CII National Award for Environmental Best Practices – 2021

Panasonic Life Solutions India Pvt. Ltd.
Haridwar, Uttarakhand

Switch, Sockets

MCB

Switch, Sockets & Accessories

Switch, Sockets & Accessories

ANCHOR | Panasonic

ANCHOR by Panasonic

Panasonic

Year:1963 → Year:1918 → Year:2007 → Now 2019

Presenter –Kapil Kumar (Sr. Engineer) & Kamal Negi (Dy. Manager)

1

Selected Theme By CII

Best Environmental Initiatives

1. **Urea Formaldehyde Waste Reduction Through 3R Technique From 24.27% to 23.23% per Month**

2. **Reduction of Single Use Plastic Waste Through Lifecycle Assessment**

2

Project Title - Theme No.: 1

3/21

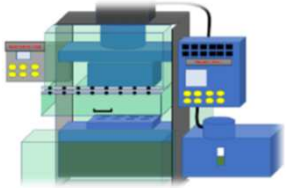
Project title - Urea Formaldehyde Waste Reduction Through 3R Technique From 24.27% to 23.23% per Month

Compression molding Process is a method of molding in which the preheated molding material placed in an open, heated mold cavity. The mold is closed with a top force or plug member and pressure is applied to force the material into contact with all mold areas, while heat and pressure are maintained until the molding material has cured. In this process we have used Thermoset Urea Formaldehyde Plastic Material.

Process Flow (PFD)-

Urea Formaldehyde Raw Material Moulding Powder

1-IQC-Raw Material



Molding Process

2-Compression Molding Process

3-Product

Urea Formaldehyde Wastage

Molding Scrap (Process Rejection) **Flash Scrap (Design Scrap)**

Urea Molding Scrap

Waste converted into Energy by co processing at Brick Kiln

Safe Disposal

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3

Trigger of The Project

4/21

Meeting With CFT

Panasonic

Company Management Loss

Urea Formaldehyde Wastage

Metal Scrap Wastage

Oil Consumption in Forming Machine

This Material is Not Recyclable So We Select This Project

The project is conceived on Middle management / Operating level

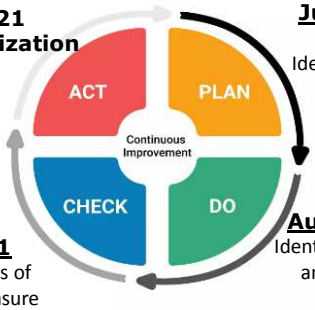
Uniqueness of this Project

1-Innovative Ideas
2-Reduction of Waste generation
3-Horizontal Deployment in Other Plant
4-Machine Improvement in Effective Manner
5-Protection for Environment

it is a new concept

Project Road Map for Waste Reduction

Feb-21 Standardization



Jun-20 to July-20
Project Selection & Identify Current Status Of Wastage

Aug 20 to Dec-20
Identify Problem Validation and Countermeasure Implementation

Jan -21
Efficetivness of Countermeasure

Schedule of Project	Start This Project	End this Project
Plan	Jun-20	Mar-21
Actual Implement	Jun-20	Feb-21

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Countermeasure & Implementation Against -Urea Formaldehyde Wastage 5/21

Issue	Cause	Implement Countermeasure	Before	After	Status
Wastage due to Spot Defect	Metal/Magnet Parts In Urea Raw Material Supplier End	**Prevention-** Implement **Magnet** At R/M Feeding Box **Permanent Countermeasure :** **C/M-1** Supplier Change **Beads** Hardness 6.8 MOH Scale to 9 MOH Scale **C/M-2** Supplier Change **Grinder Blade** Hardness From 225 to 352	**R/M Box Without Magnet**  **Grinder Blade**   **Beads**	**R/M Box With Magnet**  **Grinder Blade**   **Beads**	**Done**
Wastage Due to Short Molding Defect	Raw Material Not Proper Flow From Spacer Due to Less Hole Dia. of Spacer	Increase Spacer Hole Dia. From 15 mm to 20 mm	**Before-Dia-15 mm** 	**After- Dia-20 mm** 	**Done**
Wastage Due to Excess Flash	Raw Material Density Variation	Standardize the Density of Both Supplier : Density Observed Supplier A 0.76 to 0.82 gm/ml Supplier B 0.81 TO 0.89 gm/ml	**0.76 to 0.89 gm/ml**	**As per IS 2221:1962** Standardize Density 0.80±0.03 gm/ml 	**Done**

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Challenges Faced & Brief of Countering 6/21

S. No.	Technical Challenges	Administrative Challenges	Maintenance Challenges	Mitigation Measures	Results
1	1- How Many Gauss Magnet used to Catch Metal Parts From R/M 2- How We Standardize the Harness of Beads and Grinder Blade at Supplier end	1- What is the Cost of Magnet and how much Budget required to Implement in all M/C 2- High cost of Beads and Grinder Blade	1- Frequency of Magnet Preventive Maintenance /Replacement 2- Frequency of Grinder Blade and Beads Preventive Maintenance	Trial on different Gauss magnet Bead, Grinder Blade & finalize based on Effectives, Cost, Quality and Durability. Maintenance Frequency also Standardized	Raw Material Quality Improve and Rejection Reduce
2	1- How We Standardize Increase Hole Dia. 15 to 20 mm	1- Modification Cost much higher (Approx. 2.5 Lac by outside Vendor)	1- Frequency of Spacer Preventive Maintenance	1-Spacer Hole dia. finalize based on Low Rejection and set the Maintenance Frequency after trial and verification of shelf Life of Spacer Wear Out 2-Modification done by Inhouse Maintenance Team	Spacer Hole Dia. Standardize and Reduce Short Molding Wastage
3	1- How we calculate Density of R/M as per Standard and how we Standardize the Density at Supplier End	1- Requirement of Instrument for Density Measurement 2- Improvement at Supplier End in Current Covid-19 Condition	1- Frequency of Density Instrument Preventive Maintenance /Calibration	1- Standardize R/M Density 0.80±0.03 gm/ml as per IS 2221:1962 & Online Meeting with Supplier to Maintain Density as per Standard	Raw Material Quality improved at Supplier end and Flash Wastage Reduce

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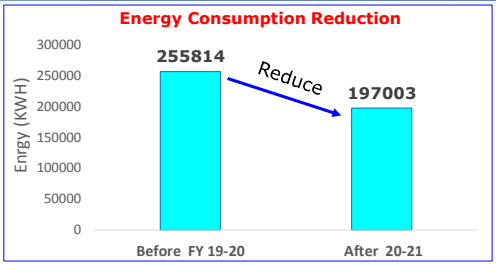
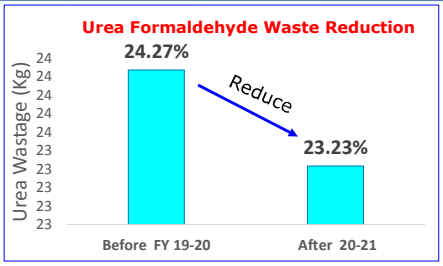
Tangible Benefits

7/21

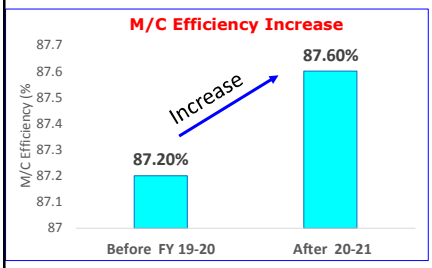
Earth Protection



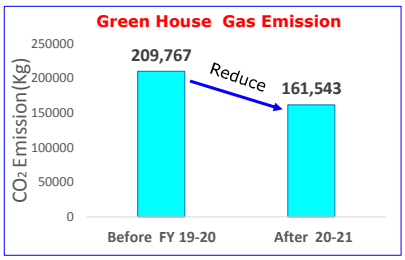
Energy Saving = 58811 KWH Per Million Pcs



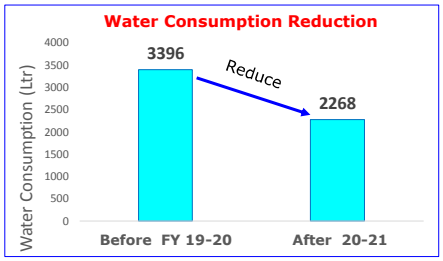
Waste Reduction = 2711 Kg/ year



M/C Efficiency Increased 0.40% Per Month



CO_2 Emission Reduction =48.22 Ton/Year



Water Consumption Saving =1.13 KL /year

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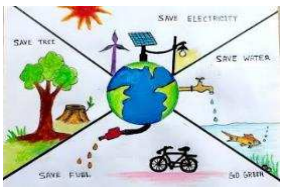
Intangible Benefits

8/21

1- Society

i) Reduce Cause of Air Pollution By Reduction In Urea Formaldehyde Wastage
ii) Natural Resource Saving

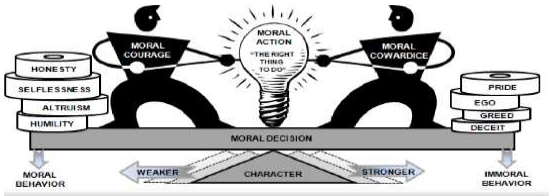


2- Skill Upgradation

i) Problem Solving Skills Improved
ii) Knowledge Improved Against Waste Reduction
iii) Raw Material Knowledge Improve

3- Moral/ Motivation

i) Self Confidence Level Improve
ii) Man & M/C Safety Improved



4- Attitude Shift/ Development

i) Achieved Target of Waste Reduction and Improved Attitude of Employees towards Environment Conservation & Protection

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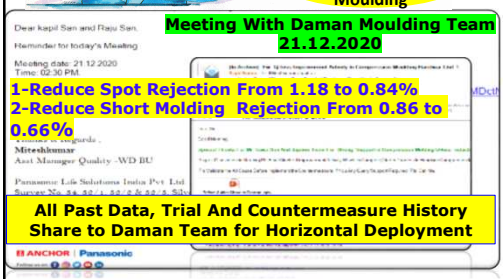
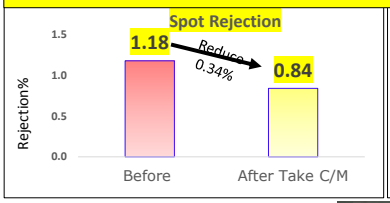
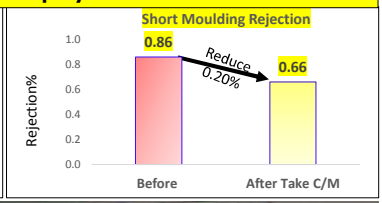
Replication Potential of Project within Sector

9/21



Effectiveness After Horizontal Deployment in Daman Plant





Knowledge Sharing With Cross Functional Team & Others

Plant Name	Defect	Countermeasure	Where	When	Before	After
Panasonic Life Solutions India Pvt Ltd	1- Black Spot	Magnet Implement on R/M Feeding Box	Daman	Dec-20	1	1
Panasonic Life Solutions India Pvt Ltd	2- Short Moulding	Increase Hole Dia. From 15 mm to 20 mm	Daman	Dec-20	2	2

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Project Title - Theme No.: 2

10/21

Project title - Reduction of Single Use Plastic Waste Through Lifecycle Assessment

Polypropylene (PP) Bags used during the internal transferring of Raw material and Semi Finished Goods from one production section to another production section. During this internal transferring the role of Poly Bag was in two different ways (i) storage of raw material/semi finish good small in size (ii) to cover the material (GINA Plates) to keep them free from scratches & damage.

Process Flow (PFD)-

1- Polybag use to avoid Scratches on Aesthetic Parts

2- Material transfer to Assembly process

3- Empty Polybag collect in Bin

Empty Polybag collected in Scrap yard for disposal through vendor/ recycler

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Trigger of The Project

11/21

Government notification to ban Single use Plastic

WHY???

500 Billion to a Trillion Plastic bags consumed each year

High Costs for clean-up Only 1% recycled

Take upto 2,000 Yrs to Decompose

Cause of Environmental pollution

Meeting With CFT

Panasonic

Company Management Loss

Single Use of Plastic Waste

Reduce Mold release spray consumption in Molding M/c

Oil Consumption in Forming M/c

Legal Compliance (Govt. Notification to Ban use of Single Use Plastic)

The project is conceived on Top management level

MD Speech

As a part of Panasonic Group To move our company to next level, We need to resolve critical Internal & External Issues

Project Road Map for Waste Reduction

May-19
Standardization

Apr -19
Efficetivness of Countermeasure

Oct-18 to Nov-18
Project Selection & Identify Current Status of Polybag consumption

Dec 18 to Mar-19
Identify Problem Validation and Countermeasure Implementation

Schedule of Project	Start This Project	End this Project
Planning & Implementation	Dec-18	May-19

Uniqueness of this Project

1-Innovative Ideas
2-Reduction of Waste generation
3-Horizontal Deployment in Other Plant
4-Protection for Environment
5-Fulfill Legal Requirement

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Countermeasure & Implementation Against –Single Use Plastic Wastage

12/21

Issue	Cause	Implement Countermeasure	Before	After	Status
Use of large size polybag for small parts packing	Increase the plastic waste quantity after use	**Small and Big size Corrufabricated box use for packing of switch, socket, dimmer and other semi finish goods (non-woven bag and box are multiple time usage due to its long life)**	**Switch and other small parts pack in polybag for transfer** 	 **Parts packing in Corrufabricated Box**	**Done**
Use of small size polybag for cover GINA plates	Increase the plastic waste quantity after use	**Non-Woven bag & Cover Bin use to replace Polybag to keep free from scratches and damage**	**Cover Plates pack in polybag** 	 **GINA Plates packing in Non Woven bags**	**Done**

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Challenges Faced & Brief of Countering

13/21

S. No.	Technical Challenges	Administrative Challenges	Maintenance Challenges	Mitigation Measures	Results
1	**Plastic Waste Reduction:** Many type of products are manufactured hence different sizes of box or tray required to keep products	Check alternative of Polybag packing to reduce plastic waste as per Govt. notification	Different type of Box search for product and trial done. Check Material feasibility on various aspects.	Brainstorming with team and finalize non-woven bags to keep plates and box for other small products	Alternative of Polybag identified
2	**Use of Alternative material with long life cycle:** Non availability of cotton bags and Soft material box in market as per our requirement	What is the Cost of alternative packing and how much Budget required to Implementation	Material replacement in alternative packing	Visit of suppliers and develop sample as per our requirement and standard	Trial of packing completed, and sample finalized
3	**Scratch / Damage free product:** Alternative material for keeping products required scratch or damage free	Follow Work instructions. Awareness training to all employees regarding use of Non-woven bag and Corrufabricated box in place of Polybag.	Safe transfer of products in other departments	Vendor developed for supply of Non-woven bags and Corrufabricated box and replaced the packing for transfer in other departments	Polybag replaced

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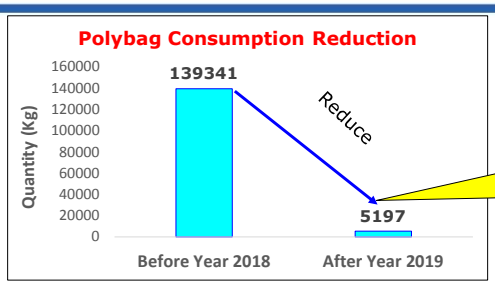
Tangible Benefits

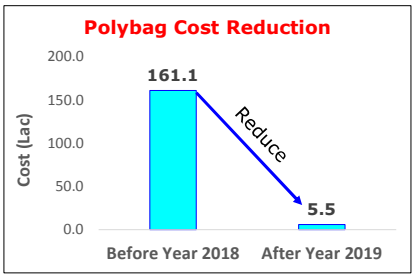
14/21

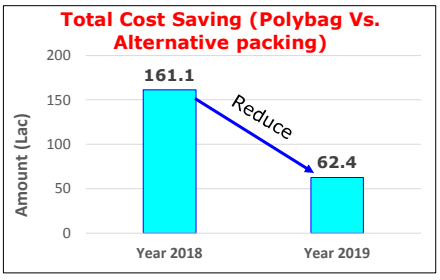
SAVE THE PLANET
ENVIRONMENT PRESERVATION



96.27 % Consumption reduced from Injection Molding

Polybag Consumption Reduced = 134144 Kg





Total Polybags Consumption Cost = 161.1 Lacs/ Year

Alternate Packing Development Cost = 56.9 Lacs

Net Saving =161 – 5.5 – 56.9 =98.7 Lacs/Year

Polybag Cost Reduced = 155.7 Lacs

Total Cost Saving= 98.7 Lacs

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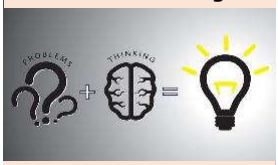
Intangible Benefits

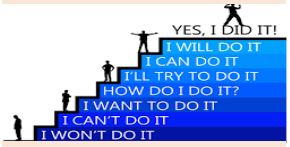
15/21

1- Society

2- Skill Upgradation

Team Work	Problem Solving	Project Management
		
Improved	Improved	Improved

3- Moral/ Motivation

Self Confidence Level	Moral Values
	
Improved	Improved

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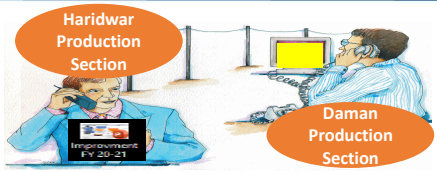
Replication Potential of Project within Sector

16/21



Meeting With Daman Production Team 15.12.2020

100 % Replication Potential of Project

Possible Implementation of Evidence

Replication Factors

Material Feasibility
- Corrugated Box
- Paper Sheet
- High-Quality Bubble Sheet

Product Quality
Process Flow
Inter Sections Working
Material Procurement Cost
Single Use Plastic Reduction
Environment Load

Future After Spreading Benefits

- Transferring of GINA Plates Without Scratch
- Product Quality Improvement
- Process Improvements

Achievements & Knowledge Sharing Platforms

Virtual National Level Meet

Rewards & Recognition @ Global Level Meet

16

Achieving National Benchmarks/Standards

17/21

PANASONIC GLOBAL BENCHMARK

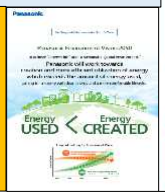
Color Code

	Area For Improvement
	Area Already Improved

Reduce greenhouse gas emission to substantially zero by 2050

Top Management From Japan, had lagged behind in Environmental issues, changed the direction towards Sustainable

- Zero CO2 Emissions Factories
- Increase Renewable Energy Resources
- Reduce Water Consumption
- Water Positive Units
- Increase Rainwater Utilization
- Zero Landfilling Waste
- Procurement of Sustainable Materials
- Chemicals Management System



PLSIND UNITS BENCHMARK

Wiring Devices Division Environment Standards

- PVC Scrap Reduction 08 %
- Water Consumption Reduction 05 %
- Inventory Control Management Increase 05 %
- Environment Care Funds Increase 10 %
- Conversion of Disposable Hazardous Wastes To Recycling Wastes About 02 %
- Increase Revenue Sources of Wastes 03 %

Wiring Devices Division Energy Standards

- 10% Decrease in Energy Utilization Through Renewable Resources
- 05 % Decrease in Energy Consumption in Machines
- Procurement of Energy Efficient Machines

Sustainable Achievements			More Sustainable Competitors	Less Sustainable Competitors
Comparative Analysis	Panasonic Global	Panasonic National	Competitor - 1	Competitor - 1
Environmental Care Funding	2836.57 MINR	18 MINR	20 MINR	<10 MINR
Factory Waste Recycling Rates	Current 98.9 % 100% Vision	30 %	35 %	<4%
Renewable Energy Resources	32000 MW	2.0 MW	5.60 MW	<1.0 MW
Comparative Analysis	Panasonic Global	Panasonic National	Competitor - 2	Competitor - 2
Green House Gases Emissions	10,000 Tons	10 %	50 %	< 5 %
Waste Water Discharge & Recycling	18.02 million M3	60 %	98 %	< 20 %
Waste Landfill Disposal	3.4 Thousand Tons	<5 %	<2 %	< 5 %

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Priority Plans for +1 year and +2 year

18/21

S. No.	Project Title	Approach	Resource Required	Timeline
1	Reduce Wastage of Urea Formaldehyde Raw Material from 23.23% to 19.23%	Waste Reduction	Infrastructure and Technology	2021-2023
2	Reuse 30% Scrap oil in Forming Machine	Reuse and Recycle	Feasibility study by Expert	2021-2022
3	Reduction of Hazardous waste generation 2% by 3R technique	Waste Reduction	Infrastructure and Technology	2021-2022
4	Reduce Water Consumption 5% by adopting advance water saving techniques recommended in CII Water audit	Natural Resource Saving	Infrastructure and Technology	2021-2022
5	Reuse old Metal scrap for Development of New Molds	Reuse and Recycle	Infrastructure and Technology & Feasibility Study done	2021-2023
6	Energy consumption and CO2 emission reduction (8%) by Utilization of Renewable Energy	Energy Conservation	Infrastructure and Technology	2021-2022
7	Reduce Energy Consumption & CO2 emission (1%) by Adopting Godrej IFC Controller for reduce Loading Time of air compressor	New Process & Technology Equipment's	Technical & Commercial Working Completed	2021-2022

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Major Learning From Projects

19/21

1- Deep understanding of waste management system of plant & conversion it into resources.

2- Strengthening of Input waste segregation system.

3- Better utilization of waste collection system and resources.

4- Elimination of Non-value added activities.

5- Process flow of waste in micro level.

6- The capital cost reduction because the project was developed In House.

7- Learned systematic approach towards improvements for environment saving.

8- Awareness of Plastic Waste Management Rule.

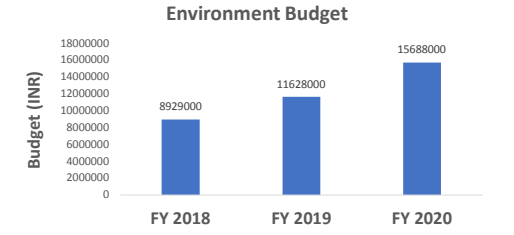
9- Enhance cost consciousness among team.

10- Culture of Environment Improvement through Sustainable Activities.

Environment Performance Evaluation

20/21

Management Performance Indicator (MPI)

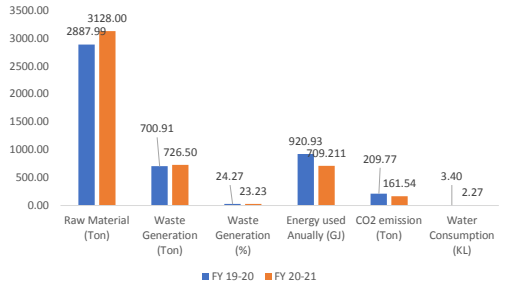


Major Environment Projects

- Replacement of Dehumidifier to Centralize dehumidifier system (INR 6700000)
- Replacement of Single use plastic by non-woven bag and Corrufabricated box (INR 5690000)
- Installation of APFCR Panel in Power factor improvement for CO2 reduction (INR 1700000)

Environment Performance	FY 2018	FY 2019	FY 2020
Waste Generation			
Used oil (KL)	27.3	29.8	20.1
Other Hazardous waste (Ton)	21.45	17.12	18.55
Urea Formaldehyde scrap (Ton)	965.20	716.56	710.44
Corrugated box (Ton)	26.59	24.51	21.54
Metal scrap (Ton)	252.73	210.00	235.48
Wooden scrap (Ton)	62.15	54.68	60.44
Plastic scrap (Ton)	319.90	210.74	76.92
Water Consumption (KL)	64.27	54.30	58.12
Air Emission			
PM (gm/kw-hr)	0.134	0.119	0.091
SO2 (gm/kw-hr)	0.072	0.067	0.034
NOx (gm/kw-hr)	0.426	0.396	0.269

Operational Performance Indicator (OPI)



Environment Condition Indicator

Sr. No.	Parameter	UOM	EPA Permisible Limit	Local	Regional Capital	National Capital
1	Particulate Matter (PM_{10})	$\mu g/M^3$	100.0	73.3	120.3	198.7
2	Particulate Matter ($PM_{2.5}$)	$\mu g/M^3$	60.0	35.5	78.6	105.0
3	Sulphur Dioxide (as SO2)	$\mu g/M^3$	80.0	21.8	21.4	-
4	Nitrogen Dioxide (as NOX)	$\mu g/M^3$	80.0	24.0	24.6	70.5

*Annual Average

Thanks

Panasonic Life Solutions India Pvt. Ltd.