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Welcomes

CII GreenCo

Delegates

LTVS-NPM

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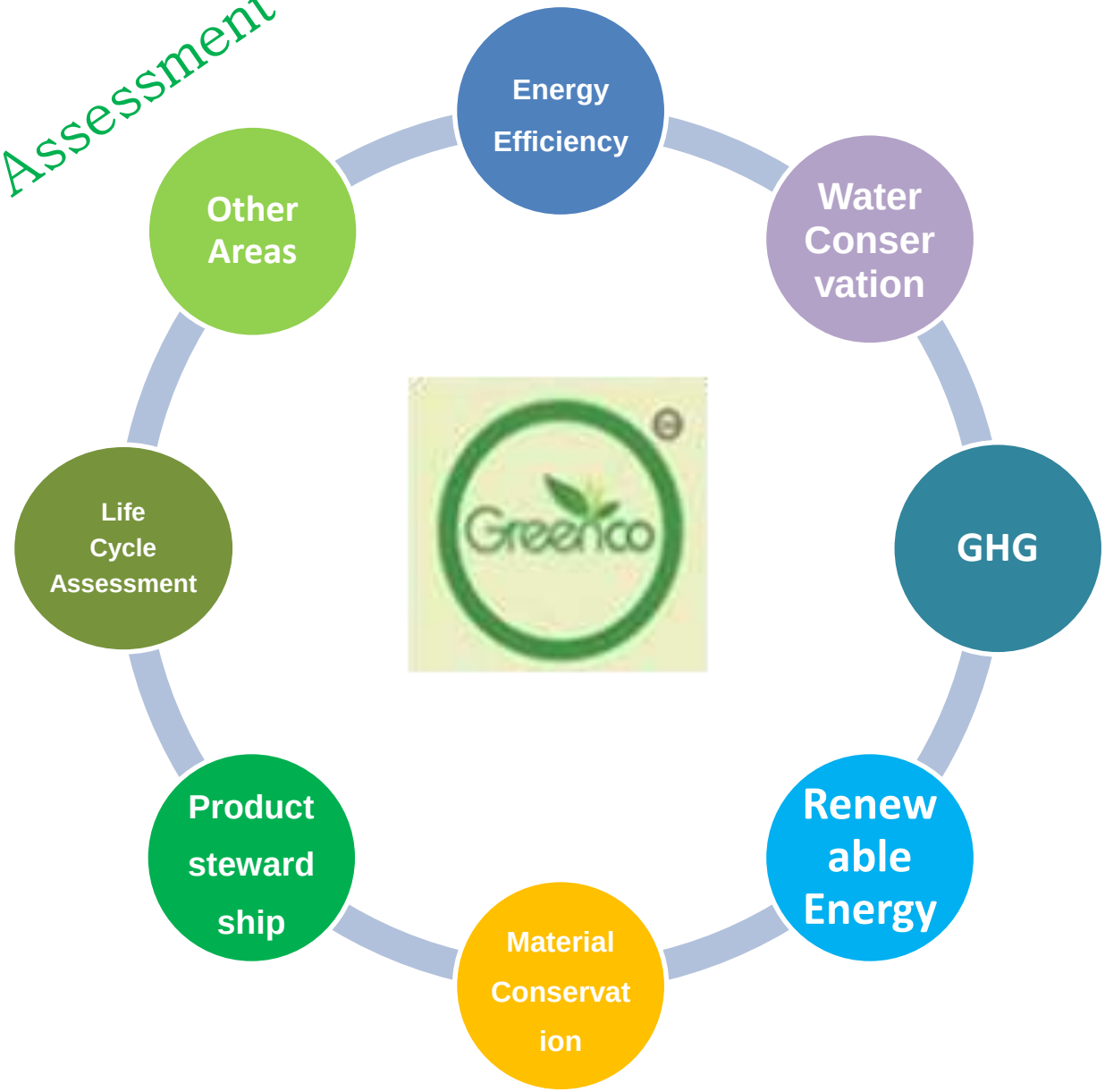
GreenCo Assessment



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Energy Efficiency

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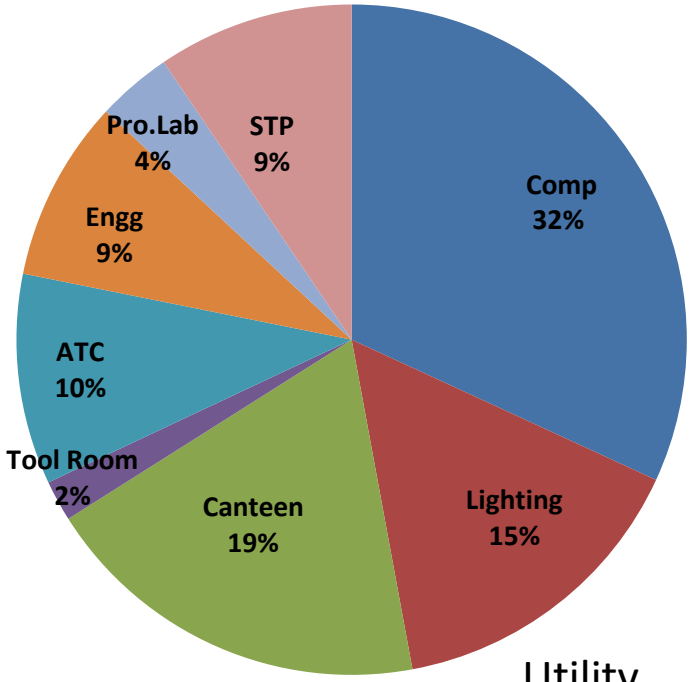
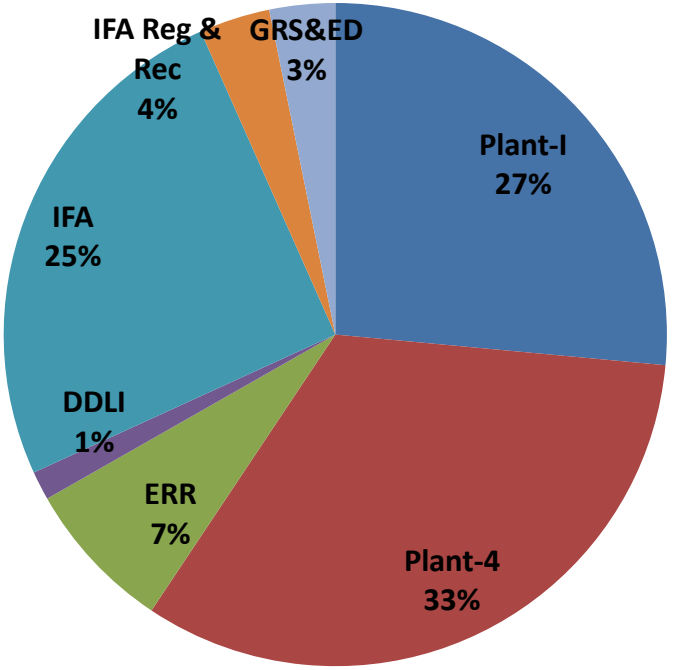
Electrical Power Source

Overall Energy Distribution

EB & Captive Power



Utility



Production

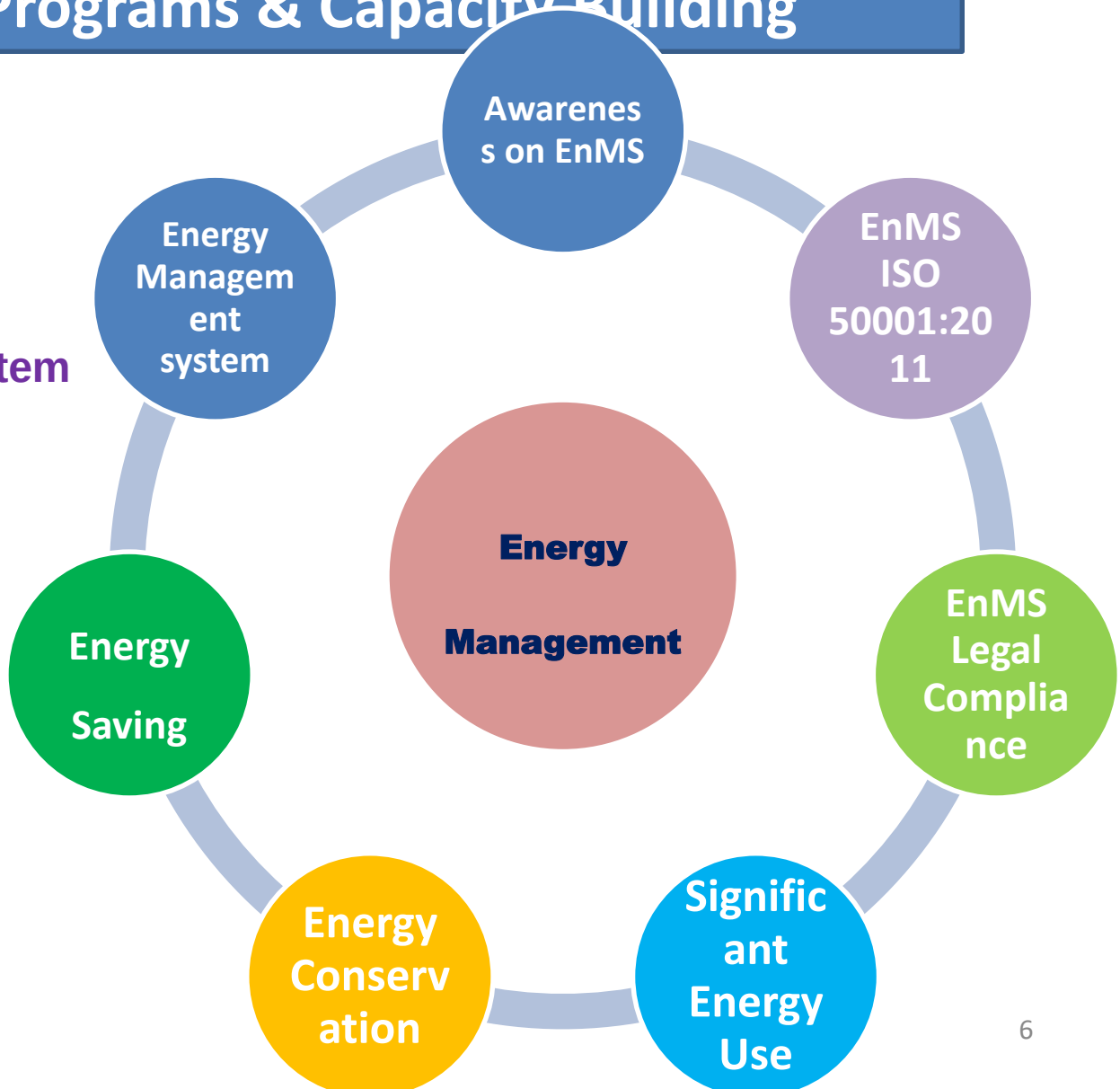
Long Term Targets and Action Plan

	Present 2016-17	Target for 2017-18	Target for 2018-19	Target for 2019-20	Target for 2020-21	Target for 2021 -22
Unit / ESU	**21.08**	**21.75**	**21.50**	**21.25**	**21.00**	**20.75**

- Roof Top Solar Power Plant.
- Solar Thermal Plant for Steam Generation in Canteen for cooking.
- Hydro pneumatic for replacement of hydraulic power pack.
- Installation of BLDC fan.

Training Programs & Capacity Building

- Awareness on EnMS
- EnMS ISO 50001 : 2011
- Energy Management system
- Energy Saving
- Energy conservation
- Significant Energy Use



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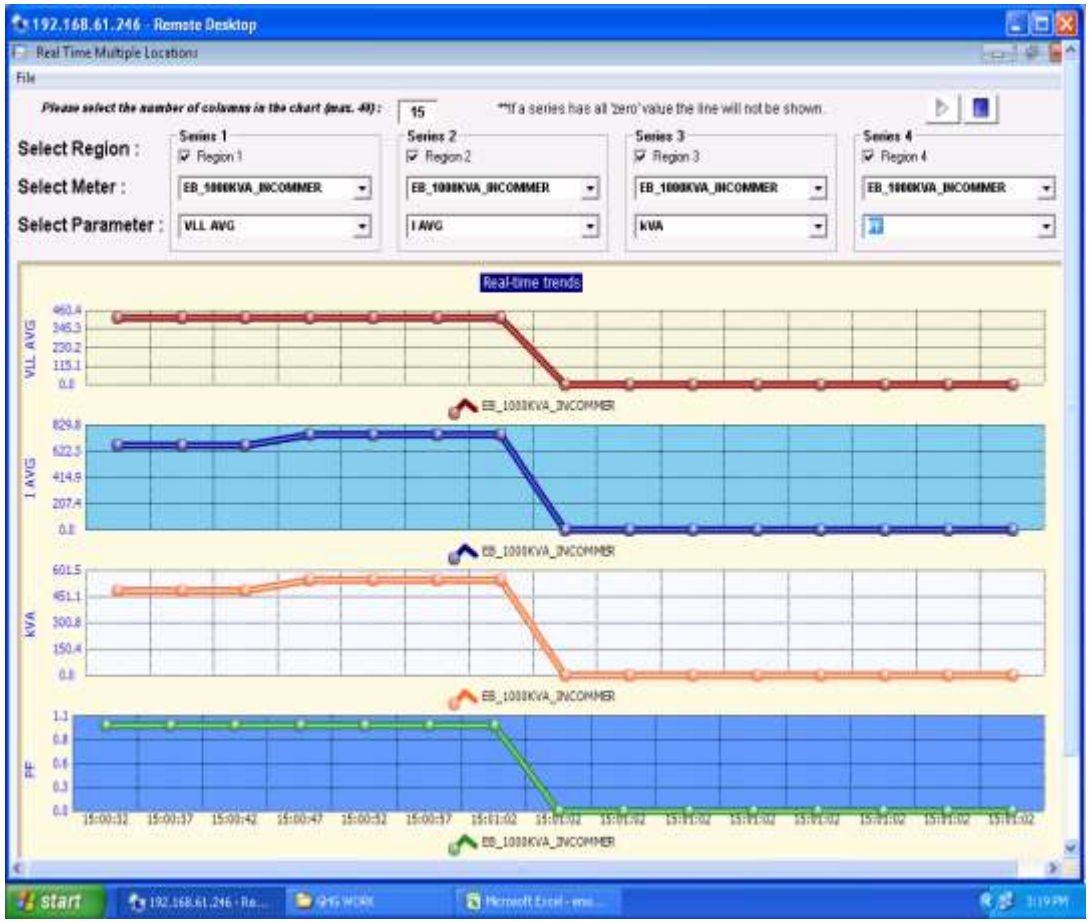
Energy Monitor & Management System



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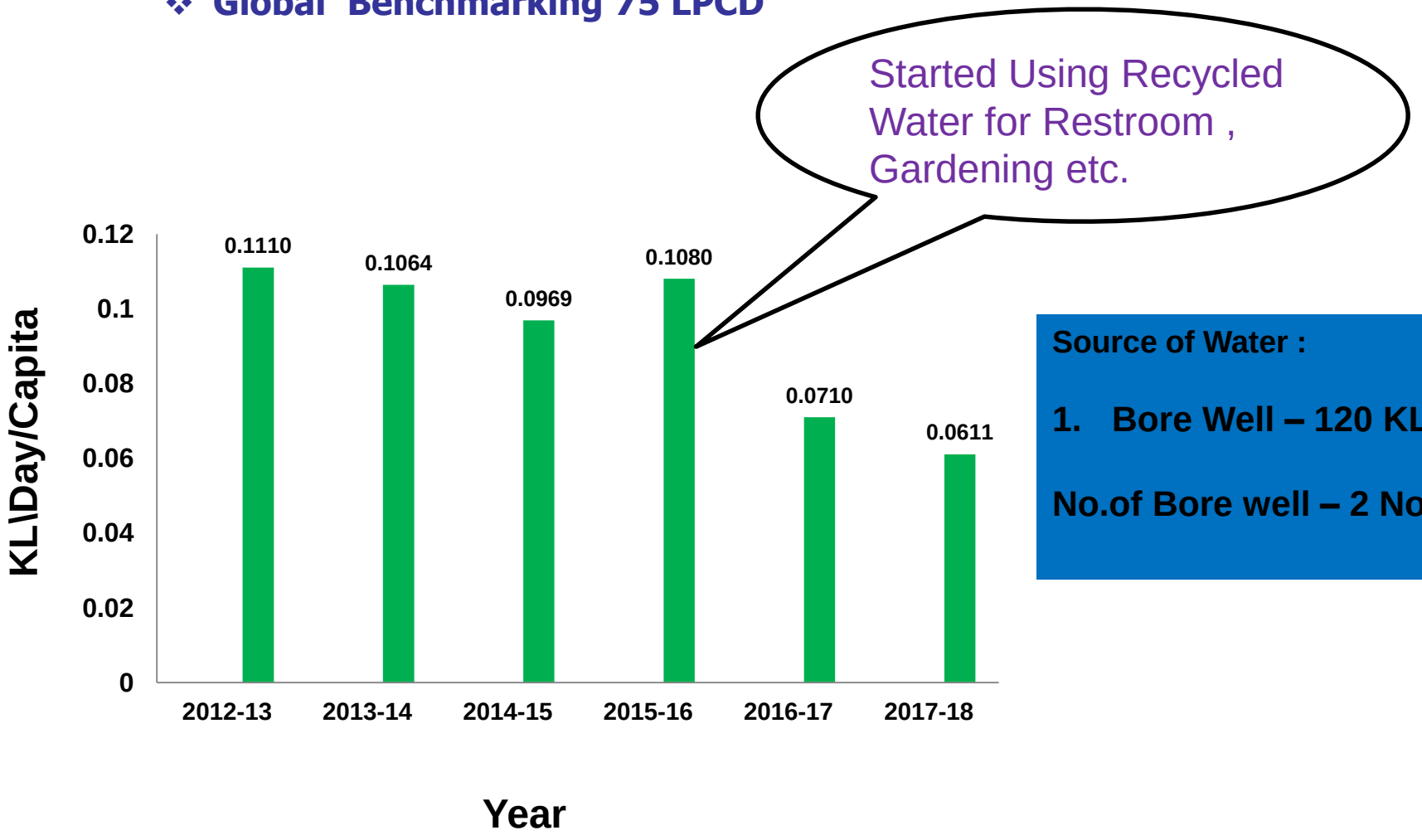
Energy Monitor & Management System

Water Conservation and Rain Water Harvesting at LTVS Nettapakkam

Water Consumption Trend

- **Specific and Annual water consumption**

  - **Global Benchmarking 75 LPCD**

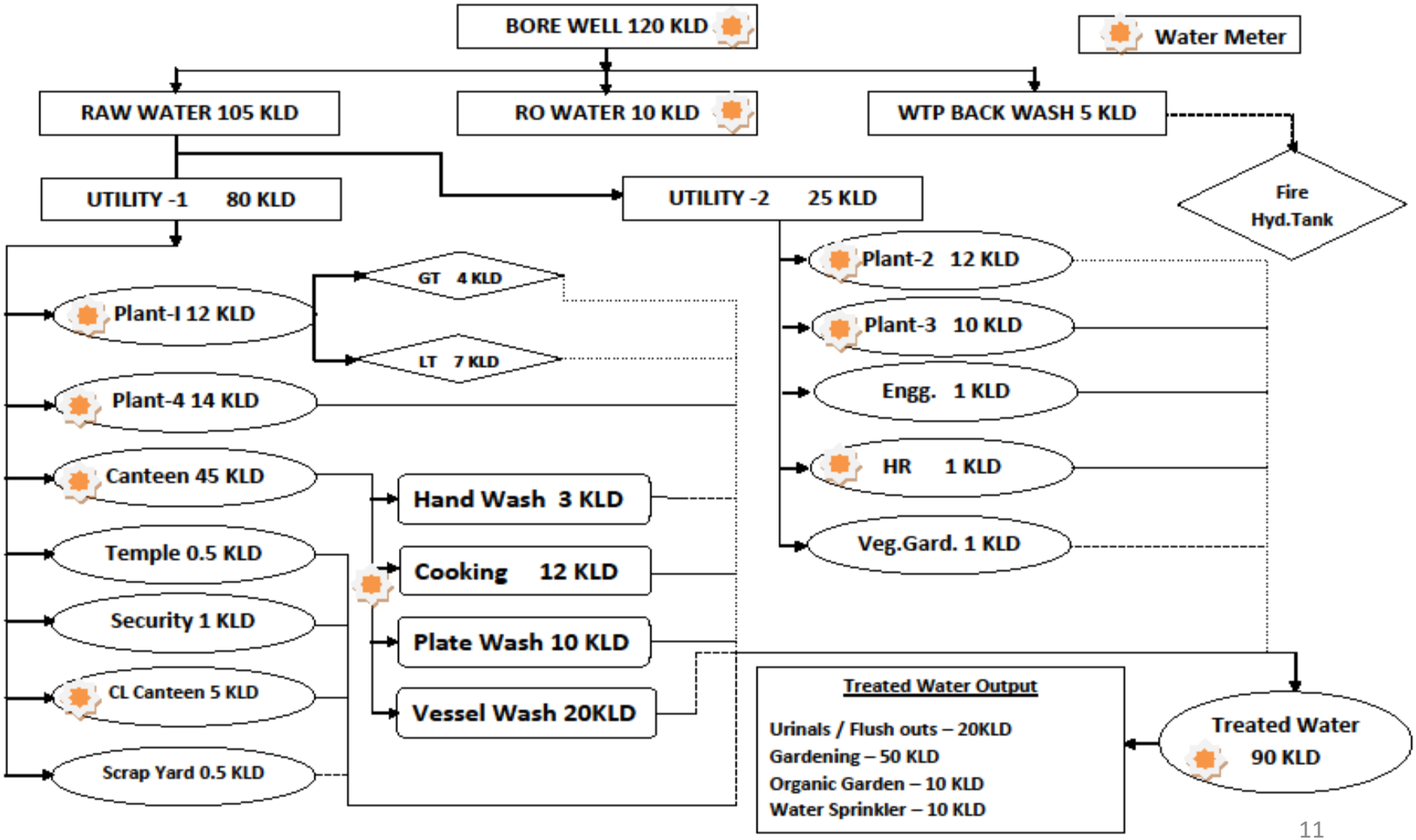


Source of Water :

1. **Bore Well – 120 KL.**

No.of Bore well – 2 Nos

Metering and Overall Monitoring



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200 KLD Sewage Treatment Plant

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As per the PPCB approved discharge – 120 KLD

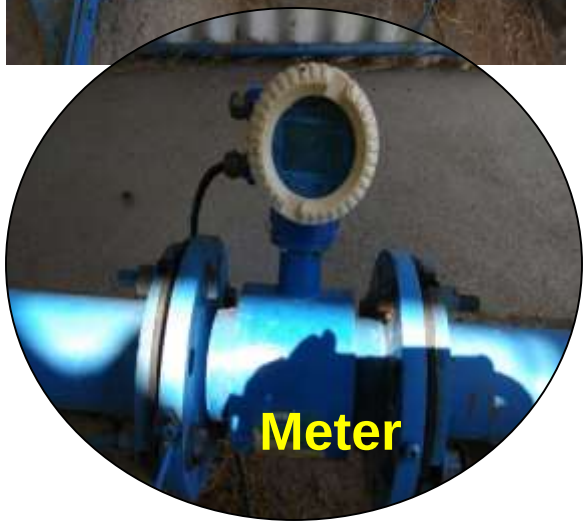
Flush Out

Sprinkler

Organic Kitchen Garden

Garden

Metering and Overall Monitoring



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Metering and Overall Monitoring

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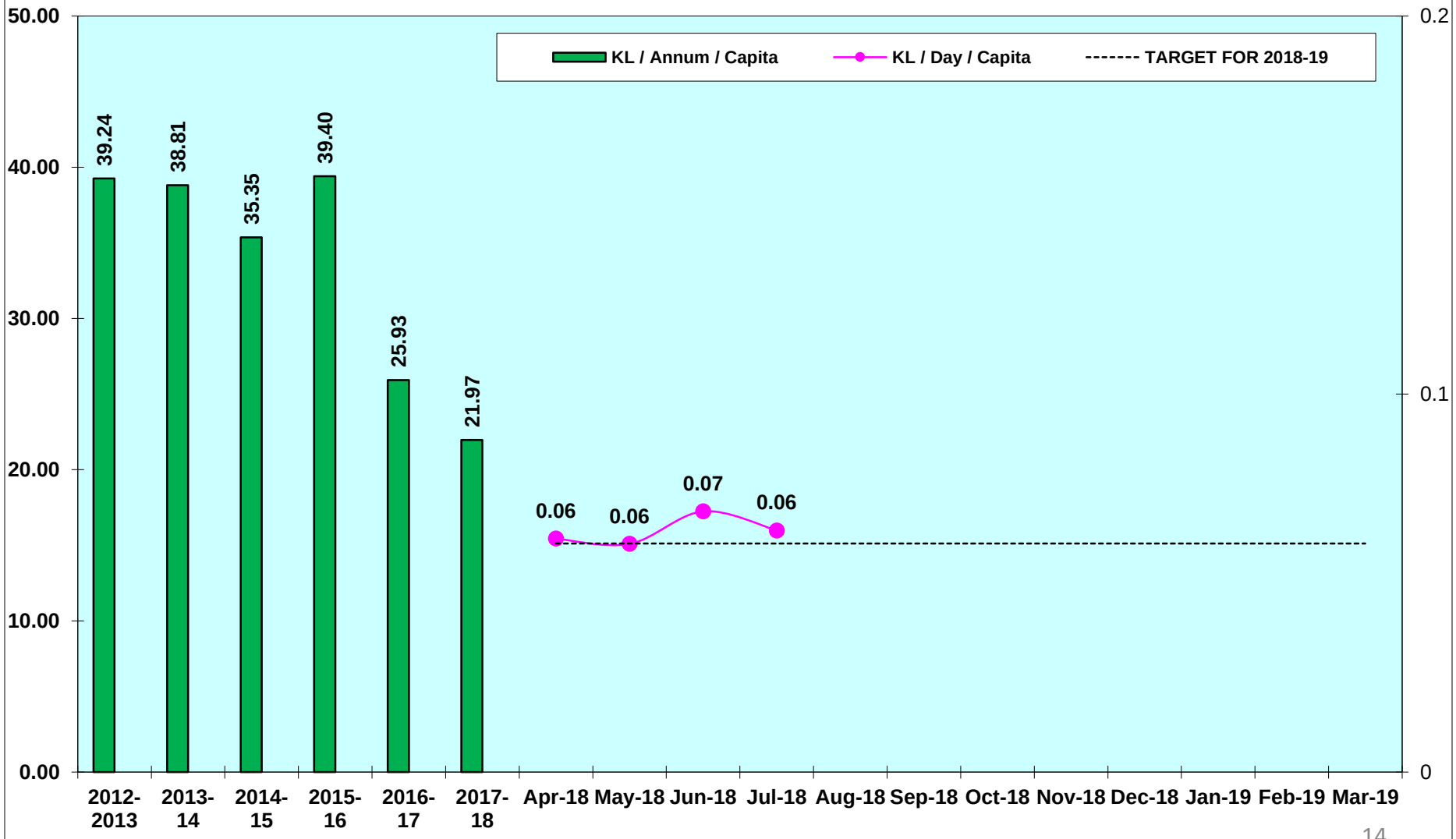
- Water consumption monitoring on a monthly basis.

WATER MONITORING CHART FOR 2018-2019



Rainwater Harvesting in Roof and Non-Roof Areas

- **Rainwater harvesting system installed**
  - Area of the facility – 31 acres
  - Rainfall received – 400 mm (average)
  - Storage or recharge structures – Pond & Rainwater harvesting facility
  - Captured percentage – 100%
  - Applications of harvested water – Fresh water replacement(Proposed).
  - All points storm water cannels connected with pond.

Rain Water Harvesting Facility

Rain Water

Rain Water Storage Capacity - 9300 Cub.m / Annum

Rainwater capture from Roof top and other areas - 4650 Cub.mtr / Annum

Pond Depth : 8 ft.

Rain Water Harvesting Facility

Rain Water Recharge Structure

1. Weighing Bridge Back Side.
2. Plant – 3 Back Side.
3. Fire Hydrant Pump Room Back Side.
4. Organic Garden Front Side.

Renewable Energy

On-site Renewable Energy Generation – Roof Top Solar Power Plant 750 KW

Capacity : 750 KW

Project Completion (Target) : 31.08.2018

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On-site Renewable Energy generation – Bio Gas




Bio Gas Plant (Floating Drum & Water Jacket Model)


Bio Gas Plant (Using Canteen Food Waste)

- Capacity : 25 Cu.mtr
- Feeding Qty : 125 Kgs of Food Waste.
- 5 Kgs of Waste : 1 Cu.Mtr of Bio Gas
- 1 Cu.Mtr of Bio Gas = 0.43 Kg of LPG
- 1 Cu.Mtr of Bio Gas = 1 Kwh Energy

On-site Renewable Energy Generation – Solar Water Heater (Pre Heating)

Project : 2000 LPD solar Water Heater (Pre Heating).

Project Description : Pre Heat the RO water feed to steam boiler available in Canteen

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Corporate Off-site Renewable Energy Generation

Plant Name : Synergy Shakthi Renewable Energy Ltd (SSREL)

Plant Capacity : 10 MW biomass based power plant

Plant location : Bargur SIPCOT Complex,
Uthangarai Taluk in Krishnagiri Dist. of Tamil Nadu

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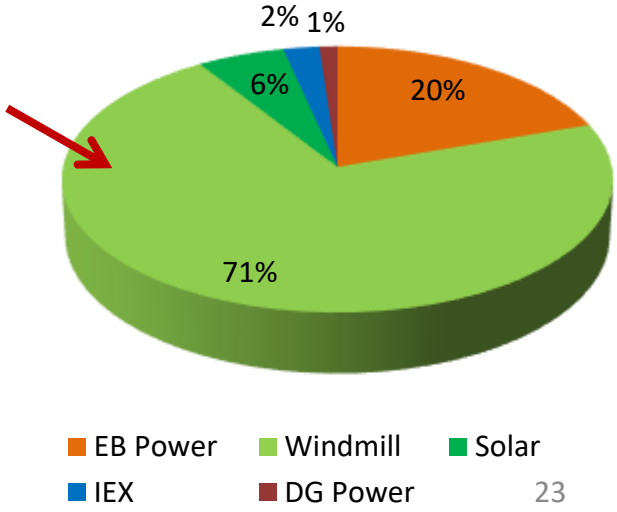
Corporate Off-site Renewable Energy Utilization

Purchase quantum	: 2.50 MW (Wind Power)
Contract Agency	: M/s Orient Green Power
Purpose	: Use of Renewable Energy
Energy Unit Generation	: 60,000 Units per Day
Benefit	: Off setting electrical energy by 71%



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Corporate Off-site Renewable Energy Utilization

Windmill Capacity	:	1 MW (4 nos. x 250 KW)
Installed Location	:	Tirunelveli
Purpose	:	Use of Renewable Energy
Energy Unit Generation	:	15 Lacs Units / Annum
Benefit	:	Off setting electrical energy by 4%

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Greenhouse Gas (GHG) Emission Reduction

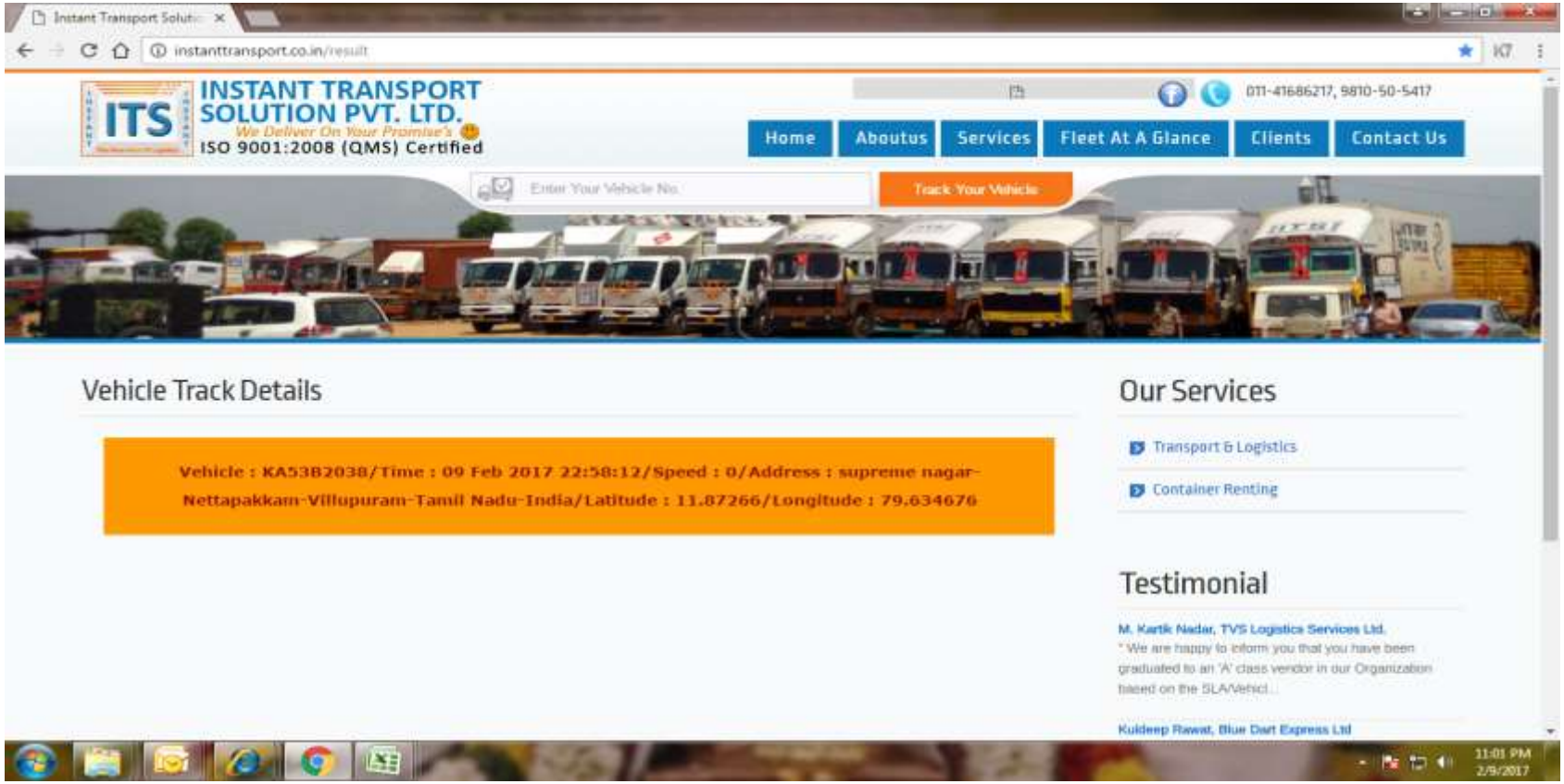
GHG Emission Inventorization

Type Of Energy	Co2 (kgs) / Annum			
	2012-2013	2013-2014	2014-2015	2015-2016
HSD	80987.65	82335.69	79334.42	72995.23
LPG	30478.71	38539.37	45233.91	41568.96
Kgs Co2/Annum e	111466.4	120875.1	124568.3	114564.2

GHG Emission Inventorization

Electricity					
Year	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Ton Co2 / Annum e	2730.52	2692.04	2788.50	3016.28	2854.04

GHG Emission Inventorization outbound Logistics of Customer dispatch.



GHG Emission Intensity reduction targets (Short & Long term)

Units	Target 2016-2017 (10%)	Target 2017-2018 (10%)	Target 2018-2019 (5%)
Total GHG emissions in Ton Co2e	3182.4	2865.96	2722.66
Production ESU (Projected)	302892	33318	349840
Ton Co2e /ESU	0.011	0.086	0.077

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GHG Emission Intensity reduction Plan

- **Roof Top 750 KW Solar Power Plant for Production.**
- **Roof Top 100 KW Solar Power Plant for Canteen Stream Generator**
- **3 MW solar Power plant in TV Koil for Group Net metering for NPM Site , TV Koil Site – Under Study.**

Green Manufacturing Training Program

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Creating Awareness through GHG Kaizen

Honda Kaizen Sheet >>> CO2 Reduction Countermeasure

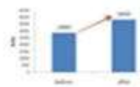
Date: 28/06/2014

Lucas-TVS	Company Name	Lucas TVS Ltd	Kaizen No.
	Address / Location	Pondicherry	1
	Department / Area	Production-Yoke Assembly	
Theme Name	To Save Energy Oven Cradle Can be Changed From 6@ a Time to 8@ a Time		

Loading 6@ a Time

- Yoke loading oven is 6@ a time in one cradle
- Consumes more energy

Loading 8@ a Time



- Yoke loading oven is 8 @ a time in one cradle
- Output / Oven incerased from 2880 nos to 3840 nos

(Benefits)

Tangible		Non Tangible	
1. Productivity increase		1. Manpower Saving	
2. Energy Efficiency			

(Savings)

Parameter	Unit	Before	After	Saving	Rs.
Electricity	Watt			576	
Diesel / Petrol	-	-	-	-	-
Other	-	-	-	-	-

C'measure by - Name	MB/DV/TSK
Verified by – Mgr. Name	V.Kannan

Reduction of CO2 → 5.9 Ton/Year

KAIZEN SHEET

Lucas-TVS

Benefit Area	P	Q	C	D	S	M	E
			✓				✓

Current level: 2 Reams & 2 Toners; Target: Zero

Date of Regn: 11-06-2016; Serial No: 16-06-2016

Plant:Pondy- NPM

Product Unit / Dept:HR - Training Centre; Section:; Area:; Ref. No:

1.Kaizen Theme: Resource waste through Competency Identification forms for various Departments.Paper Consumption & Storage space is requirerd for Indirect Staffs

5.Idea: Integerate Competncy assessment, Roles & Responsiblity and Training Need Identification for Indirect Staffs by Soft copy

Team members: 1) SP Kasi 2) R Ramani

Kaizen start: 1-Dec-14; Kaizen Finish: 1-Feb-16

2. Problem / Present Status: 1) Competency Identification - E&T Document 1 ,2) Roles & Responsibility(HR document 1) ,3) Competency mapping document- HR document 2 & 4 Training plan Calendar - E& T Document 2 - Totally 3 Documents per person & 1 Over all document for Training plan & List of Traditional Trainings -E & T 3 2) Record Keeping of these documents using Box files

6.Countermeasure (Kaizen):

8.Benefits:
1. 12 A Cannon Black Toner Cartridge - Rs. 1350 / Per Toner Cartridge
2. 685 A4 Papers Consumes 2 Black Toner Cartridge
3. Cost Saving = Rs 2700 for Toner + Rs 400 fro 2 Reams
4.Total cost saving = Rs 3100

3.Analysis: 5 Documents Used for prepration of competency assessment, Roles & Responsibilities & Training Need Identification by E&T and HR Department

More Resource consumption for preparing R&R Competency assessment

WHY?

5 no of documents for preparing R&R and competency assessment

WHY?

Competency Assessemnt consumes 2 documents, R&R consumes 2 documents & TNI Consumes 1 document

7.Results: Paper consumption reduced ,Document storage space reduced by reducing box files & Toner Consumption reduced

Kaizen Sustenance thro' revision of

SOP	QCPC	One point lesson	JH std.	PM std.	MSE - Time Master
		✓			

Scope & Plan for Horizontal Deployment

S.No	M/c No./Area	Target date	Resp	Status
1	Operator & Skill assessment & TNI	Feb-16	E&T	Under Progress

4.Root cause: Competency Assessemnt consumes 2 documents, R&R consumes 2 documents & TNI Consumes 1 document

Honda Kaizen Sheet >>> CO2 Reduction Countermeasure

Date: 25/05/2014

HONDA	Company Name	XYZ Pvt. Ltd	Kaizen No.
	Address / Location	Gurgaon	1
	Department / Area	Utility/Environment	
Theme Name	Installation of Energy Saving 20 W LED Lights in place of 45W Conventional Tube Light		

BEFORE PICTURE

- Conventional (45 W) Tube Lights are used at Weld SC & MC
- Energy Consumption from Conventional Tube Lights is High.
- Normal Running hours of Conventional Lights are 20 Hours /Day.

AFTER PICTURE

- 105 Conventional 45 W Tube Lights replaced by 20 W LED Tube Lights in Weld SC & MC.
- No mercury in LED Tube Lights, hence Eco friendly Lighting.

(Benefits)

Tangible		Non Tangible	
1. Low-Voltage		1. Long Life	
2. Energy Efficiency		2. Operational in Extremely Cold or Hot Temperatures	
3.		3.	

(Savings)

Parameter	Unit	Before	After	Saving	Rs.
Electricity	Watt	87	40	47	
Diesel / Petrol	-	-	-	-	-
Other	-	-	-	-	-

C'measure by - Name	XYZ
Verified by – Mgr. Name	XYZ

Reduction of CO2 → 8 Ton/Year

Email

Reply | Reply to All | Forward | Delete | Move to Folder | Create Rule | Other Actions | Block Sender | Safe Lists | Not Junk | Categorize | Follow Up | Mark as Unread | Find | Related | Select

You forwarded this message on 2/22/2017 3:25 PM.

From: Lakshmi Narayanan.N - EHS

To: Muthuramalingam.D - Pondy; Sampathkumar.T (P&S) - Pondy; Sudhakar.A - LTVS Thiruandarkoil; INDRADAUTO - Dhananjeyan.M; Hari Babu - LTVS Chakan; ... Uttarkhand - Indra Singh Patwal; Saby Jose - INDRADAUTO

Cc: Venkatachalapathy - EHSMS; Udayachandran (LTVS - Padi, WED); Anandan.J (LTVS - Pondy, Plant Head); Venkatakrishnan.V (LTVS - Pondy ... Kannan.V (LTVS – Thiruandarkoil; Plant Head); Sridhar.S (LTVS - Chakan, Plant Head); Rewari - Ajay Kumar; Parthasarathi (LTVS Uttarkhand ...); Shree Ranga (LTVS - Padi ...)

Subject: FW: A4 Paper consumption reduction

Message | image001.jpg (1 KB)

Please don't print this email unless you really need to - this will preserve trees on planet earth

From: Shree Ranga (LTVS - Padi, COO)
Sent: Wednesday, February 22, 2017 11:15 AM
To: Lakshmi Narayanan.N - EHS; Udayachandran (LTVS - Padi, WED); Ramesh.S - Purchase; Lakshminarayanan.K.N - ENGG Purchase; Ramesh.M - CMSBU; ECI ... Ganesan.J - Quality
Cc: Arvind Balaji; T K Balaji; Sunil D Nair (LTVS - Padi, Chief Operating Officer ...); ...palan; Satvinder Singh.A.G; Ramadoss.S - CHRO
Subject: Fwd: A4 Paper consumption reduction

Achieved CO2 reduction by 16% last year (2667kg). Aim ...% reduction in A4 paper consumption.

Good job by the team. Hope to achieve this ... year ... reduction. Request you to put a sticker of tree being cut on every printer. REFUSE PRINTING as much as possible. Spread this message to ... your ...

Move towards digital! Let's do our bit on environment. Save tree save global warming!!

Request a confirmation pledge by each HoD towards this.

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Green Manufacturing Education Program

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Green House Gas Effect
Faculty :- Dr.C.Venkatraman &
Mr.N.Lakshminarayanan

Significant Energy Usage - Shop floor
Faculty :- T.Sampathkumar

Internal Auditor - EHSMS / EnMS
Faculty :- Dr.C.Venkatraman

Renewable Energy:- Shop floor
Faculty :- SP.Kasi

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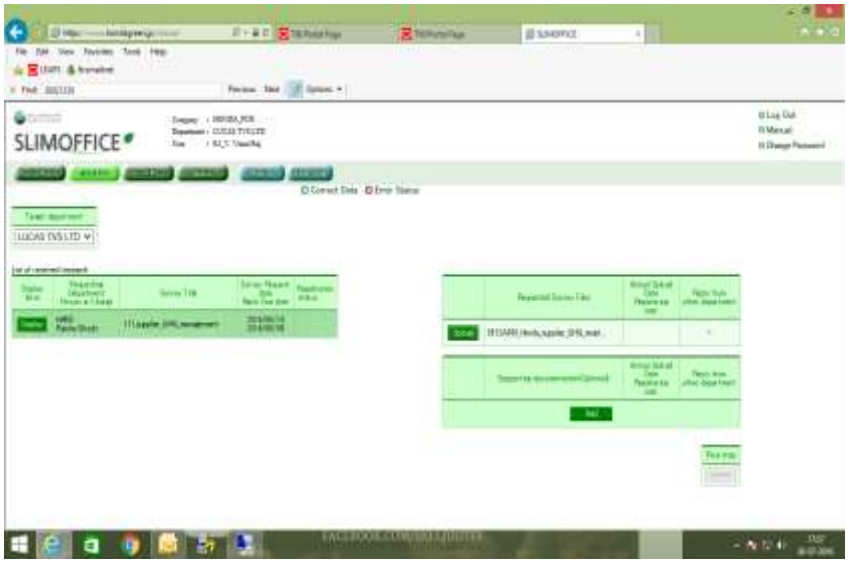
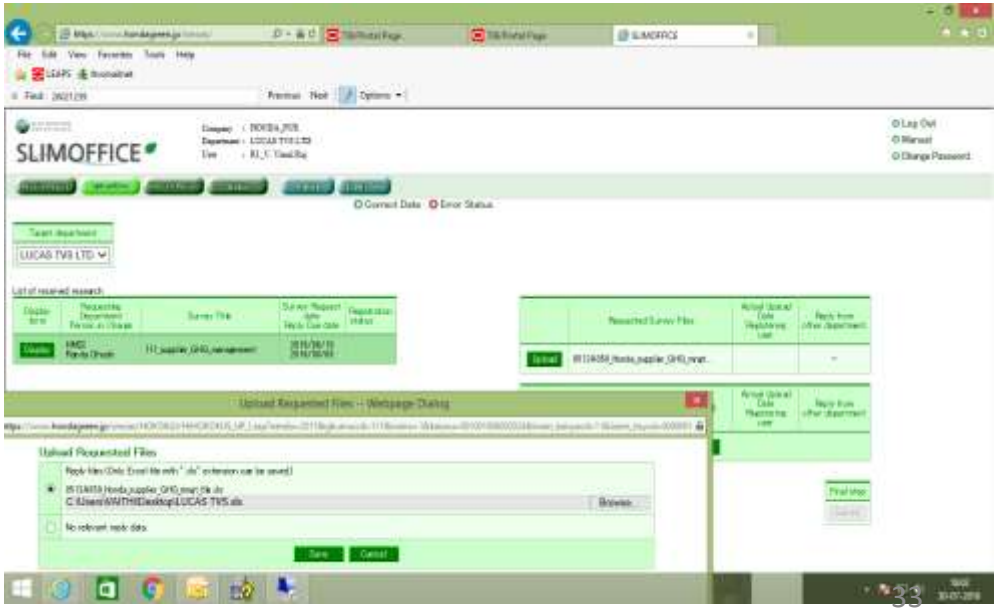
GHG Management Systems





GHG Emission Intensity Reduction

➢ Reduction in GHG intensity

❖ % reduction in the last 3 years = 13%

	Unit	2014-2015	2015-2016	2016-2017	2017-2018
Scope 1 emission					
LPG Consumption	Kgs	9584.50	12119.30	14224.50	13072.00
emission from LPG Consumption	Kgs Co2	304787.71	38539.37	45233.91	41568.95
HSD Consumption	Ltrs	149123	95867	75917	59587
emission from HSD Consumption	Kgs Co2	397799.83	258736.08	208857.07	171661.75
Scope 2 emission					
Purchased Electricity	Kwh	4600864	4795160	4601513	5561380
emission from Purchased Electricity	Kgs Co2	2413705.27	2515636	2414045.75	2917611.18
Total emissions	Kgs Co2	3116292.81	2650042.37	2668136.73	3018767.13
	Ton Co2	3116.29	2650.04	2668.13	3018.76
Annual Production	ESU	221048.00	227002.00	252868.00	255121.00
Specific Intensity (Ton of Co2 / ESU)	Ton Co2/ESU	0.0141	0.0116	0.0105	0.0118

Carbon Neutral Approach

	Kwh	Tonnes of Co2 eq.
A.Total Absolute Emissions (Sum of Scope 1 & 2 For 2017-18)	5561380	2917.61
In plant solar energy generation (Proposed)		38.29
B.Total Absolute Emission offset		38.29
C.Total Absolute Emission - Scope-1 & Scope-2 without offset (A+B)		2955.9
% offset (B/C)*100		1.20%

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Carbon Neutral Approach

TREE FACTS

Tree act as natural pollution filters by absorbing pollutants through the stomates in the leaf surface

Tree Details

Year	Total Trees	New Plantation of Trees	Loss Due to Various Reason
2011-2012	1170	80	800
2012-2013	450	180	30
2013-2014	600	250	70
2014-2015	780	250	90
2015-2016	940	400	51
2016-2017	1289	240	36
2017-2018	1493	203	184
2018-2019	1512		

Thane Cyclone 2011

Calculation for Co2 absorbing by Tree

No. Of Trees Available (2016-17) – 1289 Nos.

1 tree absorbing is - 11.79 kgs / annum.

Total Co2 absorbing by Tree – 1599 x 11.79 kgs / Annum

- **18852.21 kgs /annum**
- **18.85 Ton / Annum**

Note : 1 no Young Tree absorb 26 pounds (11.79 kgs) of Co2 / Annum.

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05. WASTE MANAGEMENT

- **Short Term**
  - 10% reduction (For Hazardous)
  - 10% reduction (For Non Hazardous)
- **Long Term**
  - Achieve as per product compositition (For Hazardous)
  - 10% reduction (For Non Hazardous)

Units	Target for 2016-17	Target for 2017-18	Target for 2018-19
Hazardous Waste	10% reduction	10% reduction	10% reduction
Non - Hazardous Waste	10% reduction	10% reduction	10% reduction

Based on previous year performance and corporate objective

Waste Management

WM – Employee involvement & Capacity Building

- Hazardous & Waste Management
- 3M-MUDA,MURA,MURI
- Types of Industrial Waste
- Workplace Management
- Correct Component,
  Correct Bin, Correct size
- Standardisation
- ECRS Principle
- Segregation & Separation
- Reduce –Recycle –Reuse
  of material,Energy,Water
- Lean office –Paperless
- Line Balancing

Waste Management

Waste collection, segregation, Internal Transport, Handling storage & Disposal Mechanism

Hazardous Waste Storage

waste contain any hazardous materials → **Separate Storage area allotted**

Does the waste contain any **hazardous chemicals (Solvents, like biosol, kleensol and varnish** → **Stored in a Separate storage area with proper PPE & MSDS**

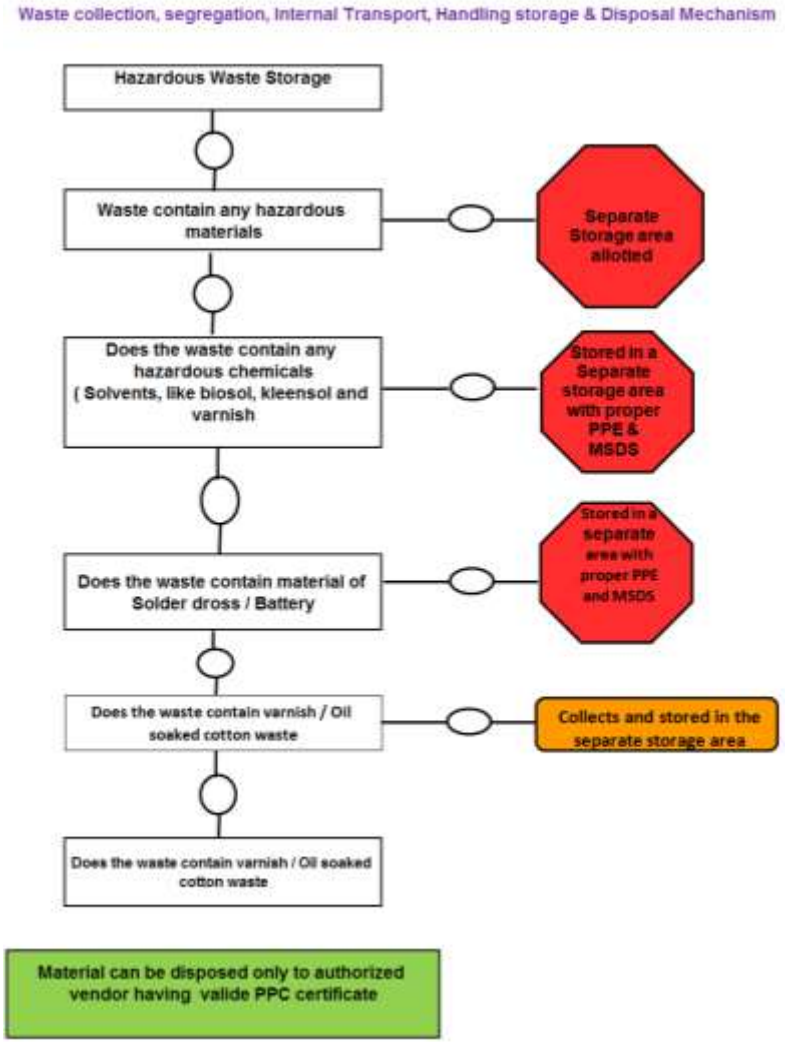
Does the waste contain material of Solder dross / Battery → **Stored in a separate area with proper PPE and MSDS**

Does the waste contain varnish / Oil soaked cotton waste → **Collects and stored in the separate storage area**

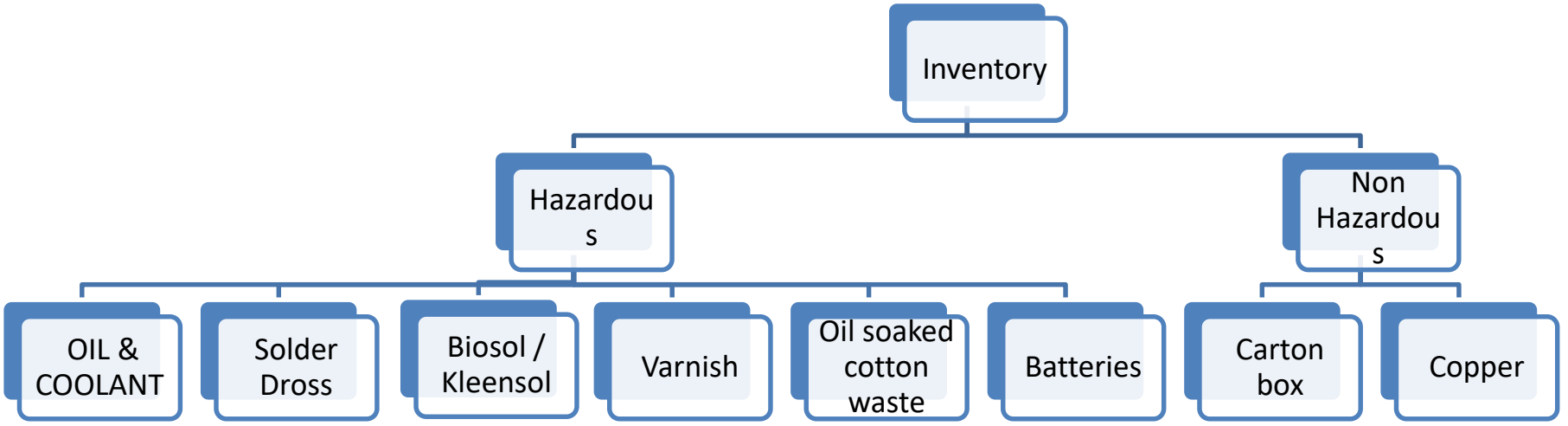
Material can be disposed only to authorized vendor having valide PPC certificate

Waste Management

Waste collection, segregation, Internal Transport, Handling storage & Disposal Mechanism



Waste Management



Zero Effluent / Zero Sewage discharge sy

WM Credit 5.2: Sewage Management

- ***Projects to be implemented to reduce Sewage discharge.***

Year	Quantity of Sewage Generated (m3)	Qty Recycled / Day		Qty Used /Day for Garden		Quantity Sewage Discharger	Production (In tones or any other unit) ESU	Specific Sewage Disposal/ ESU
		m3	in %	m3	in %			
2013-14	125	-	-	112	100%	NIL	18984	5.89 ltrs / ESU
2014-15	122	-	-	113	100%	NIL	21072	5.36 Ltrs / ESU
2015-16	115	-	-	101	100%	NIL	21260	4.75 Ltrs / ESU

Reduction in Specific waste water disposal = 100 %

Waste Management

- ***STP : Quantity = 200 Cubic meters / Day.***

Parameters Details	Unit	Inlet Concentration	Outlet Concentration (mg/l)	Discharge Limits,as Specified by SPCB / CPCB	Remarks
pH	-	6.6	7.9	5.5 - 9.0	
Color	-	Brown	Colorless	-	
BOD	Mg/l	612	5	30	
COD	Mg/l	1608	19	250	
TSS	Mg/l	256	8	100	

Application of Treated STP Water

- ***STP Treated water used for Toilet flushing .***
- ***STP Treated water used for Gardening and Kitchen Gardening Purpose.***

Maintain shop floor emissions and ambient air quality.

Indoor Air Quality in Shop Floor

Various types of fume / Exhaust purifying systems are used across the factory to ensure Ambient Air Quality as per norms.

Fume Killer

Powder Recovery System

- Use of fume killer at various applications like soldering / Hot stacking etc..
- 3 Nos of powder Recovery system installed in manufacturing stages like Primary & Secondary Powder Coating.

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Maintain Shop floor emissions and ambient air quality

Air Pollution Control Measures

Sl.No	Point of Source Emission	Air Pollution Control Measure
1	DG Set 500 KVA - 1	Acoustic Enclosure with stack 9 Mtr Height
2	DG Set 500 KVA - 2	Acoustic Enclosure with stack 9 Mtr Height
3	DG Set 250 KVA - 1	Acoustic Enclosure with stack 9 Mtr Height
4	DG Set 250 KVA - 2	Acoustic Enclosure with stack 9 Mtr Height

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Monitoring points for measuring various pollutants such as VOC, SPM, Sox, Nox etc..,

Emission at	SPM	Emission Limit according to Norms	SOx	Emission Limit according to Norms	NOx	Emission Limit according to Norms
DG 500 KVA 1	0.21	0.3 g/kw-hr	BDL	Detection Limit (DL) 3.0 g/Nm3	1.61	9.2 g/kw-hr
DG 500 KVA 2	0.18	0.3 g/kw-hr	BDL	Detection Limit (DL) 3.0 g/Nm3	0.85	9.2 g/kw-hr
DG 250 KVA 1	0.15	0.3 g/kw-hr	BDL	Detection Limit (DL) 3.0 g/Nm3	0.96	9.2 g/kw-hr
DG 250 KVA 2	0.14	0.3 g/kw-hr	BDL	Detection Limit (DL) 3.0 g/Nm3	0.61	9.2 g/kw-hr
Proving Lab	9.3	-	66.4	-	22.3	-
ERR	1.6	-	BDL	-	BDL	2.0 mg / Nm3

- % reduction in emissions over and above the norms = 90 %

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Lucas TVS DRIVEN

Material Conservation- Recycling-recyclability

LTVS-NPM

Raw Material Conservation

Initiatives taken to reduce material consumption in the last three years

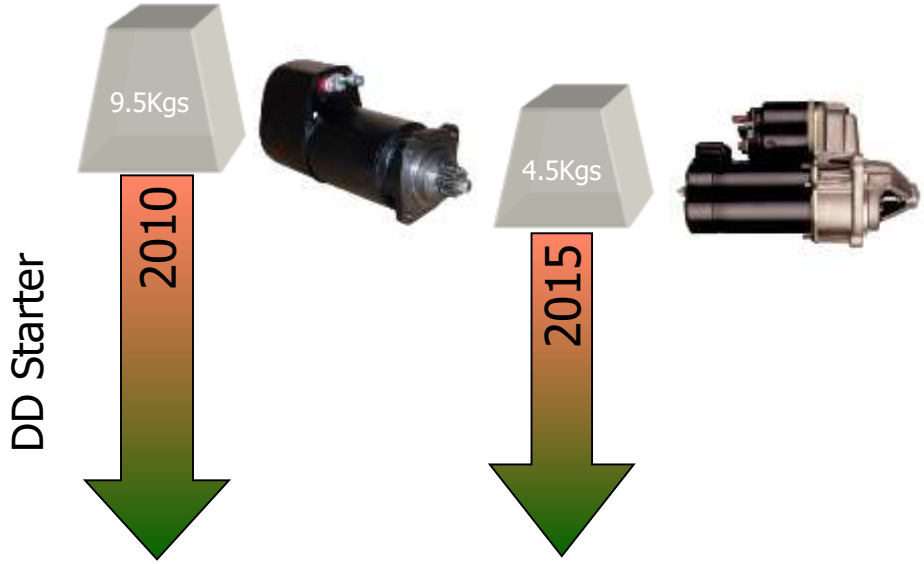
Option 2: Reduction in specific raw material consumption

Product Weight Reduction:

We constantly reducing the weight of our products to help OEM`s for fuel conservation, which intern reduce the Carbon foot print and GHG reduction in the air.

Compact and light weight Derict Drive Starter Motor was designed and developed indigenously and also for the same kilo watt output light weight Gear Reduction starter motors developed to replace Direct drive starters.

Direct Drive to Gear Reduction Starters



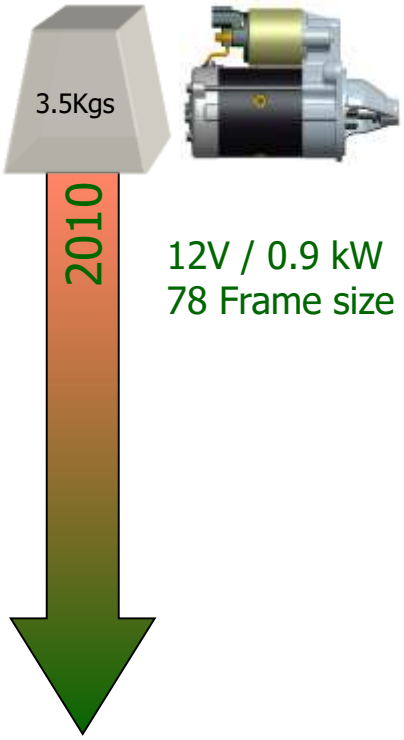
Raw Material Conservation

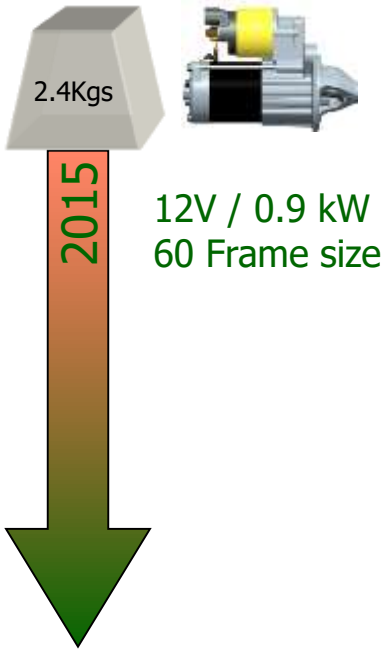
- ✓40% Steel reduction
- ✓30% Copper reduction
- ✓30% Aluminium reduction

Raw Material Conservation

Product Weight Reduction:

Compact and light weight Gear Reduction Starter Motor was designed and developed indigenously for passenger car application with same output and performance.





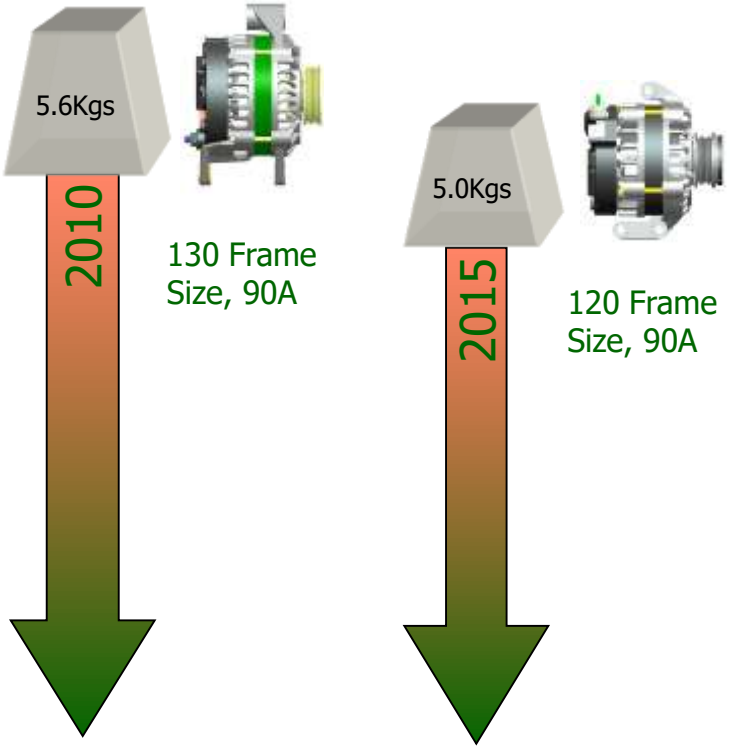
Raw Material Conservation

- ✓20% Steel reduction
- ✓20% Copper reduction
- ✓30% Aluminium reduction

Raw Material Conservation

Product Weight Reduction:

Compact and light weight Light weight Internal Fan Alternator was designed and developed indigenously for passenger car application with same output with increased battery changing performance.



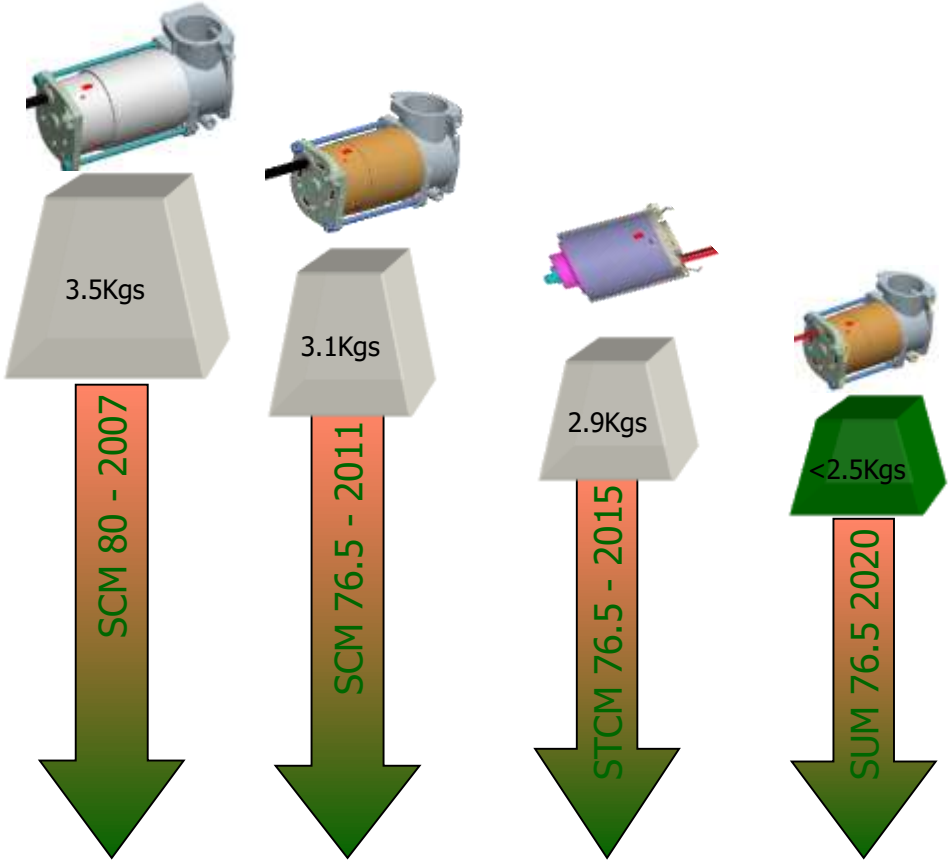
Raw Material Conservation

- ✓10% Steel reduction
- ✓20% Copper reduction
- ✓20% Aluminium reduction

Raw Material Conservation

Product Weight Reduction:

We constantly reducing the weight of our products for the same output and performance to help OEM`s for fuel conservation, which intern reduce the Carbon foot print and GHG reduction in the air.



Raw Material Conservation

- ✓20% Steel reduction
- ✓10% Copper reduction
- ✓20% Aluminium reduction

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Management of Packaging Material

- **List of different packaging materials used in the plant**

Packaging Material	Units	Quantity	Application	Recycled content
Carton box	Kgs./ year	24000	One way pack	---
Honeycomb	Kgs / year	43800	Recyclable	100%
Thermoform	Kgs / year	12890	IFT packing	100%
Blister pack	Kgs / year	17890	Service sundry	100%

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Reduction in Packaging Material

- **Initiatives taken to reduce consumption of packaging material**
- **% reduction in packaging material used** = 50 %

Packaging Material	Units	2014-15	2015-16	2016-17	2017-18
Carton Box	Kgs./ year	59783	48970	36460	24000
Honeycomb	Kgs / year	Zero	11000	13340	43800
Thermoform	Kgs / year	1280	4800	6400	12890
Blister pack	Kgs / year	10780	12380	14780	17890

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Recycled Content in Packaging Material

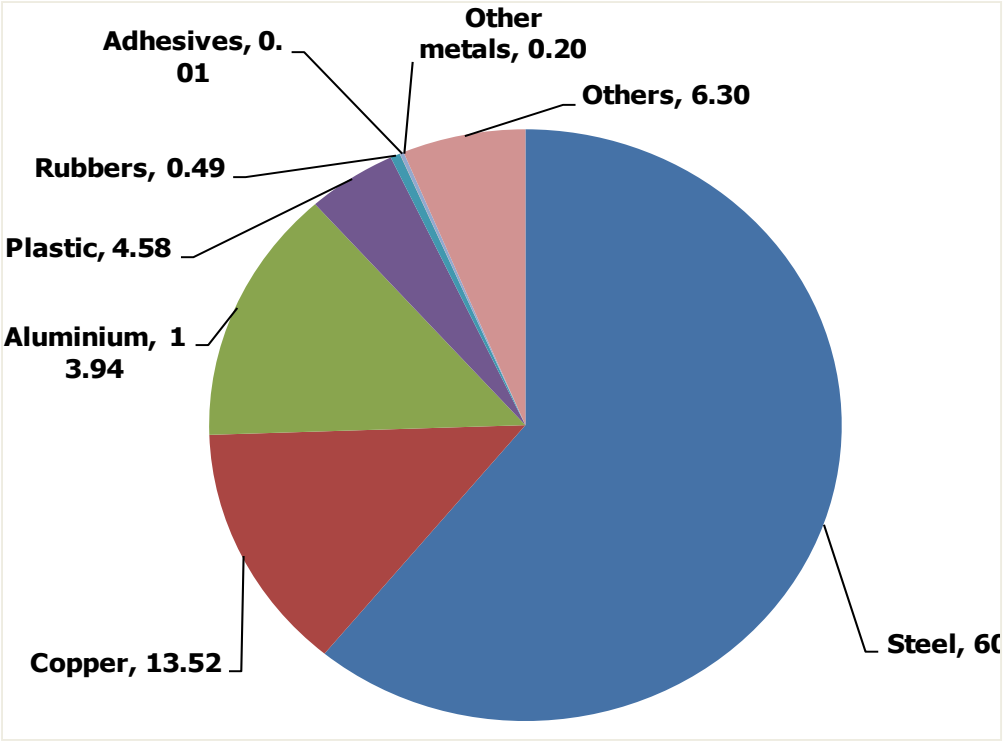
Material	Thickness	Vergin	Recycle
Honey comb	3mm	73%	27%
	5mm	64%	365
	8mm	52%	48%
	10mm	49%	51%
Thermofarm (PP)	0.3mm to 0.8mm	70%	30%
	01.0mm to 3.mm	65%	35%
	4.mm to 6mm	60%	40%
Thermofarm (HDPE)	1.0mm to 3.0mm	60%	40%
	4.0.mm to 6mm	58%	42%

Recyclability and Biodegradability of Product

- Percentage of recyclable or biodegradable content of the product

  - Material balance diagram of a Starter Motor

Material	%
Steel	60.95
Copper	13.52
Aluminium	13.94
Plastics	4.58
Rubbers	0.49
Adhesives	0.01
Other metals	0.20
Others	6.30



85% Recyclable material / Product

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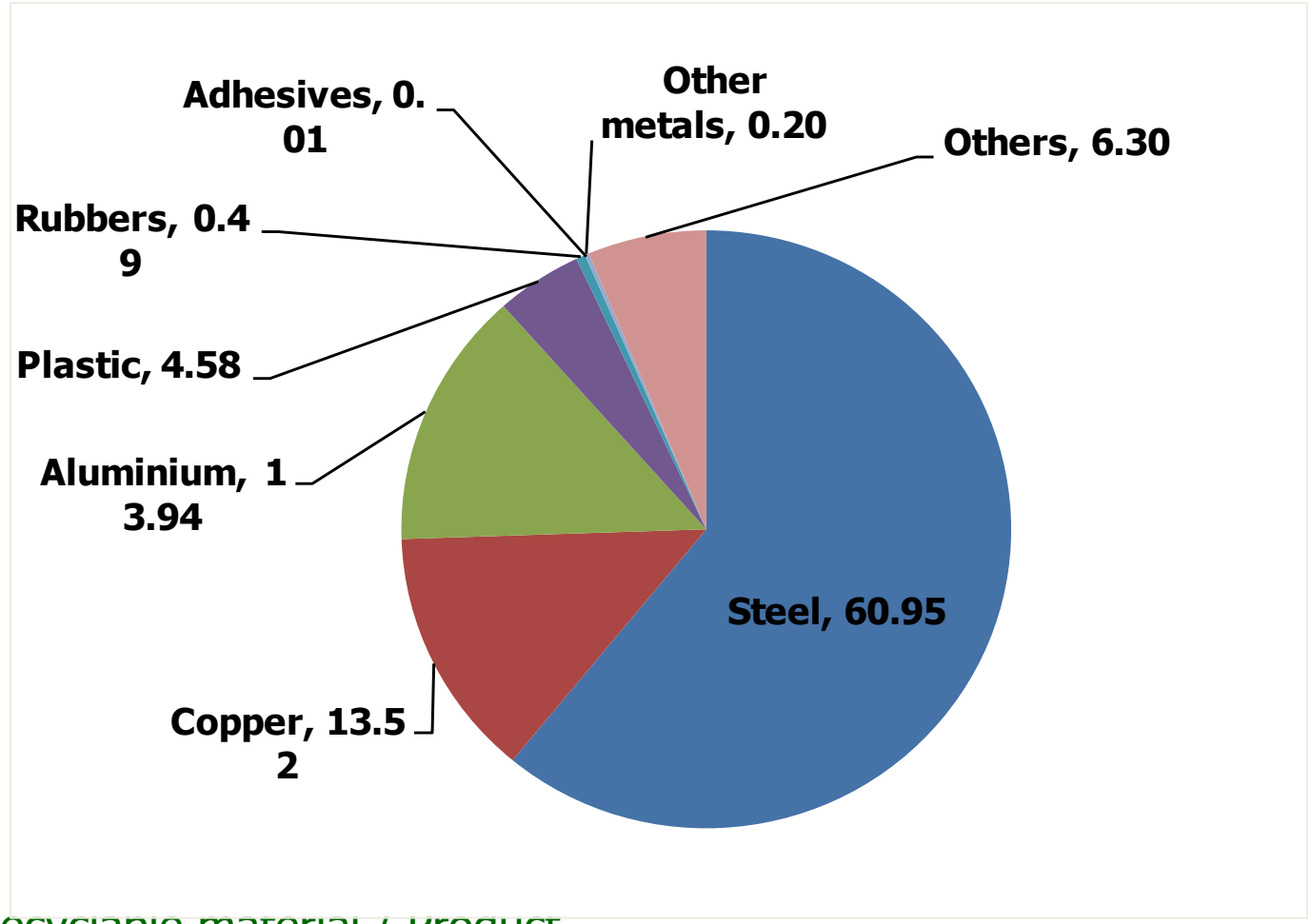
Recyclability and Biodegradability of Product



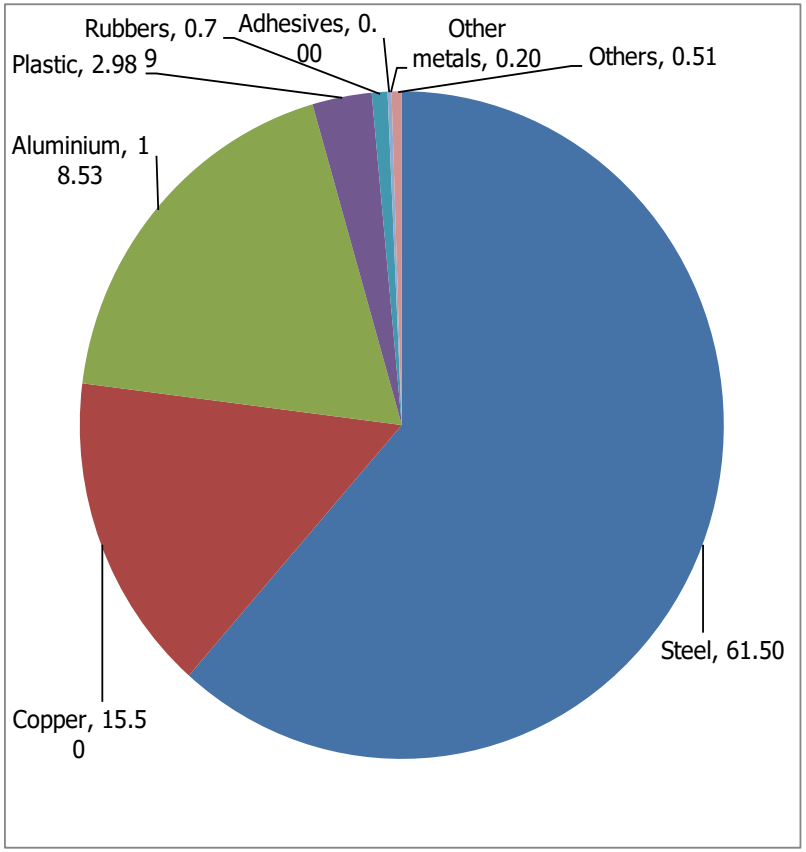
85% Recyclable material / Product

Recyclability and Biodegradability of Product

- **Percentage of recyclable or biodegradable content of the product**

  - **Material balance diagram of a Alternator**

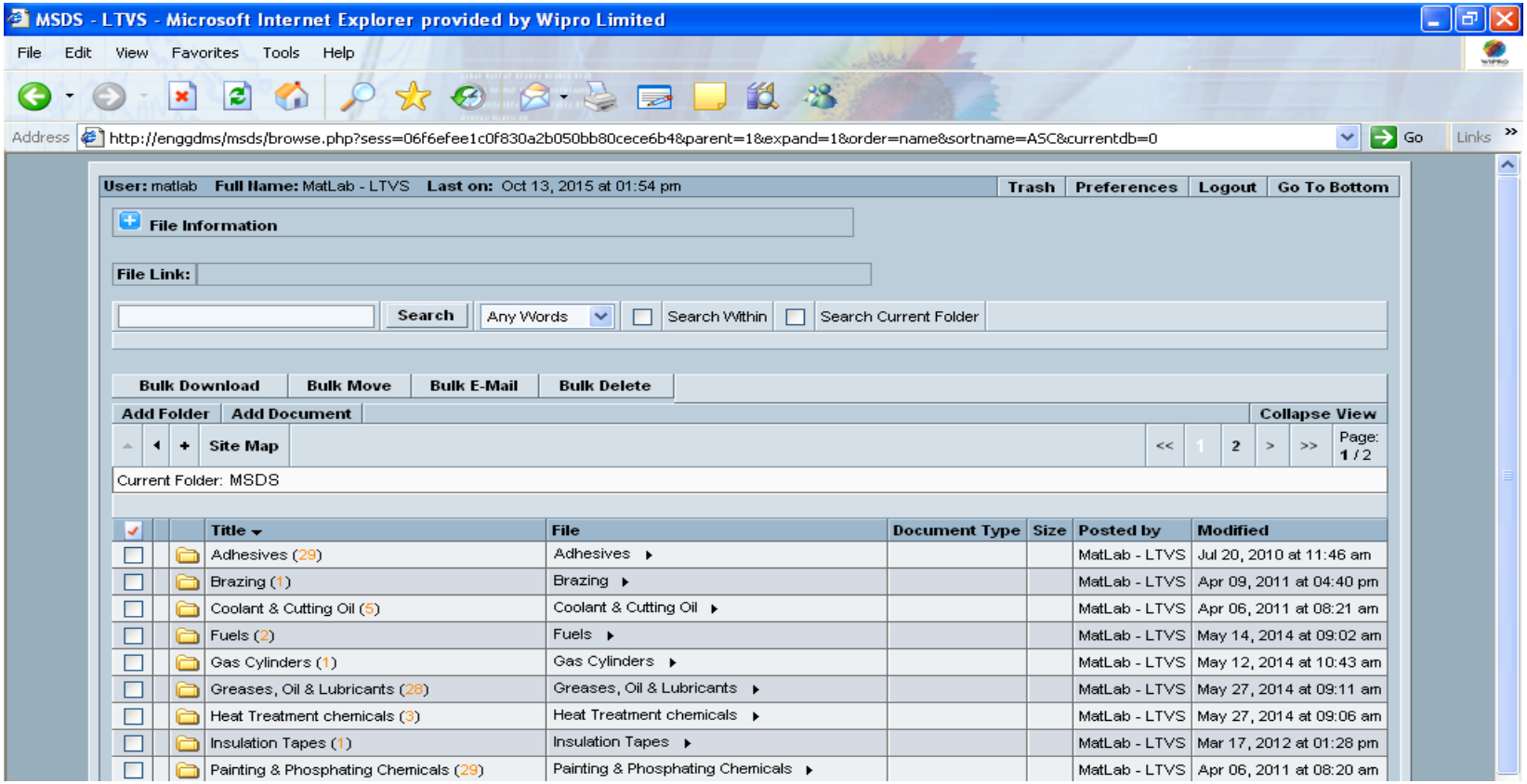
Material	%
Steel	60.86
Copper	13.47
Aluminium	13.80
Plastic	2.99
Rubbers	0.79
Adhesives	0.00
Other metals	0.20
Others	0.51



85% Recyclable material / Product

Recyclability and Biodegradability of Product

- Percentage of recyclable or biodegradable content of the product
  - MSDS sheets for hazardous or toxic materials used in the process
    - MSDS for all the materials maintained in Intranet server.



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Green Supply Chain

Confederation of Indian Industry

Lucas TVS DRIVEN

Initiative with Critical Suppliers

- Supplier training on EHSMS and Energy conservation.
- Involving suppliers in Environment day celebrations
- Recognition for best EHSMS practicing supplier in Annual Vendor Meet.
- Best EHSMS practicing suppliers – Knowledge sharing presentations with other suppliers during Environment day events Month events / Annual Vendor Meets
- Newsletter communication to suppliers on EHSMS principles
- e-training on EHSMS through RASIS portal (Online Newsletters)

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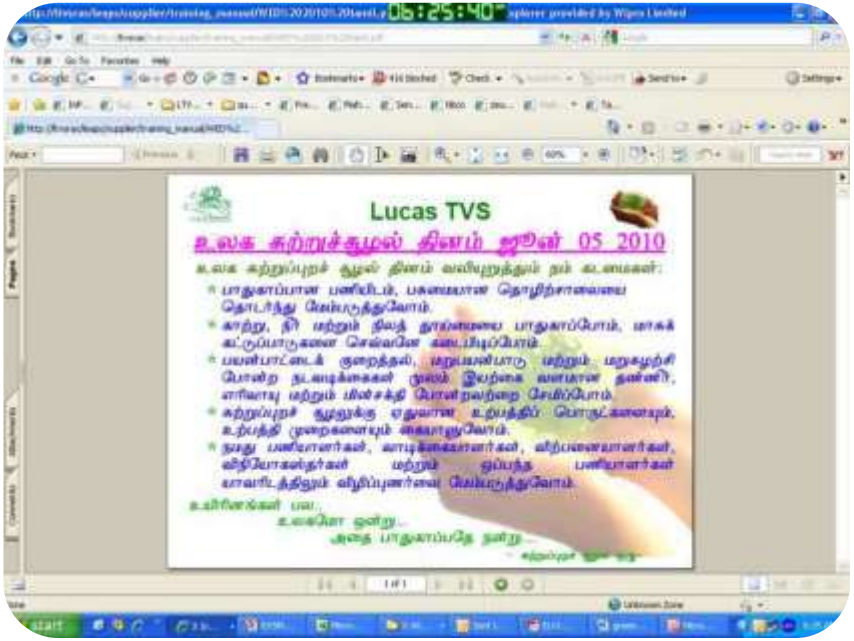
World Environment Day Commitment Communication to suppliers

World Environment Day Commitment (English) Communication to suppliers



World Environment Day Commitment (Tamil) Communication to suppliers

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Target Setting and Action Plan

Lucas TVS DRIVEN

Management Program at Supplier end	2016-17	2017-18	2018-19
Reduce Water consumption	5 %	5 %	5 %
Reduce Energy consumption	10 %	10 %	10 %
Increase Awareness	50 %	80 %	100 %
Supplier audit	80 %	80 %	80 %
Reduce Logistics vehicle	20 vehicles	18 vehicles	16 vehicles
Carton box elimination	50%	75%	80%

Based on 2016-17 Lucas TVS Corporate Objective

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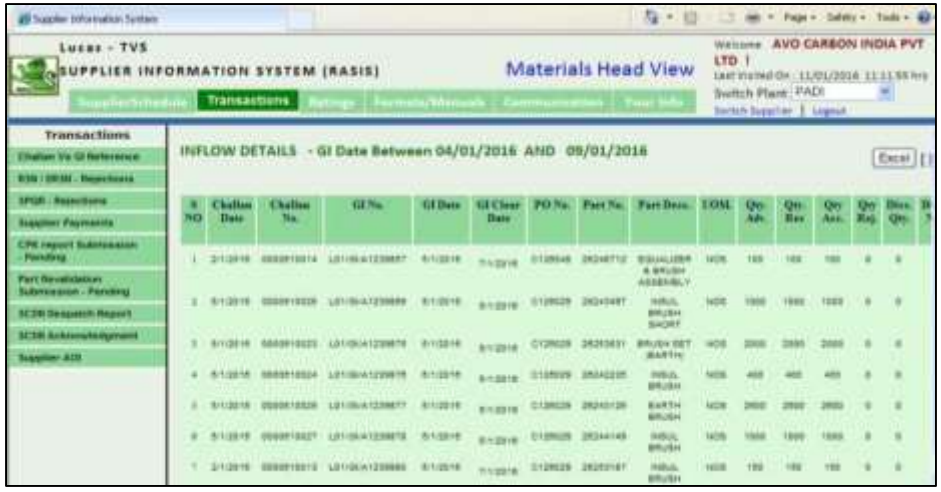
Management System for Resource Conservation through SCM

❖ Manage supply chain transactions

Software tools



Supply Chain Transactions through RASIS (Remote Access Supplier Information System) supplier Portal

- ❖Supplier Schedules
- ❖GI Details
- ❖Communications
- ❖Payment details
- ❖Environmental information

Green Procurement Guidelines

Lucas TVS DRIVEN

Lucas TVS GREEN PROCUREMENT GUIDELINES

Lucas TVS Limited is part of the TVS family and is, in itself, a Corporate company with Seven Manufacturing plants across India and also is ably supported by a distribution company, Lucas Indian Service. Lucas TVS is a major player in the manufacture and supply of Auto-electrical equipment. Over the years, Lucas has imbibed various management tools to elevate its level of performance.

Lucas TVS has obtained certifications for the Automotive Industry through ISO/TS 16949 and also has parallel certifications in Environment, Occupational Health & Safety and Energy Management systems. In the Process, Lucas TVS has also adopted practices leading to Sustainable development.

Selection of Suppliers and Service Providers

Lucas TVS Limited, in its journey forward, has also taken into confidence its suppliers and has separate programs to manage its chain of suppliers, who are either providers of goods or services (outsourced processes).

Green Procurement Guidelines

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Confederation of Indian Industry

Lucas TVS DRIVEN

Lucas TVS - Green Procurement and Sustainable Practices Policy

INTRODUCTION

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Selection of Suppliers and Service Providers

Lucas TVS Limited, in its journey forward, has also taken into confidence its suppliers and has [illegible] programs to manage its chain of suppliers, who are either providers of goods or services (outsourced [illegible]sses).

Greening the Supply Chain

Lucas TVS Limited has developed a Supplier Manual to cater to its various require[illegible]s from its suppliers. Lucas TVS has developed its own checklists and a minimum set of requirements for t[illegible]ion and qualification of various suppliers and has communicated all its requirements to its su[illegible]. These requirements also include Environment, Occupational health & Safety and Energy related topics (refer Checklist for suppliers Doc). To ensure that is suppliers fall in line with its various requirements, the Pu[illegible] team does frequent audits, along with the QA & EHS personnel, at the premises of its [illegible]s and service providers.

Lucas TVS requires that is suppliers fulfill the following [illegible]tions, as a bare minimum:

- Compliant to relevant, applicable statutory and regulatory requirements related to environment, occupational health & safety [illegible]pects
- The personnel perfor[illegible]ntions are competent technically or through experience
- Service pro[illegible]d suppliers are encouraged to opt for certification to EMS and OHSAS standards, as a prof[illegible]ing good sustainable practices that would help them get competitive and grow

Apart from certification programs, suppliers and service providers are evaluated periodically to demonstrate continual improvement in performance through adoption of best practices, and setting of goals that are in line with Lucas TVS policies and procedures.

2. Generate less waste material by reviewing how supplies, materials, and equipment are manufactured, purchased, packaged, delivered, used, and disposed.
3. Serve as a model for the region to influence waste prevention, recycling, and procurement efforts.

II. Definitions

"Recycling" means the process of collecting, sorting, cleaning, treating, and reconstituting materials that would otherwise become solid waste, and returning them to the economic mainstream in the form of raw material for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace.

"Waste Prevention" means any action undertaken by an individual or organization to eliminate or reduce the amount or toxicity of materials before they enter the municipal solid waste stream. This action is intended to conserve resources, promote efficiency, and reduce pollution.

"Practicable" means sufficient performance and not unreasonably expensive.

"Environmentally Preferable Products" means products that have a lesser impact on human health and the environment when compared with competing products. This comparison may consider raw materials acquisition, manufacturing, packaging, distribution, reuse, operation, and/or disposal of the product.

"Recycled Products" are products manufactured with waste material that has been recovered or diverted from the waste stream. Recycled material may be derived from post-consumer waste materials (those that have served its intended end-use and been discarded by a final consumer), industrial scrap, manufacturing waste, and/or other waste that otherwise would not have been utilized.

"Post-consumer recovered materials." A finished material that would normally be disposed of as a solid waste, having completed its life cycle as a consumer item. Examples of post-consumer recovered materials include, but are not limited to: old newspapers, office paper, yard waste, steel and/or aluminum cans, glass, plastic bottles, oil, asphalt, concrete, and tires.

Lucas TVS DRIVEN

rejected unused stock and paper wastes generated during printing, cutting and other converting operations.

"Total recovered material." The total pre- and post-consumer recovered material contained in a product.

III. Policies

A. Lucas TVS personnel will specify environmentally preferable products unless such products do not perform satisfactorily and/or are unreasonably expensive. The priority for environmentally preferable products shall be as follows:

1. Energy efficient equipment such as motors, compressors and other plant machinery
2. Non-hazardous materials or chemicals, which fall in line with our ROHS policy. Where non-hazardous materials are not available, we shall opt for lesser hazardous composition material.
3. Give preference to packaging materials that are reusable/recyclable, in line with our objective for carton box elimination; and

B. Lucas TVS shall solicit the use of recycled content and other environmentally preferred products in its procurement documents.

C. All departments/plants of Lucas TVS shall practice waste prevention and recycling.

IV. Best Practices

A. Procurement Practices

The EHS committee shall work in collaboration with the Materials department to evaluate the following environmentally preferable product categories, at a minimum, and produce a list of such products that meet the criteria. All Departments and Divisions shall order from the list that meets the criteria unless a performance issue with a specific product arises or the cost of the product is unreasonably expensive. Lucas TVS has also established a set of purchasing specifications for various equipment and machineries.

1. Minimize use of paper for Printing and writing including all imprinted letterhead paper, envelopes, copy paper etc., and business cards shall contain a minimum of 30 percent post-consumer recycled content. Lucas TVS aspires to adopt a paper-less office

Confederation of Indian Industry

Lucas TVS DRIVEN

- Promoting the non-use of polythene packaging, and as a minimum less than 50 microns
- Procurement of energy efficient equipment through the documentation of energy purchasing specifications

B. Waste Prevention Practices

Lucas TVS employees are required to reduce their consumption of resources, specifically raw material (steel), varnish, gel, paint and other hazardous material, by incorporating the following practices into their daily activities.

1. Consider durability and reparability of products prior to purchase.
2. Conduct routine maintenance on products/equipment to increase the useful life.
3. Reduce spillages and utilize clean secondary containment facilities
4. Lucas TVS already practices use of one-sided printed papers and two-sided copies for all memos and mailings.
5. Send and store information electronically when possible. This includes e-mail and internet documents.
6. Review records retention policies and implement document imaging systems.
7. Other waste prevention practices that further the goals of this policy.
8. Energy efficient lighting and proper ventilation is provided to reduce the energy requirements
9. Using environment friendly material that can be used again at the dismantling stage
10. Establish targets for reducing consumption of natural resources such as LPG, Water, Diesel etc, and electricity.

V. Responsibilities of EHS committee

The Department of EHS shall be responsible for working in collaboration with the Ma[illegible]'s department

V. Responsibilities of EHS committee

The Department of EHS shall be responsible for working in collaboration wi[illegible]terials department to assist in the coordination and implementation of this policy [illegible] include the following:

A. Develop and maintain information about environmentally [illegible]ble products and recycled content products containing the maximum prac[illegible]ount of recycled materials to be purchased by agencies, departments and divisio[illegible]. In[illegible]ly, these shall include the products designated in Section IV A of this policy.

B. Develop and implement a monito[illegible]tra[illegible]g system as a tool to confirm compliance with this policy.

C. Identify proposals for implementa[illegible]f energy-efficient and waste minimization programs, and encouraging employees to participa[illegible]"Small Group Activities" (SGA) & Suggestion Scheme with a Reward and Re[illegible]nition.

D. Inform other agen[illegible]de[illegible]ments and divisions of their responsibilities under this policy and provide agencies, [illegible]rtments and divisions with information about recycled products and environme[illegible]cu[illegible]ent opportunities.

E. [illegible]and implement an ongoing promotional program to educate and inspire staff to i[illegible]t this policy. Information concerning this policy will be added to the new employee orie[illegible]tation process.

F. Inform vendors of our Green Procurement and Sustainable Practices Policy.

G. Restrict contracts to only recycled-content products whenever possible [illegible]e supplies, lubricating oils, and janitorial supplies).

H. All requests for proposals shall require vendors to us[illegible]cycle[illegible]nd[illegible] whe[illegible]ver possible.

VI Responsibilities of all Departments and Lucas TVS Pl[illegible]

Each department, and Plant shall:

1. Practice waste prevention.
2. Continue to utilize recycli[illegible]g[illegible] and [illegible]and where possible.
3. Procure products in compli[illegible]the Green Procurement and Sustainable Practices Policy.
4. Evaluate each designated pr[illegible]o determine the extent to which agencies, departments and divisions may practicably use
5. Ensure that p[illegible]ment documents issued by the agency, department or division require environmental[illegible]rred purchasing.
6. Investigate wh[illegible]licies and practices could be modified to encourage or require waste reductio[illegible]cycli[illegible] environmental preferable purchasing.
7. All D[illegible]s and Divisions shall use recycled products for their business cards, letterhead stati[illegible]e[illegible]pes, business forms, and pertinent documents. All said documents shall be [illegible]te[illegible] the standard phrase, "Printed on Recycled/Recyclable Paper," thereby promoting the [illegible]of p[illegible]st-consumer content. If sufficient documentation and certification is available, [illegible]nable efforts shall be undertaken to specifically indicate the percentage of recycled post-[illegible]sumer content. In addition, the County publications or mailings will be printed using non-toxic [illegible]nks.

All photocopying of requested documents produced by grantees and contractors shall be produced on post-consumer recycled paper. All contractors and grantees will submit all requested documents one-side printed paper. This shall include, but is not limited to, drafts, reports, training manuals, bids, responses to inquiries, and permit applications. Lucas TVS will continue to engage in the practice of two-sided copies for all memos and mailings only when absolutely essential.

5. Ensure that procurement documents issued by the agency, department or division require environmental preferred purchasing.
6. Investigate where policies and practices could be modified to encourage or require waste reduction, recycling, and environmental preferable purchasing.
7. All Departments and Divisions shall use recycled products for their business cards, letterhead stationery, envelopes, business forms, and pertinent documents. All said documents shall be printed with the standard phrase, "Printed on Recycled/Recyclable Paper," thereby promoting the use of post-consumer content. If sufficient documentation and certification is available, reasonable efforts shall be undertaken to specifically indicate the percentage of recycled post-consumer content. In addition, the County publications or mailings will be printed using non-toxic inks.
8. All photocopying of requested documents produced by grantees and contractors shall be produced on post-consumer recycled paper. All contractors and grantees will submit all requested documents one-side printed paper. This shall include, but is not limited to, drafts, reports, training manuals, bids, responses to inquiries, and permit applications. Lucas TVS will continue to engage in the practice of two-sided copies for all memos and mailings only when absolutely essential.

VII. Exemption

Nothing in this policy shall be construed as requiring the purchase of products that do not perform adequately or are not available at a reasonable price. In those instances where it is deemed impractical to procure a recycled-content item, a specific explanation for the finding must be included in the purchasing record.

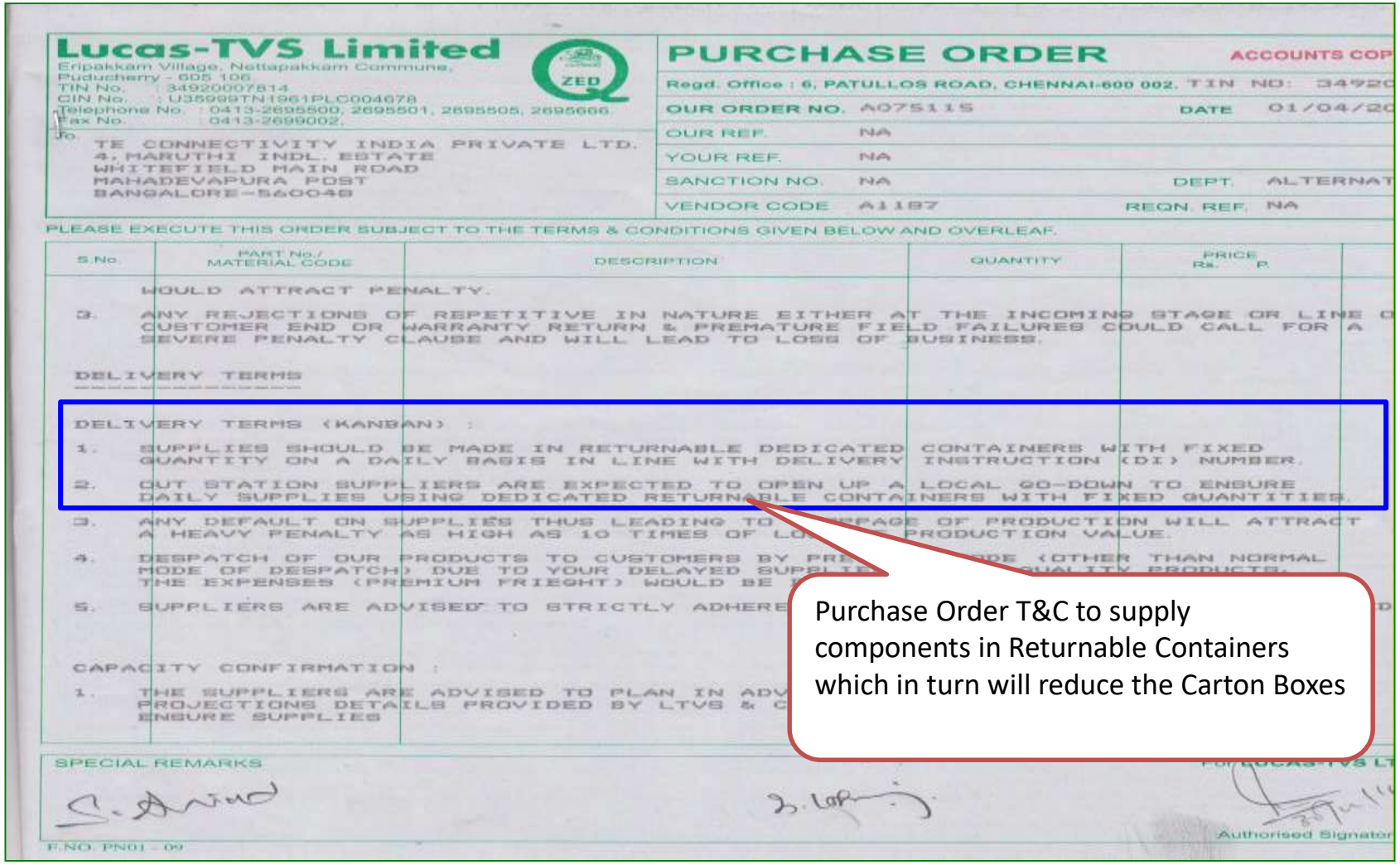
VIII. Monitoring/Reporting

A. Collaboratively, the EHS Committee and Materials Department shall prepare and deliver to the Chief operating officer an annual status report on the implementation of this policy and a formal recycled products list to aid in purchasing and monitoring goals. The report shall include documentation of the types, quantities, and dollar amounts of recycled products purchased in the previous year.

The report shall also identify and discuss the following:

1. Instances where this policy is waived or its requirement found impracticable; and

Green Procurement Guidelines Implementation



Lucas-TVS Limited
Eripakkam Village, Nettapakkam Commune,
Puducherry – 605 106
TIN No. : 34920007814
CIN No. : U35999TN1961PLC004678
Telephone No. : 0413-2695500, 2695501, 2695505, 2695666
Fax No. : 0413-2699002.

To
TE CONNECTIVITY INDIA PRIVATE LTD.
4, MARUTHI INDL. ESTATE
WHITEFIELD MAIN ROAD
MAHADEVAPURA POST
BANGALORE-560048

PURCHASE ORDER ACCOUNTS COP

Regd. Office : 6, PATULLOS ROAD, CHENNAI-600 002. TIN NO: 34920

OUR ORDER NO.	A075115	DATE	01/04/20
OUR REF.	NA		
YOUR REF.	NA		
SANCTION NO.	NA	DEPT.	ALTERNAT
VENDOR CODE	A1187	REQN. REF.	NA

PLEASE EXECUTE THIS ORDER SUBJECT TO THE TERMS & CONDITIONS GIVEN BELOW AND OVERLEAF.

S.No.	PART No./ MATERIAL CODE	DESCRIPTION	QUANTITY	PRICE Rs. P.

WOULD ATTRACT PENALTY.

3. ANY REJECTIONS OF REPETITIVE IN NATURE EITHER AT THE INCOMING STAGE OR LINE O CUSTOMER END OR WARRANTY RETURN & PREMATURE FIELD FAILURES COULD CALL FOR A SEVERE PENALTY CLAUSE AND WILL LEAD TO LOSS OF BUSINESS.

DELIVERY TERMS

DELIVERY TERMS (KANBAN) :

1. SUPPLIES SHOULD BE MADE IN RETURNABLE DEDICATED CONTAINERS WITH FIXED QUANTITY ON A DAILY BASIS IN LINE WITH DELIVERY INSTRUCTION (DI) NUMBER.
2. OUT STATION SUPPLIERS ARE EXPECTED TO OPEN UP A LOCAL GO-DOWN TO ENSURE DAILY SUPPLIES USING DEDICATED RETURNABLE CONTAINERS WITH FIXED QUANTITIES.
3. ANY DEFAULT ON SUPPLIES THUS LEADING TO [illegible] OF PRODUCTION WILL ATTRACT A HEAVY PENALTY AS HIGH AS 10 TIMES OF LO[illegible] PRODUCTION VALUE.
4. DESPATCH OF OUR PRODUCTS TO CUSTOMERS BY PRI[illegible]DE (OTHER THAN NORMAL MODE OF DESPATCH) DUE TO YOUR DELAYED SUPPLI[illegible] QUALITY PRODUCTS, THE EXPENSES (PREMIUM FRIEGHT) WOULD BE [illegible]
5. SUPPLIERS ARE ADVISED TO STRICTLY ADHERE[illegible]D

CAPACITY CONFIRMATION :

1. THE SUPPLIERS ARE ADVISED TO PLAN IN ADV[illegible] PROJECTIONS. DETAILS PROVIDED BY LTVS & C[illegible] ENSURE SUPPLIES

SPECIAL REMARKS

For LUCAS-TVS LT

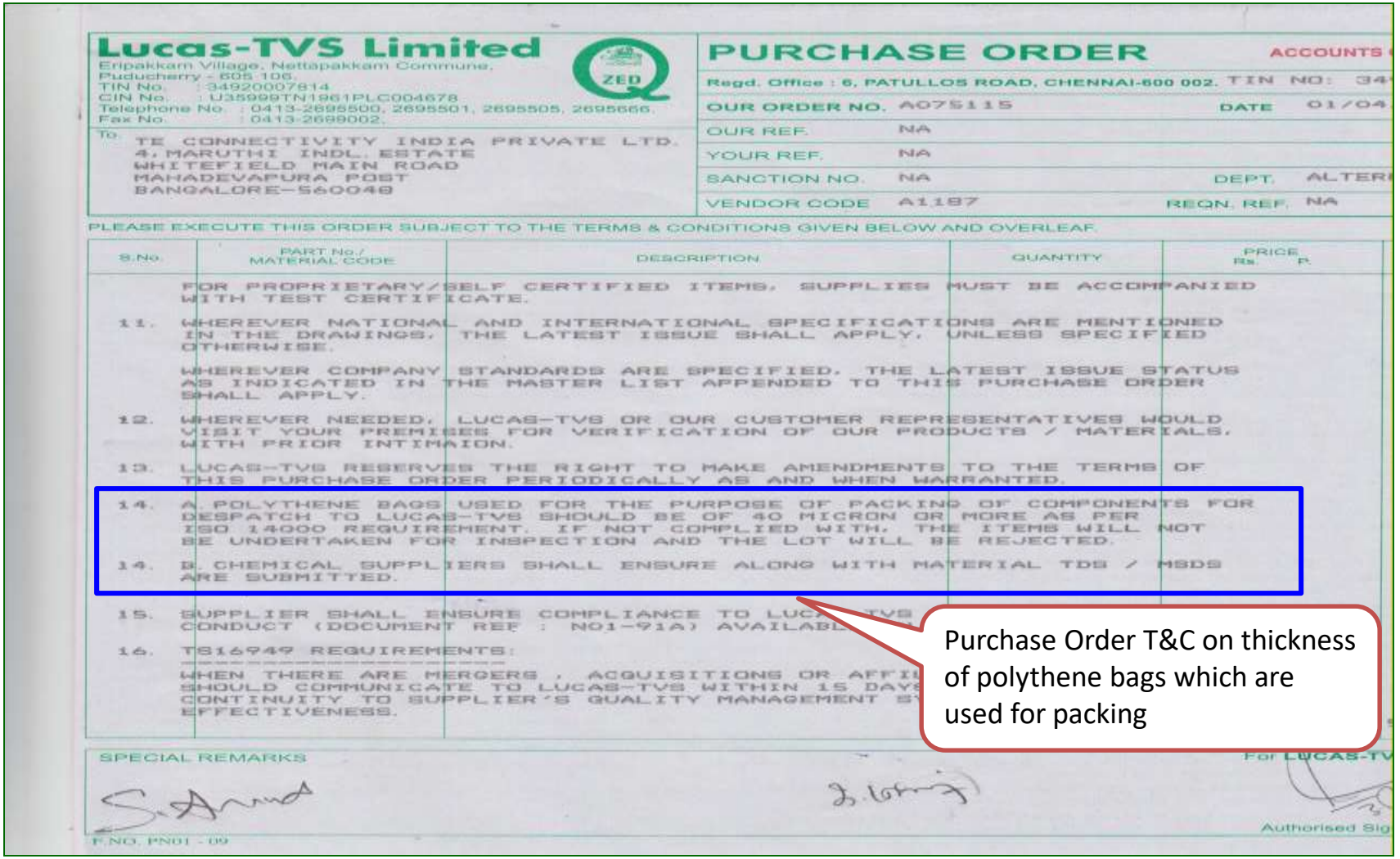
Authorised Signator

F.NO. PN01 - 09

Purchase Order T&C to supply components in Returnable Containers which in turn will reduce the Carton Boxes

Green Procurement Guidelines & Implementation

- Document the purchase guidelines encompassing green procurement



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Fax No. : 0413-2699002.

PURCHASE ORDER

Regd. Office : 6, PATULLOS ROAD, CHENNAI-600 002. TIN NO: 34

OUR ORDER NO. A075115 DATE 01/04

To:
TE CONNECTIVITY INDIA PRIVATE LTD.
4, MARUTHI INDL. ESTATE
WHITEFIELD MAIN ROAD
MAHADEVAPURA POST
BANGALORE-560048

OUR REF. NA
YOUR REF. NA
SANCTION NO. NA DEPT. ALTER
VENDOR CODE A1187 REQN. REF. NA

PLEASE EXECUTE THIS ORDER SUBJECT TO THE TERMS & CONDITIONS GIVEN BELOW AND OVERLEAF.

S.No.	PART No./ MATERIAL CODE	DESCRIPTION	QUANTITY	PRICE Rs. P.

FOR PROPRIETARY/SELF CERTIFIED ITEMS, SUPPLIES MUST BE ACCOMPANIED WITH TEST CERTIFICATE.

11. WHEREVER NATIONAL AND INTERNATIONAL SPECIFICATIONS ARE MENTIONED IN THE DRAWINGS, THE LATEST ISSUE SHALL APPLY, UNLESS SPECIFIED OTHERWISE.

WHEREVER COMPANY STANDARDS ARE SPECIFIED, THE LATEST ISSUE STATUS AS INDICATED IN THE MASTER LIST APPENDED TO THIS PURCHASE ORDER SHALL APPLY.

12. WHEREVER NEEDED, LUCAS-TVS OR OUR CUSTOMER REPRESENTATIVES WOULD VISIT YOUR PREMISES FOR VERIFICATION OF OUR PRODUCTS / MATERIALS, WITH PRIOR INTIMAION.

13. LUCAS-TVS RESERVES THE RIGHT TO MAKE AMENDMENTS TO THE TERMS OF THIS PURCHASE ORDER PERIODICALLY AS AND WHEN WARRANTED.

14. A. POLYTHENE BAGS USED FOR THE PURPOSE OF PACKING OF COMPONENTS FOR DESPATCH TO LUCAS-TVS SHOULD BE OF 40 MICRON OR MORE AS PER ISO 14000 REQUIREMENT. IF NOT COMPLIED WITH, THE ITEMS WILL NOT BE UNDERTAKEN FOR INSPECTION AND THE LOT WILL BE REJECTED.

14. B. CHEMICAL SUPPLIERS SHALL ENSURE ALONG WITH MATERIAL TDS / MSDS ARE SUBMITTED.

15. SUPPLIER SHALL ENSURE COMPLIANCE TO LUCAS-TVS CONDUCT (DOCUMENT REF : NO1-91A) AVAILABL

16. TS16949 REQUIREMENTS:
WHEN THERE ARE MERGERS , ACQUISITIONS OR AFFI
SHOULD COMMUNICATE TO LUCAS-TVS WITHIN 15 DAYS
CONTINUITY TO SUPPLIER'S QUALITY MANAGEMENT S
EFFECTIVENESS.

SPECIAL REMARKS

For LUCAS-TV

Authorised Sig

F.NO. PN01 - 09

Purchase Order T&C on thickness of polythene bags which are used for packing

Confederation of Indian Industry

Lucas TVS DRIVEN

Green Procurement Guidelines & Implementation

Lucas-TVS

TELEPHONE : 0413 2695666
0413 2695500
0413 2695501
0413 2695504
Fax : 0413 2699002

(PUDUCHERRY DIVISION)
FACTORY : ERIPAKKAM, NETTAPAKKAM COMMUNE,
PUDUCHERRY - 605 106. INDIA.

To,

06/01/2014

Sir,

SUB: EHSMS – Usage of Polyethylene Bags

As you are aware, we are one of the EHS certified Company in Puducherry.

We request all our suppliers to use the re-cyclable containers to avoid use of polyethylene bags wherever possible.

If you are using polethene bags, kindly ensure that the thickness of polyethylene bag is > 50 microns.

Regards,

JOSEPHRAJ STIVANE
AGM-Materials

Regd. Office : 11, Patullo Road, Chennai - 600 002. India.
Corp. Office : 'Ashok Centre' 82, Dr. Radhakrishnan Salai,
Chennai-600 004. Telephone : 28110063 / 28110074. Fax : 28115624.

om: Senthilmurugan.R - Pondy
: Muthuramalingam.D - Pondy
:
bject: FW: USAGE OF POLYETHYLENE BAGS

Message | POLY BAG.PDF (436 KB)

LLVS NPM.

From: Senthilmurugan.R - Pondy
Sent: 21 April 2014 13:47
To: Vaithiyanathan.S - Pondy (DP)
Cc: Joe Stivane - Pondy
Subject: USAGE OF POLYETHYLENE BAGS

Kind attn: Mr.Vaithy

Kindly send the enclosed Letter to our Vendors through RASIS as part of EHSMS & EnMS

Regards,

R.Senthil Murugan

Lucas-TVS Ltd,
Eripakkam Village,
Nettappakkam Commune,
Pondicherry-605106.

Ph No: 0413-2695536
Fax: 0413-2699002

- **Mechanisms employed by the unit to evaluate environmental performance of suppliers.**

LUCAS - TVS SUPPLIER AUDIT CHECK LIST

Vendor Name / Vendor Code : M/s. Sri Balaji Assemblies & Plastics / S0217	**Date of Audit**	**Auditor Name**	**Vendor Side Participants :**
PART NO: 26220840 & 26260905	07.01.2017	S.Balaji	Mr.Ramamurthy & Mr.Sudharsan
PART NAME: Regulator Moulding & Wiring Harness Assembly			
PRODUCT : Alternator & TWS	**Actual Vendor Score : 91%**		

	Audit Points	Audit Score			Grading	General Observations / Impressions
		Achieved Score	Max. Score	% Achieve		
1	Process control	77	87	89%	B	A : Good (>90) B : Needs improvement (70~90) C : Not meeting the requirement (< 70)
2	Production Planning -(Logistics & Schedule Adherence)	15	15	100%	A	
3	Quality Assurance - (Final Inspection, Problem Solving & QMS)	44	48	92%	A	
4	Energy, Environment, Health and Safety	28	30	93%	A	
Total Score		**164**	**180**	**91%**	**A**	

Audit Feed back (Over all Summary)

Refer Observation points in the audit checklist

Date of submission of improvement	20.01.2017

Form No:NO1-64 I

Inbound Logistics – Route Optimization

Daily milk run collection of materials from local supplier base (Pondicherry)

- Suppliers are grouped based on their location
- Vehicles are allotted for each group to collect material from all suppliers in a group
- Routes are optimized while vehicle allotment for reducing Fuel consumption and GHG Emission

Daily milk run collection of materials from Chennai based suppliers

- Sharing the Vehicles which are used by Lucas-TVS, Padi for Daily milk run collection
- Then materials are grouped in hub and bringing to Pondicherry by Two vehicles (per Day)

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Carton Box Elimination in Incoming Supplies – Approach Plan

Total Parts Identified	104 Nos
Completed	**41 Nos**
Balance to complete	63 Nos

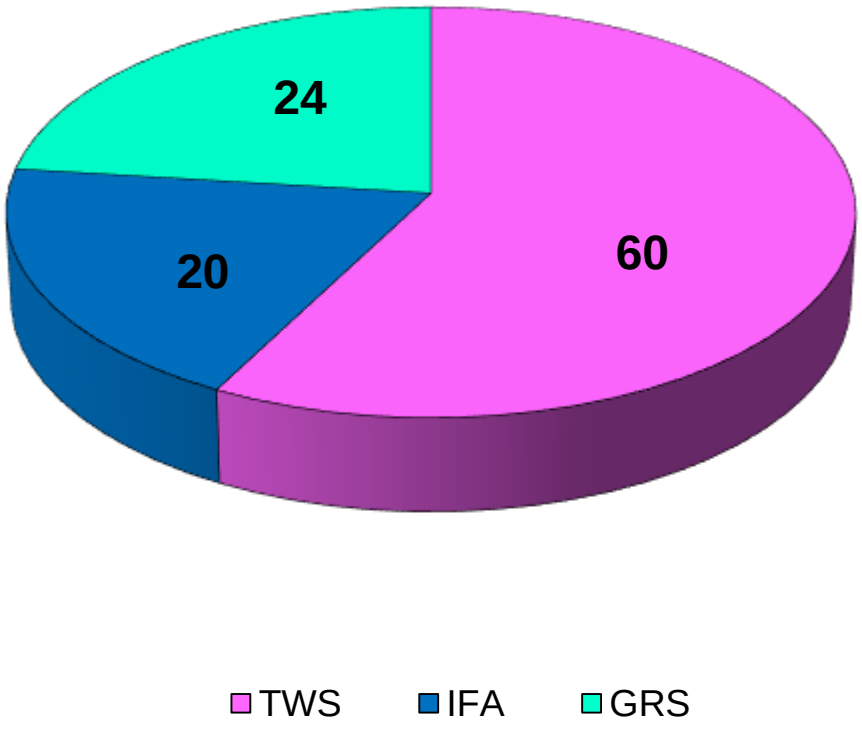
Before

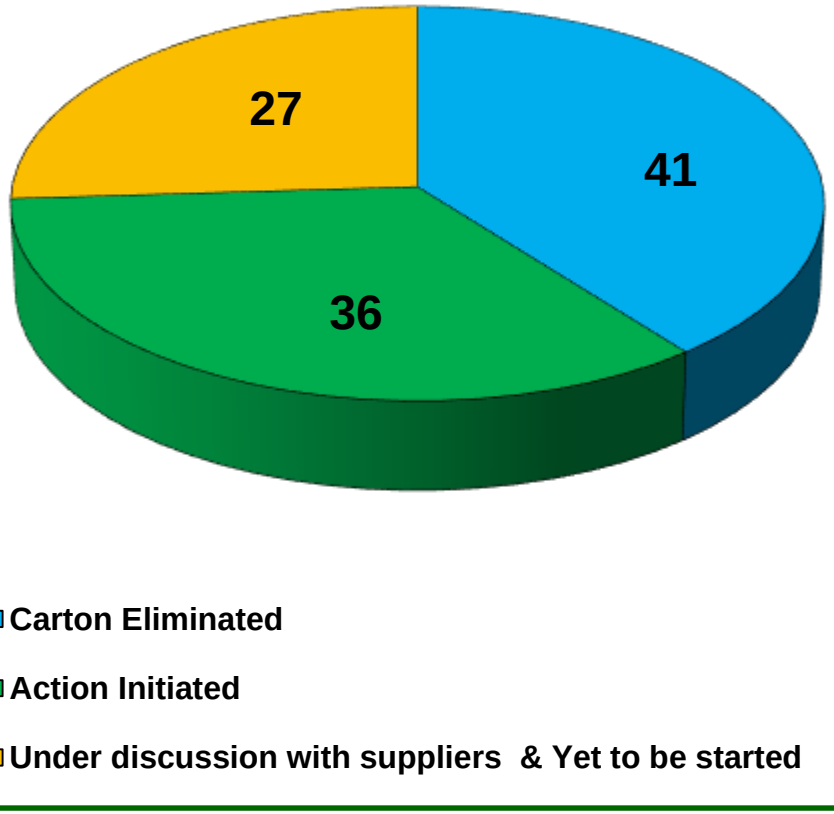
After

Carton Box Elimination in Incoming Supplies – Approach Plan

Implementation Status

Carton Box – BU Wise supplies





Product Stewardship

Target Setting

- **What are the targets set?**
  - **Short term – less than 3 years**
  - **Long term – more than 3 years**
- **Targets reflecting commitment towards**
  - **Influencing customer behavior (Material change)**
  - **Reducing toxic substances in process/product**
  - **Design for environment**
  - **Extended producer responsibility**
  - **Quality management and environment risk assessment**

Target Setting

- **Short Term: Within 3 years**
  - In order to reduce the entire life cycle impacts of Products, Process of manufacturing, the amount of toxics in the product, Lucas TVS Pondy Engineering set the following as a short term target.
- **Influencing Consumer Behavior :**
  - Developing Product with better performance and with the reduced weight.

SL.No	Project Description	Benefits		Target
1	Introduction of compact SM5-4 Pole starter instead of SM5-2 Pole starter(TVSM Applications)	Length Reduction: 11.5mm	Weight reduction: 75grams	2017
2	Introduction of Compact SM5-4 Pole starter instead of Existing SM5-4 Pole starter(HMSI Applications)	Length Reduction: 5.7mm	Weight reduction: 34grams	2019
3	Introduction of Compact SM53-4 Pole starter instead of Existing SM6-2Pole starter(TVSM Application)	Length Reduction: ---	Weight reduction: 180grams	2017
4	Introduction of Compact SM5-4 Pole starter instead of Existing SM5-2 Pole starter(HMCL Applications)	Length Reduction: 15.2mm	Weight reduction: 85grams	2018
5	Soldering Elimination	Environment Friendly design using welding instead of soldering		2017 ~ 2018

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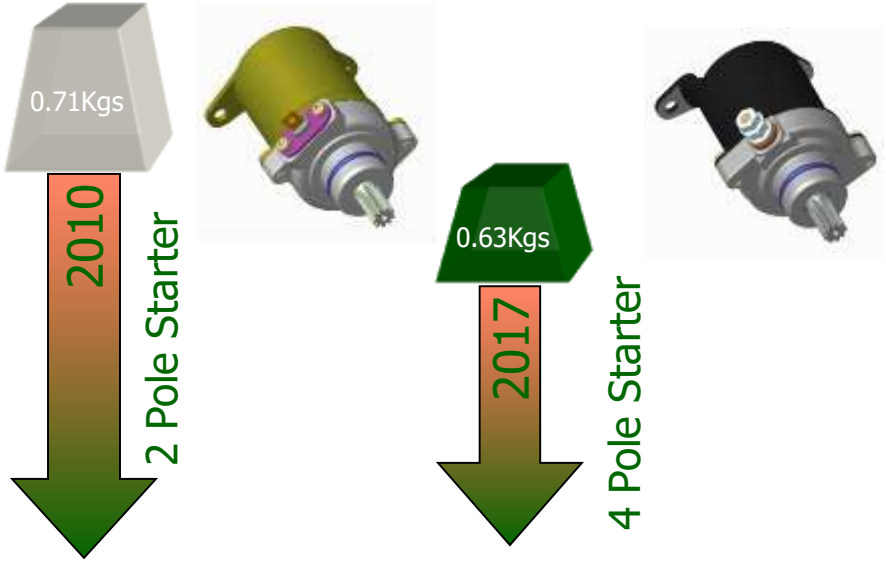
Targets reflecting commitment towards mDesign for environment

Product Weight Reduction: (WEGO)

Lucas TVS proactively develops products with reduced weight and with increased reliability. This is to help OEM`s plan for fuel conservation, which intern reduce the Carbon foot print and GHG reduction in the air.

Compact and light weight Starter Motor was designed and developed indigenously and also for the same power output light weight Starter motors developed to replace existing Starter motor.



Material	Existing weight (g)	Expected weight reduction (g)	Reduction (%)
Steel	400	355	11
Copper	62	39	23
Aluminium	88	78	11
Plastic	7.6	5.4	28

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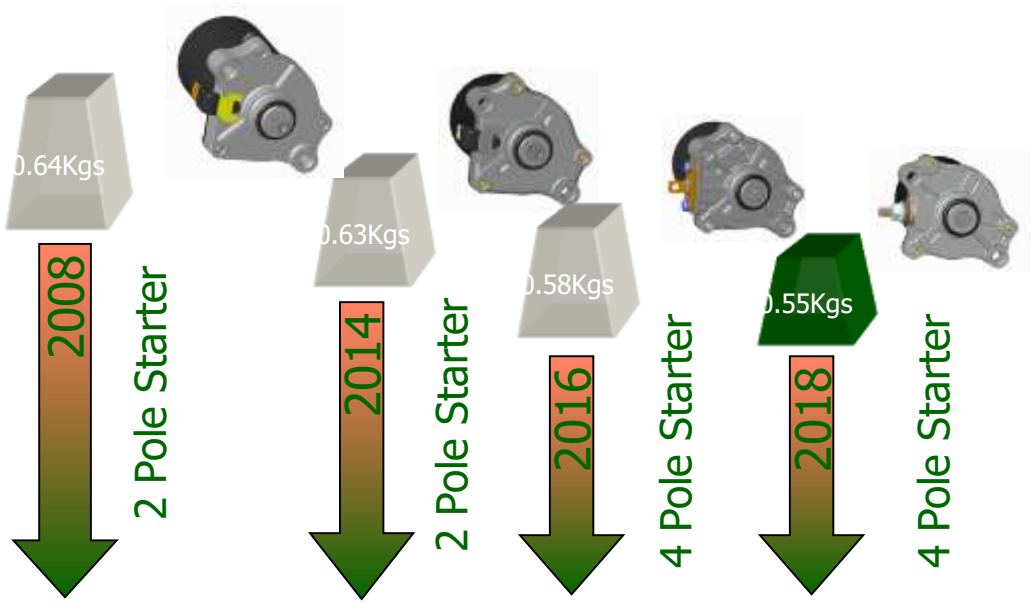
Lucas TVS DRIVEN

Targets reflecting commitment towards

Design for environment

Product Weight Reduction: (HMSI)
Lucas TVS is constantly working and developing Starters with reduced weight. This is to help OEM`s for fuel conservation, which intern reduce the Carbon foot print and GHG reduction in the air.

Compact and light weight Starter Motor was designed and developed indigenously and also for the same power output light weight Starter motors developed to replace existing Starter motor.



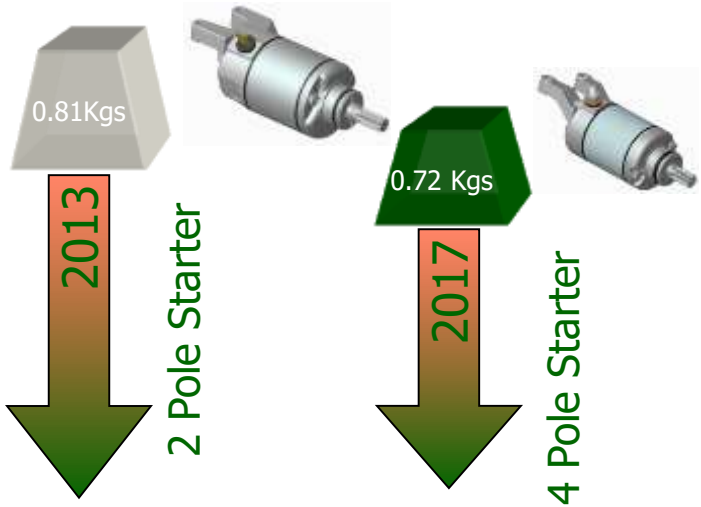
Material	Existing weight(g)	Expected weight reduction(g)	Reduction (%)
Steel	309	274	4.9
Aluminium	80	77	3.7
Plastic	9.5	5.4	43

Targets reflecting commitment towards Design for environment

Product Weight Reduction: (Apache)

Lucas TVS Two wheeler team constantly working new product development to reduce the weight of our products and increase the reliability of the products to reduce fuel consumption of OEM`s vehicles , which intern reduce the Carbon foot print and GHG reduction in the air.

Compact and light weight Starter Motor with the same power output was designed and developed indigenously and introduced . In this direction for Apache application a new SM6 2pole Starter was introduced in year 2013 and in 2017 a new compact 53mm frame size Starter was developed and introduced.



Material	Existing weight (g)	Expected weight reduction (g)	Reduction (%)
Steel	483	351	27
Copper	90	36	60
Aluminium	155	142	8.4

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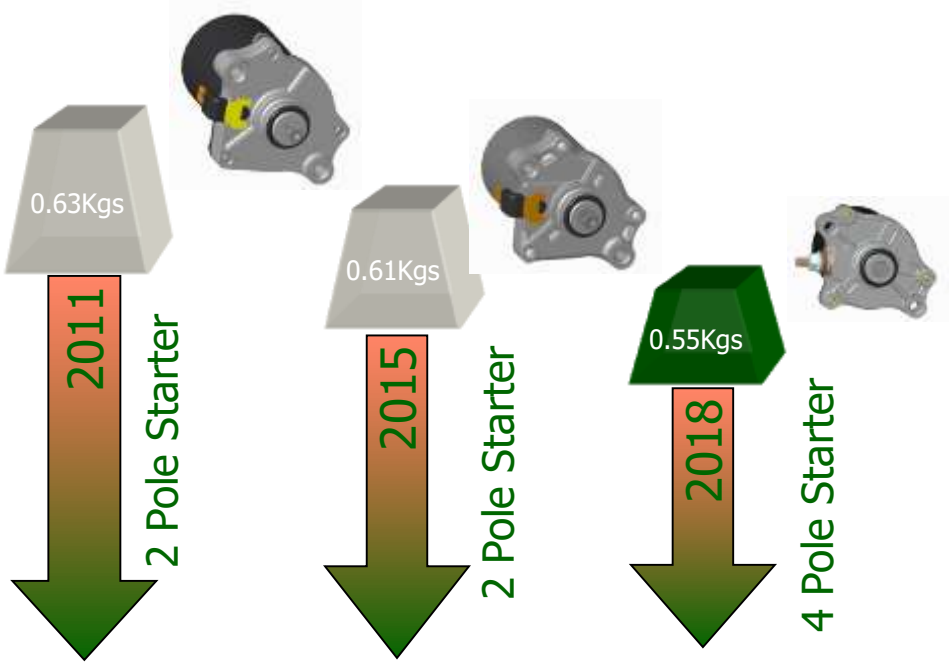
Targets reflecting commitment towards Design for environment

Product Weight Reduction: (AAWA)

We constantly reducing the weight of our products to help OEM`s for fuel conservation, which intern reduce the Carbon foot print and GHG reduction in the air.

Compact and light weight Starter Motor was designed and developed indigenously and also for the same power output light weight Starter motors developed to replace existing Starter motor.



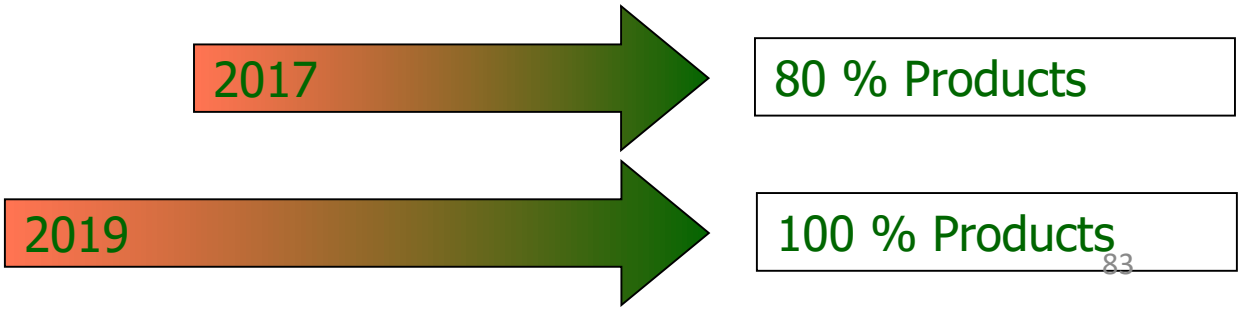
Material	Existing weight (g)	Expected weight reduction (g)	Reduction (%)
Steel	344	274	20
Copper	53	39	26
Aluminium	90	77	14
Plastic	7.1	5.4	24

Targets reflecting commitment towards

Hazardous material elimination:

Lucas TVS constantly eliminating use of Hazardous materials in the products and processes. All products are meets international regulations such as ELV, GADSL, RoHS etc.

- Soldering process which contains Lead (Pb) will be changed either to lead free soldering or welding.
- Solder elimination (Soldering to welding) for Starter Motor assembly



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Retainable bulk packing

Trolley
(Ware house to Customer end)

Design for Environment Program

Modification or change includes (any of the following)

28 % Material saving

Phenolic Brush holders

- Phenolic conservation of 28% per Brush holder

SM5 Starter - KWPK

SM5 2 Pole 0.3 kW Starter Motor.
0.64 kgs

SM5 4 Pole 0.3 kW Starter Motor.
0.55 kgs

Activa

Others

Fresh Air Ventilation

❑ Initiatives taken to maintain indoor air quality

❖ For Natural Conditioning

Sl.No	Details of area	Area (sq ft)	Openings, windows, entrance area (in sq ft)	Opening to carpet area ratio in %
1	Shop floor	120557	13155	11 %
2	Utility Area	66943	6971	10.4%

Eco Friendly House Keeping Chemicals

Document the use of eco friendly house keeping products/chemicals in the plant

RMC

MATERIAL SAFETY DATA SHEET

REVISION DATE: 08/24/2007 REVISION NUMBER: 12
DATE PRINTED: 08/24/2007 PREPARED BY: EH&S DEPARTMENT

1. CHEMICAL PRODUCT

PRODUCT NAME: ENVIRO CARE, Washroom Cleaner
PRODUCT CODE: 120020

Health: 1/1 Fire: 0/0
Reactivity: 0/0 Special/Protective Equipment: None

2. HAZARDS IDENTIFICATION

EFFECTS FROM ACUTE EXPOSURE:

INGESTION: May be harmful if swallowed.
SKIN CONTACT: No irritation or absorption expected.
INHALATION: Inhalation of spray mist may be irritating.
EYE CONTACT: May cause mild eye irritation.
CHRONIC EFFECTS: None known.
EFFECTS/CARCINOGENICITY: None listed under OSHA, IARC, or NTP.
ROUTES OF ENTRY: Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation.

SCHEVARAN

Clean Technology in Tune with Green Trend

MATERIAL SAFETY DATA SHEET

REVISION DATE: 02.05.2007 REVISION NUMBER: 01

1. BASIC INFORMATION

Product shipping name : HAND WASH

Chemical name & Synonyms : Disinfectant hand cleaner.

NFPA/HMIS HAZARD CODES (minimal=0; slight=1; moderate= 2; serious= 3; severe=4)

Health: 2/2 Fire: 0/0
Reactivity: 0/0 Special/Protective Equipment: Neutral/A

SCHEVARAN

Clean Technology in Tune with Green Trend

MATERIAL SAFETY DATA SHEET

REVISION DATE: 31.07.2007 REVISION NUMBER: 01

Product shipping name : DRAIN CARE

Chemical name & Synonyms : Alkali.

NFPA/HMIS HAZARD CODES (minimal=0; slight=1; moderate= 2; serious= 3; severe=4)

Health: 2/2 0/0
Reactivity: 1/1 Special/Protective Equipment: ALK/C

Product description : Highly basic formulation capable of digesting organic matter which blocks pipes and drainage ports.

Manufacturer's name & address : Schevaran Laboratories Pvt. Ltd.

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Green Belt Development in Unused Site Area

- Open area availability in plant – 718740 sq ft.
- Area under HT line – 7000 sq ft.
- Area for open auditorium – 11000 sq ft.
- Car and Truck Parking Area – 8000 sq ft
- Rain Water Pond area – 27000 Sq ft.

560000 sq ft available land under greenery.

105740 sq ft available land under progress of greenery development.

Green Belt Development in Unused Site Area

Bio-diversity

❑ Efforts/Initiatives taken to create and maintain bio-

❖ Butterfly Garden.

❖ Lawn and Greenery development.

❖ Organic Roof Garden / Kitchen Garden for Employees Canteen.

Bio-diversity

- **Efforts/Initiatives taken to create and maintain bio-diversity in the facility**

❖ Indoor plantation.

❖ Herbal garden.

Pond deepening.

Recreational and Inspirational Places

- A Recreational and Inspirational club headed by Mr.Murugasen Head - HR, having indoor and Outdoor game facilities.
- Our Cricket team and Badminton team are representing matches internal within our SITE.
- “8” Shaped walking & Medicine Garden walk – Health improvement for employees.

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Lucas TVS DRIVEN

Lucas TVS GreenCo journey Continues…..

Green Initiatives

&

Reduction in carbon footprint

THANKS