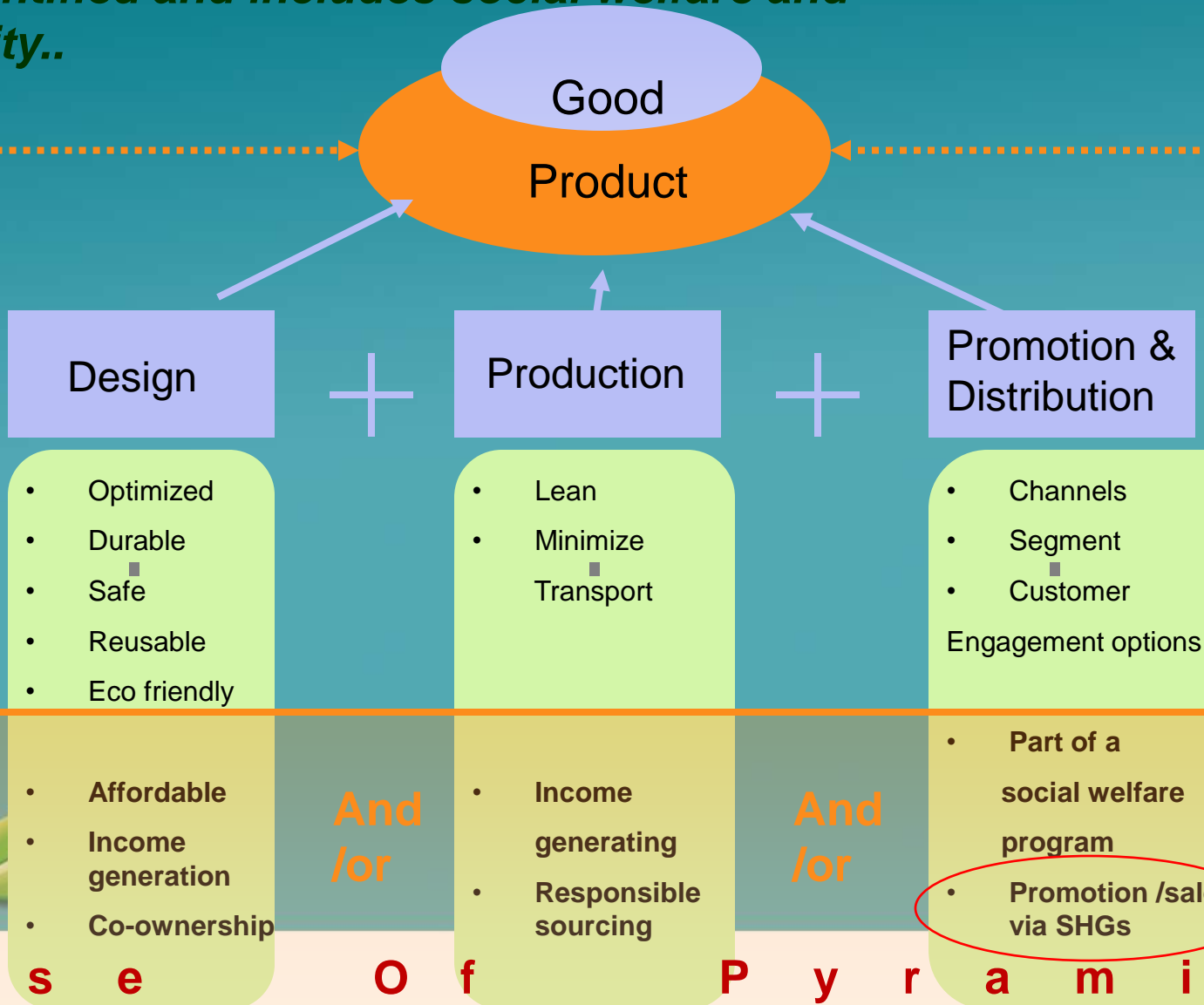
Goal - By 2020  
Training 1 million rural & urban youth in skilled employment

**Mission on Sustainable Growth  
(Commandments)**



# GOOD PRODUCT

*Good Product: definition addresses the critical social issues identified and includes social welfare and affordability..*



# GREEN PRODUCT

*Green Product is defined as products complying to any one attribute listed below*

Green Product Attributes	
1	Reduce <b>energy consumption</b> by at least <b>20%*</b>
2	Reduce <b>water consumption</b> by at least <b>20%*</b>
3	Reduce <b>GHG emissions</b> by at least <b>20%*</b>
4	Reduce <b>material used in products</b> incl. packaging by at least <b>20%*</b>
5	Use <b>100% recyclable, renewable and/or natural material</b> in product incl. packaging
6	<b>Eliminate toxic materials</b> such as PVCs, BFRs, mercury, and others.

*\* Baseline definition: Over & Above 2010 performance for existing products, Over & above industry comparable best practice or Government Standards for new products. Criteria should go over and above government standards. For existing products BUs may choose to develop Green attributes Y-on-Y but a product will only qualify for inclusion when it meets above targets, at which point the baseline will be reset to the year of inclusion.*





# BENCHMARKING... CREATING THE “BEST-OF-BEST”

Process Steps	Rationale	Process step owner
Decide Competitors to be focused	Focused efforts	Cat Head
Map Portfolio/Channel <ul style="list-style-type: none"> <li>• Platforms</li> <li>• Capacities/Models</li> <li>• Variants</li> </ul>	Understand product offerings and pricing strategy	Cat Head
Study Communication	Understand claimed value proposition	Product Managers
Model(s) selection for Benchmark Study	Focused efforts	Cat Head
Benchmarking through feature study, testing and tear down	Insights on performance, costs - Best of Best approach	R&D
Benchmarking on field quality performance	Establish Benchmark on field quality	Service

- **Develop understanding on**
  - Communication on claims
  - Range / variant strategy
  - Channel strategy
  - Product material content
  - Supply sources for key items

**Dovetail with category MGPP / Fine tune NPD**



## Creating awareness amongst stakeholders

Stakeholders	Awareness provided through
<ul style="list-style-type: none"> <li>➤ <b>Product handling</b> <ul style="list-style-type: none"> <li>▪ <b>Logistic</b></li> <li>▪ <b>Distribution</b></li> <li>▪ <b>Branch</b></li> </ul> </li> </ul>	Contact Programs / Tool Box Meetings, Work Instructions / SOP's, Instructions on packing cartons
<ul style="list-style-type: none"> <li>➤ <b>Transport</b></li> </ul>	Work Instructions / SOP's, Instructions on packing cartons
<ul style="list-style-type: none"> <li>➤ <b>At Customer end</b></li> </ul>	User Manuals, Instructions on packing cartons, One Watt project, Tour De India
<ul style="list-style-type: none"> <li>➤ <b>Service</b></li> </ul>	Godrej Vocational training school, User Manuals, Instructions on packing cartons, Green Think Diary.
<ul style="list-style-type: none"> <li>➤ <b>Disposal</b></li> </ul>	E waste disposal detail printed on carton and manual, E waste policy.





# Godrej Eon Tour De India

A green initiative from Godrej Appliances

- Godrej Eon was the title sponsor of the Indian leg of Tour De France – Tour De India
- The association with Tour De India was primarily for following reason
  - Cycling being a green sport is inline with the overall strategy of Godrej
  - It's a good platform to spread awareness about the green sport among the youth of India



# PROMOTING AWARENESS ON GREEN SPORTS AMONG YOUTH



In December last year, we gave Indians all over the country, a chance to ring the bell with their friends, families, neighbours and the stars. A chance to relive their childhoods and save the world at the same time, with cycling and so TDI came to grow as one of India's largest cycling extravaganza. A race that turned cycling into a sport to be reckoned with.



The Official Launch of TDI 2012 at Mumbai



**Mumbai**  
**2<sup>nd</sup> December 2012**

<p><b>Race Categories</b></p> <ul style="list-style-type: none"> <li>• Elite National Men – 123 kms</li> <li>• Elite International Men – 123 kms</li> <li>• Mass Participation – 23 kms</li> <li>• Tinkle Race - 5 kms</li> </ul>	<p><b>Race Statistics</b></p> <ul style="list-style-type: none"> <li>• Total Participants: 5000+</li> <li>• Total Viewers: 25000+</li> <li>• National Riders: 58</li> <li>• International Riders: 98</li> </ul>
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**Srinagar**  
**4<sup>th</sup> December 2012**

<p><b>Race Statistics</b></p> <ul style="list-style-type: none"> <li>• Elite National Men – 130 kms</li> <li>• Elite International Men – 130 kms</li> <li>• National Riders – 58</li> <li>• International Riders – 95</li> </ul>
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**Delhi**  
**9<sup>th</sup> December 2012**

<p><b>Race Categories</b></p> <ul style="list-style-type: none"> <li>• Elite National Men – 130 kms</li> <li>• Elite International Men – 130 kms</li> <li>• Mass Participation – 23 kms</li> <li>• Tinkle Race 6 kms</li> </ul>	<p><b>Race Statistics</b></p> <ul style="list-style-type: none"> <li>• Total Participants: 5000+</li> <li>• Total Viewers: 20000+</li> <li>• National Riders: 58</li> <li>• International Riders: 95</li> </ul>
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India's mindset of treating cycling as a poor man's sport has to change: Yuvraj Singh

Style posse

Final to the grand tour

Cyclists push their limits...

Print Coverage for the event

CYCLING FOR A CAUSE

Msiden run ends at FI track

**More than 45000 eyeballs covered by the event**







# One Watt Project

- National Initiative to sensitize people about the grave situation of Power Deficiency.
- Spread awareness about the importance of conserving energy.
- Approach:
  - Covering all the major cities of India, in a duration of a Month- starting 18<sup>th</sup> April'2012
  - Seeking people's contribution by taking a Pledge to save electricity
  - Cover Corporate Parks in select cities to target participation of Key Corporate
- Objective:
  - SAVE A BILLION WATTS.



# AWARENESS PROJECT - 2

## Taking it to the people



**Green Van 35 Cities**



**Tie up with Kings XI - IPL 2012  
Visibility of 5 Crore+**



**10 lakhs + spectators  
engaged through CCL**



**300 + Schools Reached**



**In store promotions**





## SUPPLIER CLUSTER

### Context

- Inspiration from CII's hybrid cluster for OEMS
- Godrej Appliances' factories successfully deployed cluster learnings
- Extending to suppliers – the next logical step considering the challenges faced due to external factors.
- Choosing suppliers
  - Small scale suppliers
  - Dependent on Godrej
  - Current quality performance (PPM level)

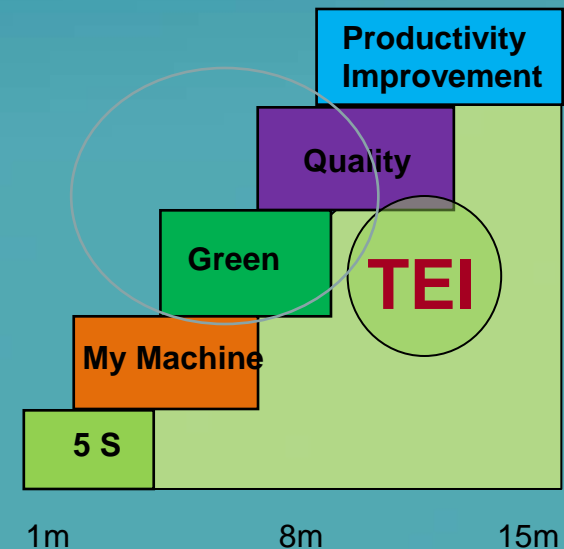
### Cross-functional working

**A systematic effort to develop supplier capabilities**

- Sourcing head leads the project.
- Manufacturing head acts as mentor.
- Cross functional **Supplier Improvement Team** drives execution.
- Top management reviews the progress on monthly basis.

### Roadmap

- The roadmap for excellence



**TEI to be at the core of the initiative.**

**Individual participation, but a collective experience**



# PARTICIPATION OF SENIOR LEADERSHIP IN RAMA (REFRIGERATOR & AC MANUFACTURERS ASSOCIATION) MEETINGS



**USAID | INDIA**  
FROM THE AMERICAN PEOPLE



**Partnership to Advance Clean Energy-Deployment (PACE-D)  
Technical Assistance Program**

## **HVAC Market Assessment and Transformation Approach for India**

### **RAMA Meeting**

**Hyderabad**

September 3, 2014

Tanmay Tathagat & Gurneet Singh



# PARTICIPATION IN BEE MEETINGS



## BUREAU OF ENERGY EFFICIENCY

### MINUTES OF MEETING

Name of the Meeting	DATE	VENUE
First Steering committee for Proficiency Testing under Standard & Labeling Program of BEE	November 3 <sup>rd</sup> , 2014	Conference Room, Bureau Of Energy Efficiency

CHAIRMAN: Dr. R.S. Agarwal, Professor, Ex-IIT

#### LIST OF ATTENDEE:

S.no	Name of the Attendee	Designation	Organization
1	Dr. R.S. Agarwal	Professor	Independent Expert (Ex- IIT)
2	Mr. Saurabh Diddi	Energy Economist	BEE
3	Mr. Ashish Saraswat	Project Engineer	BEE
4	Mr. Sundaramoorthy	Project Engineer	BEE
5	Mr. Kishore kumar	Project Engineer	BEE
6	Mr. Deepanshu Ahuja	Program Associate	CLASP
7	Mr. Venkateswaran	Technical Operation Manager	NABL
8	Mr. Rajeshwar Kumar	Accreditation Officer	NABL
9	Mr. Mohit Kausluk	Accreditation Officer	NABL
10	Mr. Nikil	Accreditation Officer	NABL
11	Mr. R.K. Mehta	Secretary	RAMA
12	Mr. Gurmeet Singh	Executive Director	Hitachi India
13	Mr. Low Seng Chok	Deputy Director	Panasonic India
14	Mr. Vijay Kumar	AGM	Panasonic India
15	Mr. Ajay Sharma	DGM	LG Electronic India
16	Mr. Shripad	Manager	LG Electronic India
17	Mr. Umesh	Asst. Manager	Blonster Limited
18	Mr. A.A. Acharekar	Associate G.M.	Godrej (Appliance Division)
19	Mr. Anand Chandra	Secretary General	CEAMA

WELCOME ADDRESS BY THE CHAIRMAN:



- Frequency of Proficiency Testing

#### BRIEF DISCUSSION ON S&L PROGRAM CHECK TESTING:

- Mr. Saurabh Diddi, BEE gave a brief background on Room Air Conditioner check testing held 2014 under Standard & Labeling program and informed about the Gazette notification of air conditioner, check testing procedure & its enforcement process. Subsequently, shared about the issue arising by the manufacturers & their associations on the Room air Conditioner test results variations in NABL accredited Independent Laboratories.
- Mr. Saurabh Diddi also informed about the discussions held with NABL official on Independent labs test result variations, Inter Lab Comparison & Proficiency Testing and opinion that a standard methodology shall be developed for analyzing the Independent labs test results variations so that no ambiguity will arise on test result variations in future and subsequently requested the steering committee members to thoroughly discuss & decided on above agenda points.
- Chair has opinion same on the above points and requested the steering committee to establish the procedure for minimizing the laboratory test result variations through the proficiency testing/Interlab comparison and requested to NABL officials to brief about the existing practice adopted for Lab's NABL accreditation process.
- In response, NABL official briefed about the following stages in accreditation process i.e., after receiving the application from the Laboratory for NABL accreditation.
  - Pre-accreditation Process:
    - a) Lab Pre-assessment
    - b) Lab Final assessment
    - c) Review by Accreditation Committee
    - d) Approval by Accreditation Board
  - Post accreditation Process:
    - a) On-site Surveillance audit
    - b) Off site Surveillance audit
- NABL official also informed that, there have analyzed few Independent labs' test reports & results and highlighted that the following issues/testing conditions could be main reasons for testing result variations i.e.,
  - a. Quantity of gas –charging & discharging
  - b. Compressor Vacuumization
  - c. Purity of Gas
  - d. Length of the copper tube

# PARTICIPATION IN CEAMA (CONSUMER ELECTRONICS & APPLIANCES MANUFACTURERS ASSOCIATION) MEETINGS

**CEAMA** Consumer Electronics and Appliances Manufacturers Association

**Kamal Nandi**  
Chairman - Home Appliances Council

CEAMA/2014/9/658

July 23, 2014

Dr. Ajay Mathur  
Director General,  
Bureau of Energy Efficiency,  
4<sup>th</sup> Floor, Sewa Bhawan,  
R. K Purani, New Delhi 110 066

#### Standards & Labeling Program for ACs & Refrigerators

Dear Dr. Mathur,

We are thankful to you for sparing your valuable time to meet CEAMA delegation, on July 18, 2014, to discuss issues related to Standards and Labeling Program (S&LP) for ACs and Refrigerators.

As brought out during the meeting, we would like to table some of our concern which are genuine and would make a plea for your kind consideration for the same.

1. Under the Check and Challenge process, BEE conducts two tests: these are currently done at single lab, i.e. CPRI Bangalore. Industry has expressed its apprehensions on the test procedure followed by CPRI Bangalore and therefore on the results of these tests. We would request that before an action is initiated on the brands facing failure under Check and Challenge process, detailed report for both the tests should be made available. We would also request that the two tests be conducted in different labs, as best practice followed elsewhere. The industry is happy to know that BEE was making efforts to have more labs registered. We request a speedy action in this regard.
2. There is a need to modify procedure after the brands fails to meet the Check and Challenge test. We are of the view that the brand should be given an opportunity to modify or withdraw the said model before any defamatory action is initiated. Considering the good track record of industry in implementing S&LP, you may consider to give the brands an opportunity for hearing before advertisement is placed in media, as it affects the brand image. As advised by you, CEAMA would make a suitable representation in this regard.
3. We understand that BEE would accept the test reports from NABL accredited labs only for models registered w.e.f. 01/12/2014. Industry requests that this should be implemented on prospective basis, as it is difficult to get huge number of current models retested which involves cost & time, also there could be issue of capacity in NABL accredited labs.

F-423, 4th FLOOR, WAVE 1st SILVER TOWER, PLOT NO. D-6, SECTOR-18, NOIDA - 201 301 (U.P.)  
TEL. : 91-120-4265897, 3147424 E-MAIL : info@ceama.in Website : www.ceama.in

**CEAMA** Consumer Electronics and Appliances Manufacturers Association

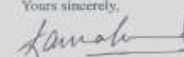
4. In ACs, S&LP band-width for each label is narrow and inadequate. We request the band-width be reviewed and widened to accommodate the tolerance (specified in BEE Schedule-3) in cooling capacity and input power.
5. S&LP for ACs and Frost Free Refrigerators are currently at table 2.3 having undergone 2 level changes. To the best of our understanding, The energy efficiency levels are almost at par with the Australian standards and better than the ASEAN countries like Thailand and Malaysia. Now that we have reached a certain level and keeping in mind the complexity of change over from one level to another, it is requested that the frequency of level of change be reduced from two years to four years.
6. The industry has observed that after the recent two Star jump in the energy efficiency level in the Frost Free Refrigerators, the market of this category has been adversely impacted. In spite of very good growth witnessed in single door Refrigerators and ACs this summer, the Frost Free segment has witnessed slower growth, many brands have even witnessed degrowth. In view of this, we request that two Star jump change should be avoided in any segment/ category in future.

We are in agreement with you that consumer along with the industry is an important stakeholder in the Energy Efficiency Program and his interests must be taken into consideration. On behalf of all industry colleagues, I would like to assure you that Consumers' interest will be given due importance by all brands in implementing the S&L Program.

Industry is very happy that you are back as Director General of Bureau of Energy Efficiency. It is only because of your leadership, through consensus building, that S&LP for ACs & Refrigerators has been a great success. We assure you that CEAMA would continue to work with you and build on this success.

With kind regards,

Yours sincerely,



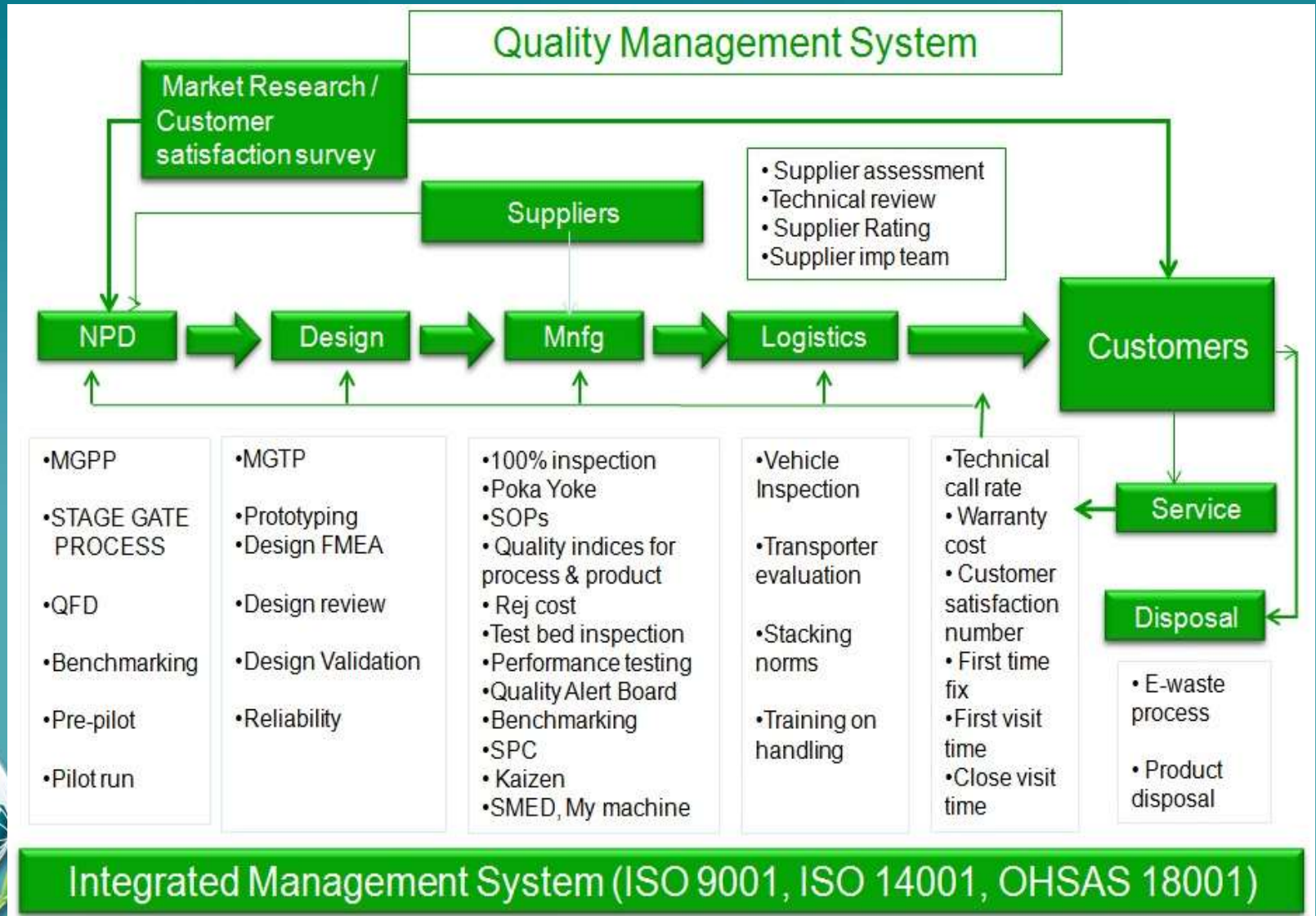
**Kamal Nandi**  
Chairman - H A Council CEAMA

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TEL. : 91-120-4265897, 3147424 E-MAIL : info@ceama.in Website : www.ceama.in

**HOME APPLIANCE COUNCIL OF CEAMA CHAIRED  
BY OUR DIVISION HEAD**



# PRODUCT RESPONSIBILITY MANAGEMENT - QUALITY MANAGEMENT SYSTEM FOR REDUCING WASTE DURING DISPATCH, STORAGE & USAGE



## Environmental Risk assessment of product

- RoHS compliance of products
- Refrigerators tested at ERTL labs
- ILC (Interlab comparison) test for refrigerators in India for energy consumption & performance test
- Environment Risk assessment of product during handling, storage and transportation





## *RoHS compliance for products*

Initiative: To make all items used for manufacturing of appliances at Mohali Factory -100% RoHS compliant

Status : Till year 2012, we had hardly 20~25% items with RoHS compliance

Current Status: We took 100% RoHS compliance target with deadline of March 2014 and achieved the same by making suppliers aware of RoHS requirements , tied up with testing lab (M/s SGS , Chakan, Pune) to facilitate suppliers with special discounted rates for RoHS testing, had detailed discussions with each supplier for making step-by-step plan for implementation.

**With this efforts, we are now 100% RoHS compliant**

Parameter	(2012~13)	(2013~14)	(2014~15)
RoHS compliant items	25%	84%	100%



## Initiative for CFC free product:

- Introduction of 100% CFC ,HFC,HCFC free Refrigerators(2002)
  - Change over to HC refrigerant (zero ODP and GWP of 3) ahead of competition which went for R124a (ODP zero & GWP of 1600)
  - Helped to reduce the impact of refrigerants in terms of “Global Warming” & “Ozone Depletion” on environment.

### Refrigerator

Criteria	Godrej (All Ref models)	LG (GL-278 VE4)	Samsung (RT-2534 SARJ-TL)	Whirlpool (FF-2D25545)
Refrigerant	Isobutane	R134a	R134a	R134a
ODP	0	0	0	0
GWP	3	1600	1600	1600

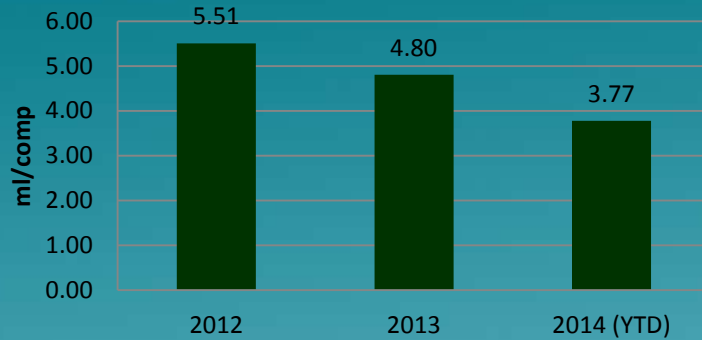
\*ODP – Ozone Depleting Potential

\*GWP – Global Warming Potential



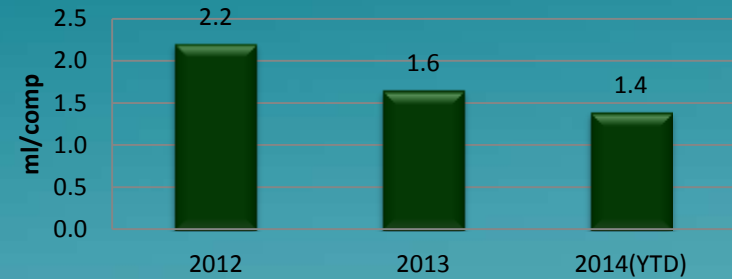
# REDUCTION OF TOXIC OR HAZARDOUS SUBSTANCE IN PROCESS

## RUSTOKEM 2



**Consumption reduce by 31.5 %**

## PARCOLUBRITE-5 MN PHOSPHATE



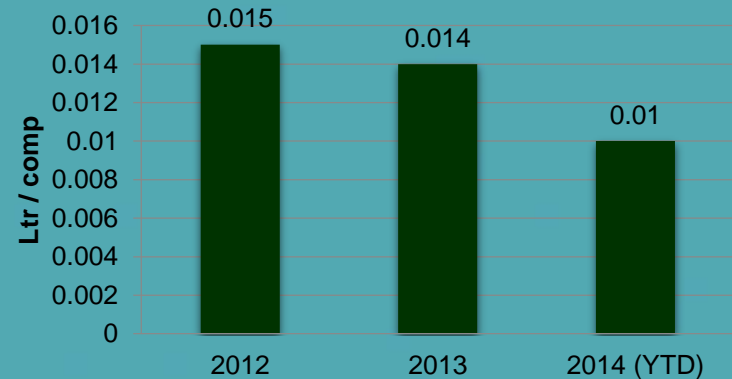
**Consumption reduce by 36.8 %**

## Thinner



**Consumption reduce by 13.0 %**

## Paint



**Consumption reduce by 33.3%**



# INNOVATIVE PROJECT – PAINT SLUDGE RECYCLING PROJECT

Patents English French

## Phase-converted intermediate from paint sludge

WO 2013186783 A1

### ABSTRACT

A process for making a usable paint by converting and recycling paint sludge includes the steps of providing the paint sludge, filtering the paint sludge, adjusting the water content of the paint sludge, homogenizing the paint sludge and water by addition of at least one solvent, carrying out emulsification of the homogenized paint sludge in a mixer to produce an Emulsified Intermediate Paint Sludge (EIPS) mixture, grinding the EIPS mixture to produce a first mixture and filtering the first mixture to obtain a finished Emulsified Intermediate Paint Sludge (EIPS) paint product.

Publication number	WO2013186783 A1
Publication type	Application
Application number	PCT/IN2012/000571
Publication date	Dec 19, 2013
Filing date	Aug 28, 2012
Priority date	Jun 14, 2012
Inventors	Aditya Sayal, A Girish, Sayal Gautam, Sayal Pardeep
Applicant	Aditya Sayal, A Girish
Export Citation	BIBTeX, EndNote, RefMan
Patent Citations (1), Non-Patent Citations (2), Classifications (2), Legal Events (1)	
External Links	Patentscope, Espacenet

## PROCESS FLOW CHART

Paint Sludge obtained from Paint booth/pit

Proprietary Technology

Premixing With additives and other RM'S

Process complete

Grinding to achieve stable dispersion

## SLUDGE CONVERSION



PAINT SLUDGE



FINAL PRODUCT



# EXTENDED PRODUCER RESPONSIBILITY - PRODUCT TAKE BACK AND RECYCLING PROGRAMS

## E waste storage and Disposal at Branches

### Objective:

To enable safe disposal of E waste material generated / collected at branches

### Stakeholders

Ware house keeper

Stores Manager

Commercial manager

Commercial – order booking person

### Prerequisites :

Separate Location for storing E waste material in our ware house as collection Point

Separate warehouse code in Baan for proper tracking

### Applicability:

The process is applicable for

Field return material under exchange program

Claim components recd from Dealer/ ASP / Customer

E waste generated at branches and ware house

Customer delivered machine as E-waste



# EXTENDED PRODUCER RESPONSIBILITY - PRODUCT TAKE BACK AND RECYCLING PROGRAMS

## GODREJ TAKE BACK POLICY



### Introduction

Electronic waste (E-waste) comprises of waste electrical/electronic goods which are not fit for their originally intended use. These outdated/obsolete appliances or electrical/electronic devices found in offices and houses can become hazardous if not discarded properly. E-waste is hazardous as it contains hazardous constituents like toxic substances and chemicals, which can have adverse effect on environment and health, if released indiscriminately into the environment. Safety and environmental considerations must be taken into account when disposing of old electrical household appliances.

To promote environmental sustainability in Indian Industry, Godrej Group under the chairmanship of Mr. Jamshyd N Godrej is signatory to the 'Mission on Sustainable Growth-01 Code for Ecologically Sustainable Growth'. Godrej is committed to reduce resource intensity & emissions, discharge & waste generation by 2-6% every year.





# EXTENDED PRODUCER RESPONSIBILITY - DESIGN FOR ENVIRONMENT PROGRAM

## Green initiatives in product

**BEFORE**



EPS support on 3 sides of refrigerators for DC Edge models

**AFTER**



EPS support replaced with pulp trays on 3 sides of refrigerators for DC Edge models



EPS support on top and bottom sides of service compressor



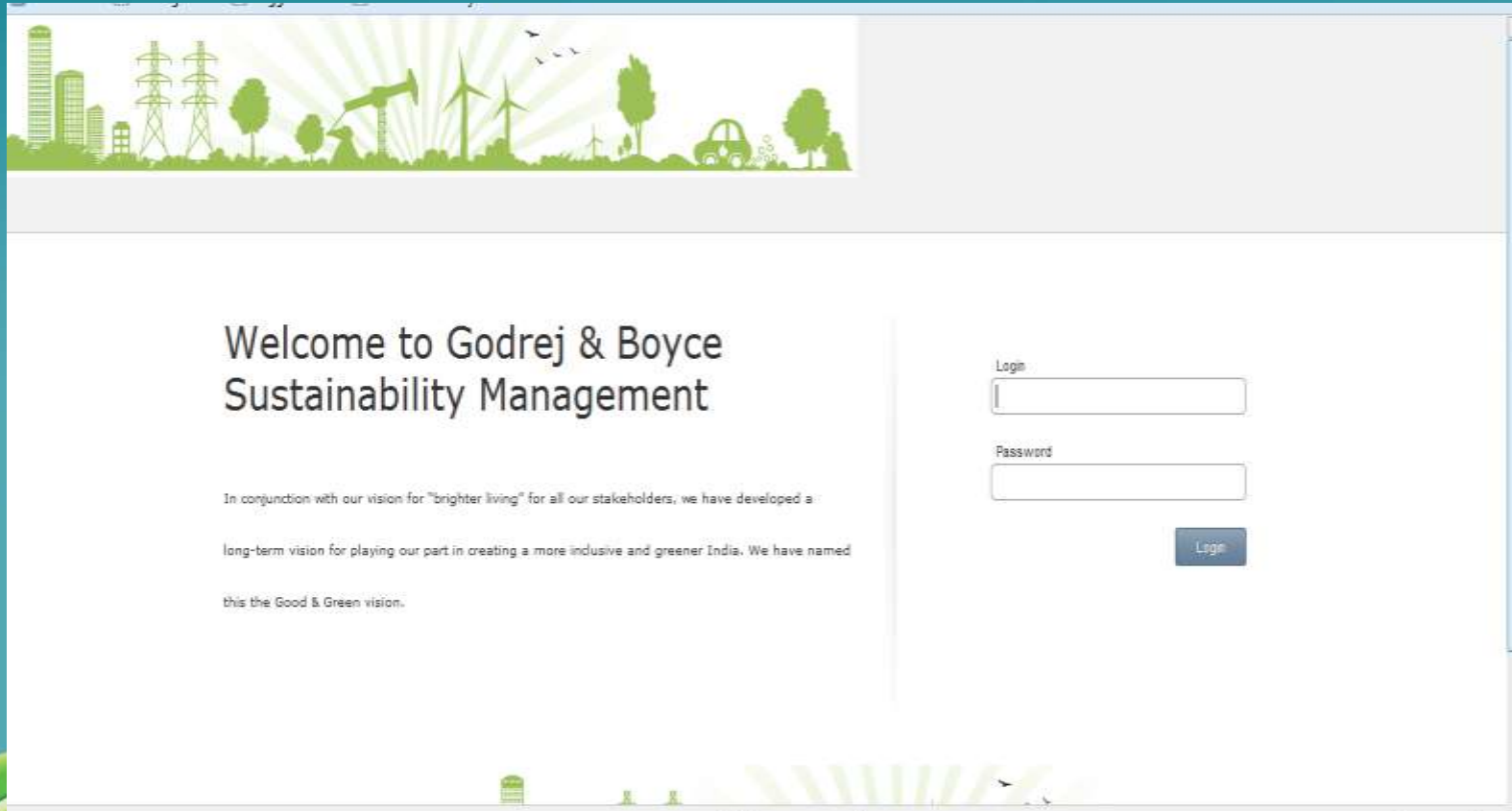
EPS support replaced with pulp trays on top and bottom sides of service compressor



# ENGAGEMENT TO VOLUNTARY CODES AND STANDARDS AND ALSO DIRECTIVES FOR REDUCING ENVIRONMENTAL IMPACT

- Compliance to CII commandments on MSG initiatives

## Sustainability Reporting System (SoFi)



# ENGAGEMENT TO VOLUNTARY CODES AND STANDARDS AND ALSO DIRECTIVES FOR REDUCING ENVIRONMENTAL IMPACT

## Voluntary Initiatives

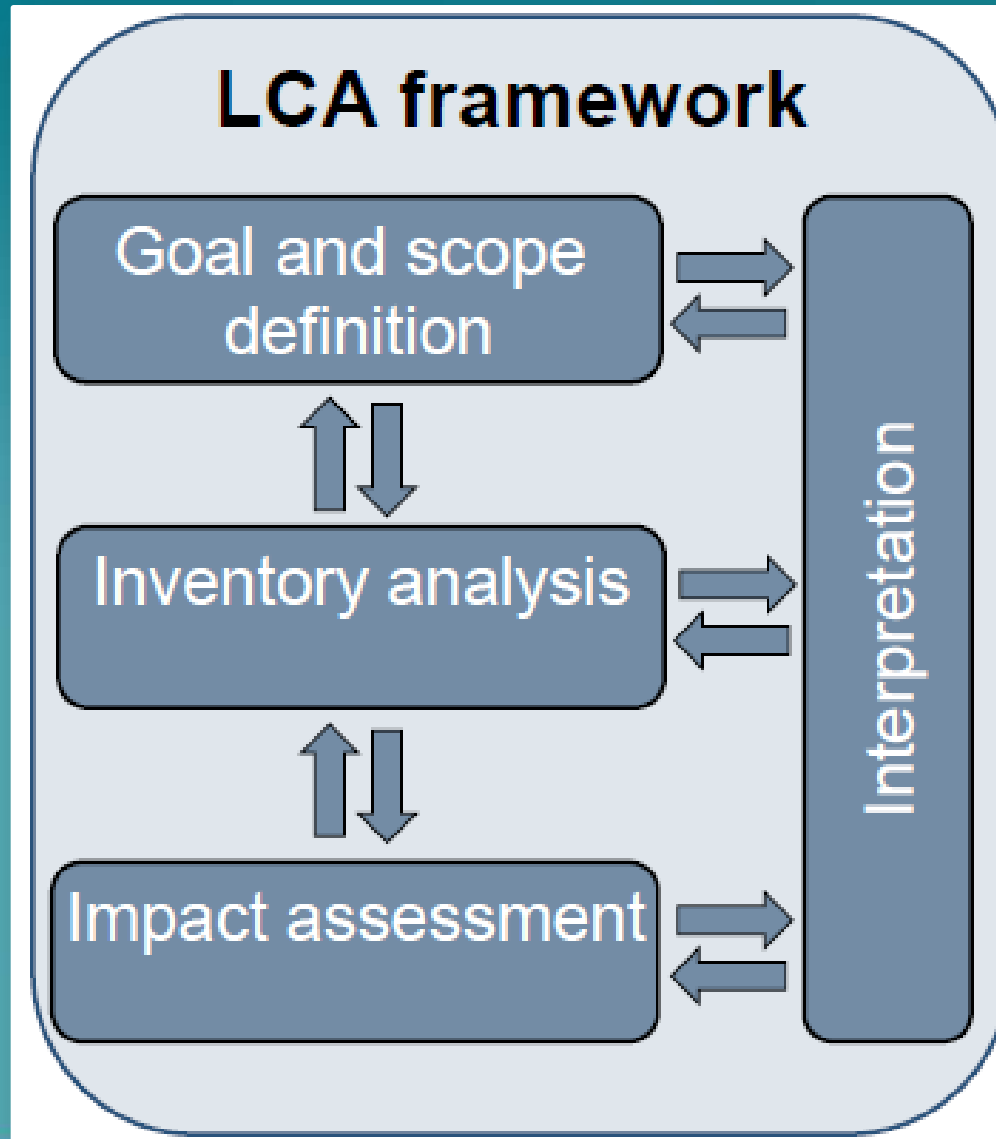
- In order to comply to Montreal protocol of discontinuing ozone depleting substances other manufacturers changed refrigerant from R12 to R134a which has GWP of 1600. But GAD moved one step ahead by changing over to HC which has zero ODP & GWP of 3.
- In year 2001- change over of blowing agent from Freon 11 to CPIP ( Blend of Cyclopentane & Iso pentane ) . Godrej was first to implement in India.
- In year 2012- Started manufacturing the most energy efficient split AC with R290 as refrigerant.
- Voluntary compliance to BEE energy Labeling Program for DC refrigerators & Godrej was first implement 5 Star model .
- First to make 6 star performance in DC Edge Pro refrigerator
- The data for sustainability reporting for last 3 years has be summarized and the sustainability reporting will be done by corporate in 2015~16



# LIFE CYCLE ASSESSMENT

**LCA**: A method/tool for the estimation of the environmental and human health impacts that are connected with a product/service /process /technology over the whole life cycle from cradle to grave.



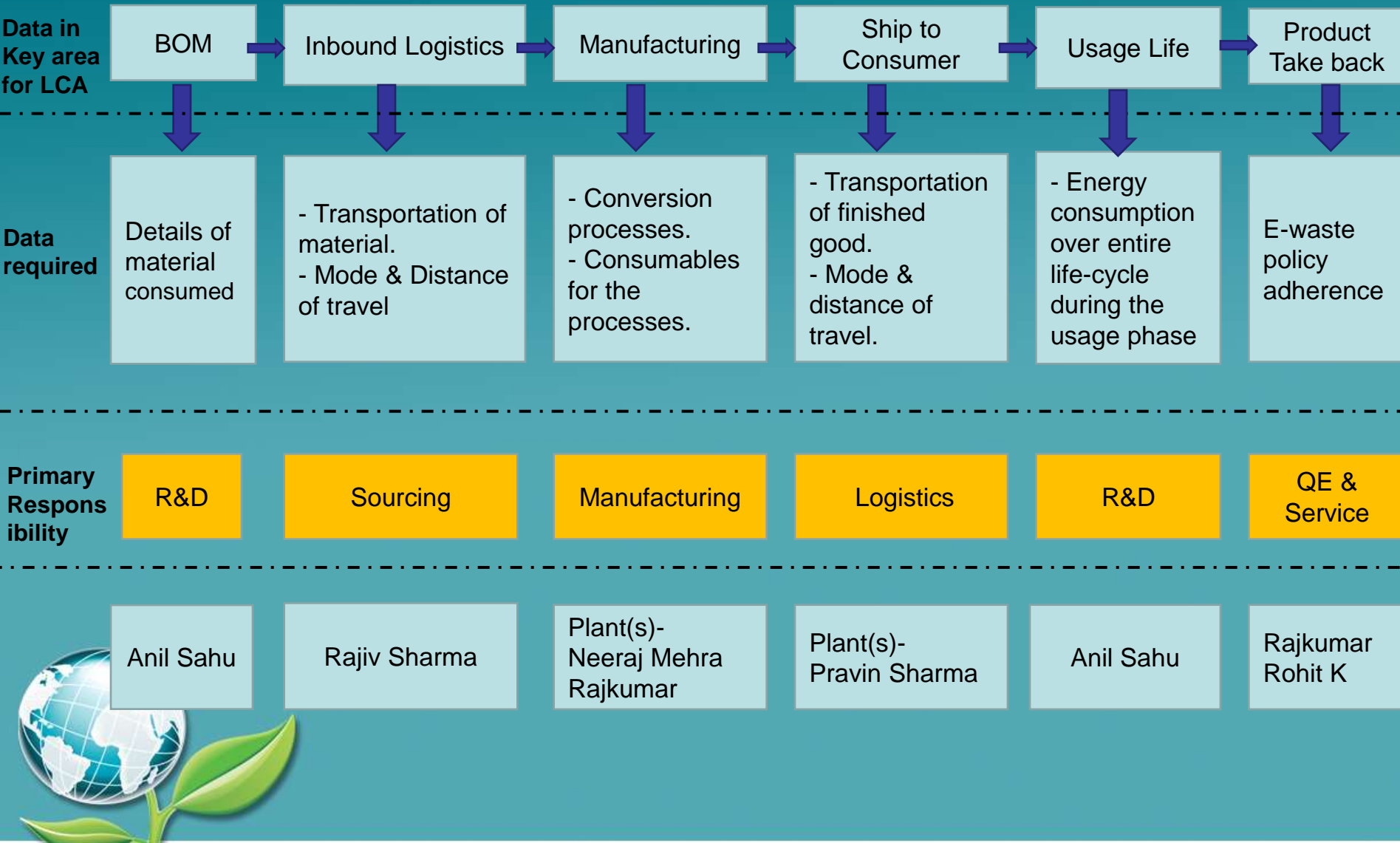


- To study the environmental impact of the various processes involved during complete life cycle of DC refrigerators and hermetic compressors.
- To provide users with the best in class refrigerators and compressors with most eco-friendly technology and approach.
- Identify areas and opportunities for improvements.
- Identify information and data gaps within the system boundary.





# LIFE CYCLE ASSESSMENT ARCHITECTURE



**SUPPORT OF ALL CRITICAL FUNCTIONS IS ESSENTIAL FOR CONDUCTING LCA STUDY**

**Function**: Function taken in for conducting LCA is DC refrigerator with hermetic compressor that constitutes 100% of compressor production.

**Functional Unit**: DC refrigerator with hermetic compressor.

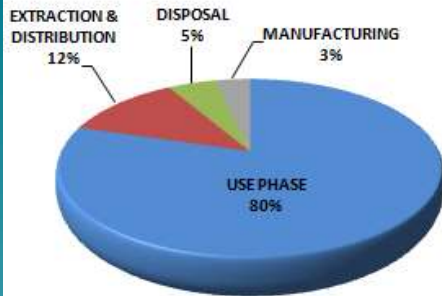
**System boundaries**: Thorough study in both upstream (RM extraction to company) and downstream directions (Company to end user) throughout the product life cycle.



**GODREJ MOHALI LOCATON MANUFACTURES APPROX 1.5 MILLION COMPRESSORS PER YEAR TO CATER THE REQUIRMENTS OF PLANTS AT BOTH THE LOCATIONS AS WELL AS FIELD REQUIREMENTS.**

# LIFE CYCLE INTERNAL STUDY (INTERNET SOURCES)

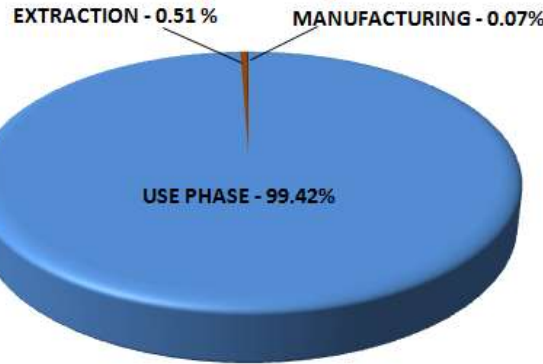
## IMPACT ON ENVIRONMENT (REFRIGERATOR)





**LCA REFR SHOWING MAX IMPACT IN USE PHASE.**

LCA MOTOR SHOWING MAX IMPACT IN USE PHASE

## IMPACT ON ENVIRONMENT (MOTOR)

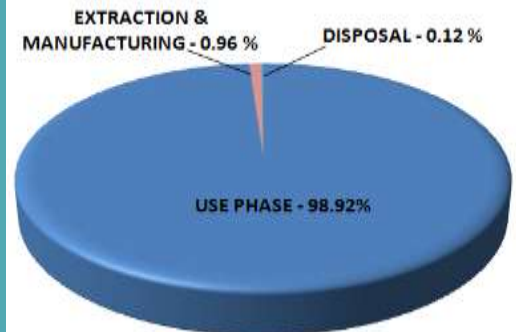


WHAT COMPONENT OF COMP IN USE PHASE HAS THE MAXIMUM IMPACT ..??

			
Compressor 80-150 Watts	Lights Bulb: 15 Watts LED: 1 Watt	Display / Touch screen 5-0 Watts	Ventilator 5-7 Watts

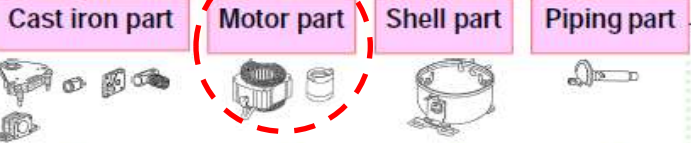
**COMPRESSOR USES APPROX 90 % OF REFRER POWER CONSUMPTION**

LCA OF COMPRESSOR



**LCA COMPRESSOR SHOWING MAX IMPACT IN USE PHASE.**

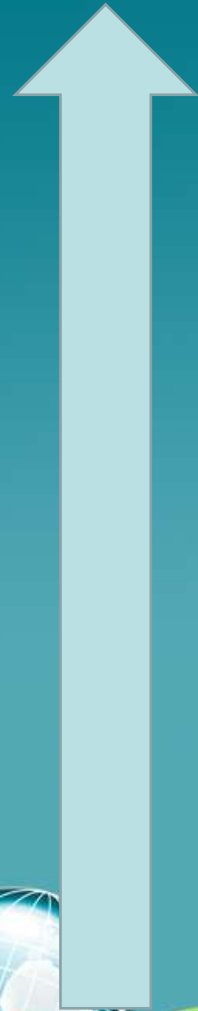
## Reciprocating compressor production



**MOTOR IS THE ONLY ELECTRICAL ENERGY CONSUMING COMPONENT IN COMPRESSOR**

**INTERNAL STUDY REVEALS THAT MAXIMUM IMPACT OF REFR ON ENVIRONMENT IS IN USE PHASE (80-90%) THAT TOO DUE TO MOTOR.**

# OUR ACTION PLAN FOR CONDUCTING LCA



LCA  
REFRIGERATOR

- R&D ALREADY IN PROCESS OF GAUGING LCIA JOINTLY WITH PE INTERNATIONAL

LCA  
COMPRESSOR

- R&D ALREADY IN PROCESS OF GAUGING LCIA JOINTLY WITH PE INTERNATIONAL

LCA  
MOTOR

- COMPLETED BY **GODREJ LAWKIM MOTOR GROUP**

**BOTTOM - UP  
APPROACH**

**FOR THIS REASON WE ADOPTED BOTTOM - UP APPROACH AND INITIATED LCA STUDY OF MOTOR WITH GODREJ LAWKM.**

## LIFE CYCLE ASSESSMENT:

### Goal:

Qualitatively compare environmental impact from the current refrigerant (ISOBUTANE + PROPANE v/s ISOBUTANE)

### Scope:

Godrej 180L EDGE refrigerator

## Comparison of Life Cycle Assessment of CO<sub>2</sub> Emissions (energy-induced CO<sub>2</sub>) and Green House Gas for Refrigerator

### Conditions of Life Cycle Assessment of Refrigerator:

#### Refrigerator type, refrigerant and energy consumption –

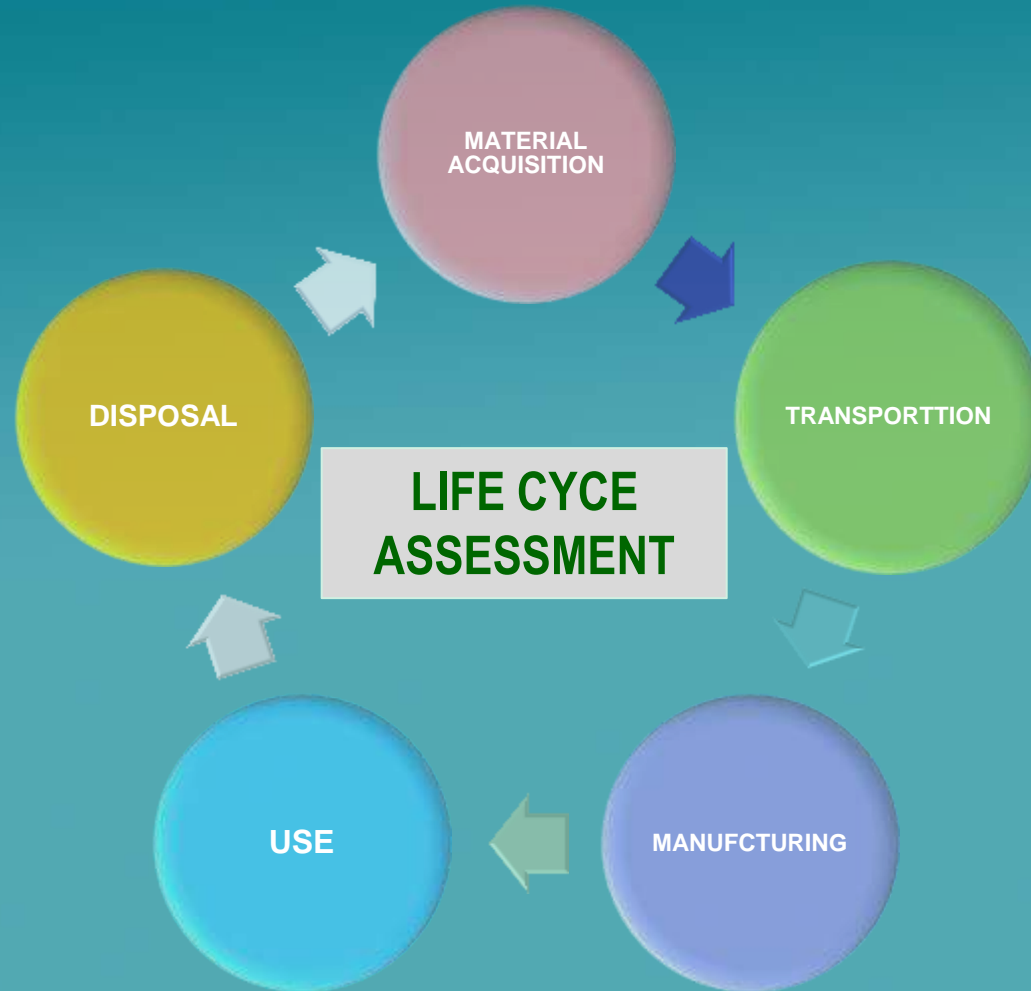
- The most commonly used refrigerators in India are Direct Cool Refrigerators which roughly contribute to 75% of volume.
- This section will take two refrigerants ISOBUTANE and ISOBUTANE + PROPANE to accomplish life cycle assessment.
- Energy consumption values - obtained from Energy Testing Laboratories.

#### Service life –

In India, most of refrigerators may be used for 10 years or longer.  
Therefore the calculations are evaluated for two time-spans: 10 and 15 years.



# ENVIRONMENT IMPACT REDUCTION AT EACH STAGE



# SUMMARY OF ENVIRONMENT IMPACT REDUCTION

Stages	ACTION	BENEFIT	Reference Parameters
Raw Material	•Reduction in <b>total weight</b> of compressor through recent initiatives	<b>15 %</b>	• PMO Initiatives
	•Reduction in <b>GHG emissions</b> during transportation	<b>30 %</b>	• GHG Reduction
Manufacturing	<ul style="list-style-type: none"> <li>• Reduction in <b>water</b> consumption</li> <li>• Reduction in <b>hazardous</b> substances</li> <li>• Reduction in <b>non hazardous</b> substance</li> <li>• Reduction in <b>specific power</b> consumption.</li> <li>• Reduction in <b>GHG emissons</b></li> </ul>	<b>18.61 %</b> <b>25.02 %</b> <b>51 %</b> <b>21%</b> <b>22%</b>	<ul style="list-style-type: none"> <li>• Material Conservation &amp; Recycling</li> <li>• Water Conservation</li> <li>• Product stewardship</li> <li>• Electrical Energy</li> <li>•GHG</li> </ul>
Product Usage	• <b>Improvement</b> in <b>over all energy</b> reduction in refrigerators.	<b>15~20 %</b>	<ul style="list-style-type: none"> <li>• Product Stewardship</li> <li>• Lawkim</li> </ul>
	• <b>Improvement</b> in <b>EER</b> of compressors in last 15 yrs	<b>100 %</b>	
	• Overall <b>Improvement</b> in <b>motor efficiency</b>	<b>15 %</b>	
End of life	• <b>RoHS compliance</b> for products	<b>100 %</b>	<ul style="list-style-type: none"> <li>• Material Conservation &amp; Recycling</li> <li>• GSC</li> </ul>
	• <b>Recycled content</b> in refrigerator and compressor	<b>25.5 %</b>	

# RECOGNITION TO OUR GREEN INITIATIVES



URJAVARAN- 2008



NATIONAL ENERGY CONSERVATION AWARD - 2009



'The Emvies' -2012  
(One watt project)



CII National Award for Excellence in Energy management-2013



NATIONAL ENERGY CONSERVATION AWARD FOR MOST ENERGY EFFICIENT REFER 2014



FIRST PRIZE AT NATIONAL ENERGY CONSERVATION AWARDS- 2014





# GREEN CO PLATINUM RATING



**Godrej Appliances Division, Mohali has attained the distinction of being the 2<sup>nd</sup> company to be certified Platinum in Green Co assessment and the 1<sup>st</sup> unit on all India basis to go through “platinum category” in the first attempt.**

**From:** CII GBC Environment Council [mailto:envirogbc@cii.in]  
**Sent:** Wednesday, January 28, 2015 3:41 PM  
**To:** Hussain Shariyarr; anlr@godrej.com  
**Cc:** mgandhi@godrej.com; svivek; Muthusezhiyan N; Harshita Soni; Prasad Gangane  
**Subject:** CII - GreenCo, Green Company Rating System Assessment Findings

Dear Mr. Hussain Shariyarr & Mr. Anil Rijhwani,

Thank you for the warm hospitality and exemplary courtesies extended to us during our visit for GreenCo assessment on January 20<sup>th</sup> & 21<sup>st</sup>, 2015.

I am extremely pleased to inform you that based upon the findings from the site assessment, it has been found that **Godrej Appliances Division, Mohali** has met all the requirements in accordance with GreenCo, Green Company Rating System and is being rated “**GreenCo Platinum**”.

**Godrej Appliances Division, Mohali** has also attained the distinction of being the 2<sup>nd</sup> company to be certified Platinum and the 1<sup>st</sup> unit on all India basis to go through “platinum category” in the first attempt. It is indeed a matter of pride for all of you that inspite of no intervention from any external source on training/hand holding, the unit has performed so very well on GreenCo parameters; and this leads us to believe that the balance of grounds on all the parameters of GreenCo certification will be further improved upon by yourself to set a new trend altogether in the GreenCo horizon.

This is an excellent effort and CII-Godrej GBC would like to congratulate you and the entire team.

The detailed report containing Opportunities for Improvement (OFI) will be sent to you by February 20<sup>th</sup>, 2015.

We are sure that your estimated rating in each of the parameters meets more or less with the assessors’ findings. The score band is attached for your perusal.

I am sure that the incredible work done by **Godrej Appliances Division, Mohali** will pave way for establishing itself as a global benchmark for appliance manufacturers going “Green”, thereby leaving an example for others to emulate.

Warm regards,

L S Ganapati  
Chairman  
GreenCo Assessment Panel  
CII - Godrej GBC

# LET'S GO GREEN

Thanks.....





“ It is our obligation to leave the world in better shape for future generations than when we were born to it. The fate of humanity is linked with every living creature and resource of nature and we serve to nurture these bonds. ”

– S. P. Godrej

