

PROJECT DETAILS

Title of Project : **GREEN PARKING**

- Project Initiation Date : 30.12.2023
- Project Completion Date : 05-06-2024
- Areas Impacted : Productivity/Quality/Cost/**Environment**

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TEAM DETAILS

Mentor



Mr.SUBRATA BHADRA

Team Member 1



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Team Member 2



Mr. Robin Antony
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Team Member 3



Mr. Winson Norohan
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Team Member 4



Mr. Chidanand
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Team Member 5



Mr. Manjunathan D
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PROBLEM

We currently have the area for the parking capacity of 120 bikes, but as the bikes are more. They are parked outside and don't have a platform for those because we lack the designated area for parking as the area is the big constraint to us. When it rains it is very difficult the bikes which parked outside.



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IDEA TO OVER COME

So, we should identify the enough designated area for the current required parking capacity of 460 bikes such that all bikes should be accommodated at one place with a good platform and lighting facilities.

Also, we planned it to build as a Green Parking.



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HOW IT WILL BE GREEN PARKING!

Using process waste for the platform



Using solar for the lighting

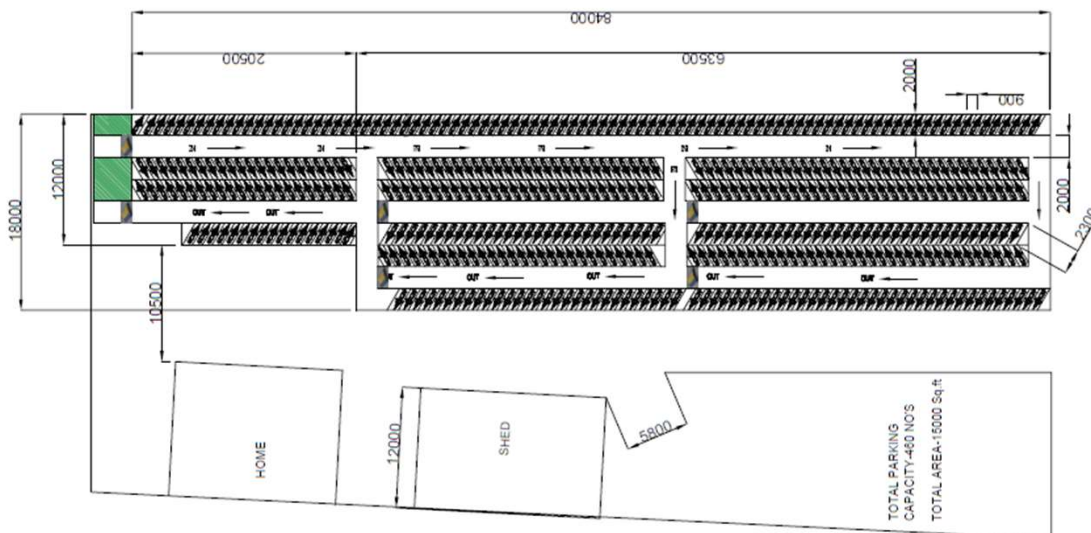


Planting trees for the shadow



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PARKING PLAN



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APPROACH FOLLOWED (RCA)

Making floor by using
thar



Making floor by using
concrete



Making floor by using
paver block



Using lens cutting
waste as a flooring
material

- Details of tools used for root cause analysis
 - 5 Why?

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SYNOPSIS OF THE PROJECT

Initially, we were used to send the lens cutting waste **approximately 60 Tons every year** for Incineration.

This process was releasing **about 0.253KG** of carbon emissions **per 1 KG of waste combusted**. We had tried several methods to recombine or reform our lens cutting waste which is made of **40% Thermoplastic and 60% Thermoset**. But eventually we are able to convert lens cutting waste into usable products like Paver Blocks, Kerb stone and brick, and through this we have constructed the Car/Bike parking

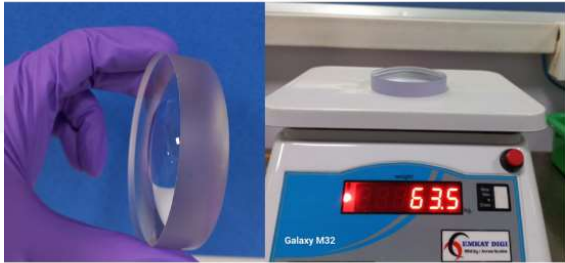
Need/ Trigger

In path of **eliminating the incineration process and carbon emission**. and, to achieve the business objective of **zero waste**, we thought of recycling the lens cutting waste into usable products like Paver blocks etc.

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LENS CUTTING WASTE

INNITAL BLANK



POWER GENERATION



FINAL PRODUCT



WASTE



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WASTAGE FROM PROCESS



Lens cutting waste



Acetate cutting waste



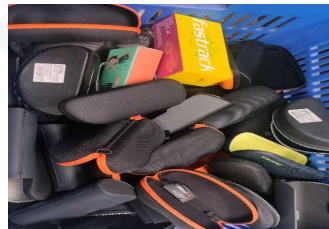
Rejected lens & blanks



Rejected sunglasses & Frames

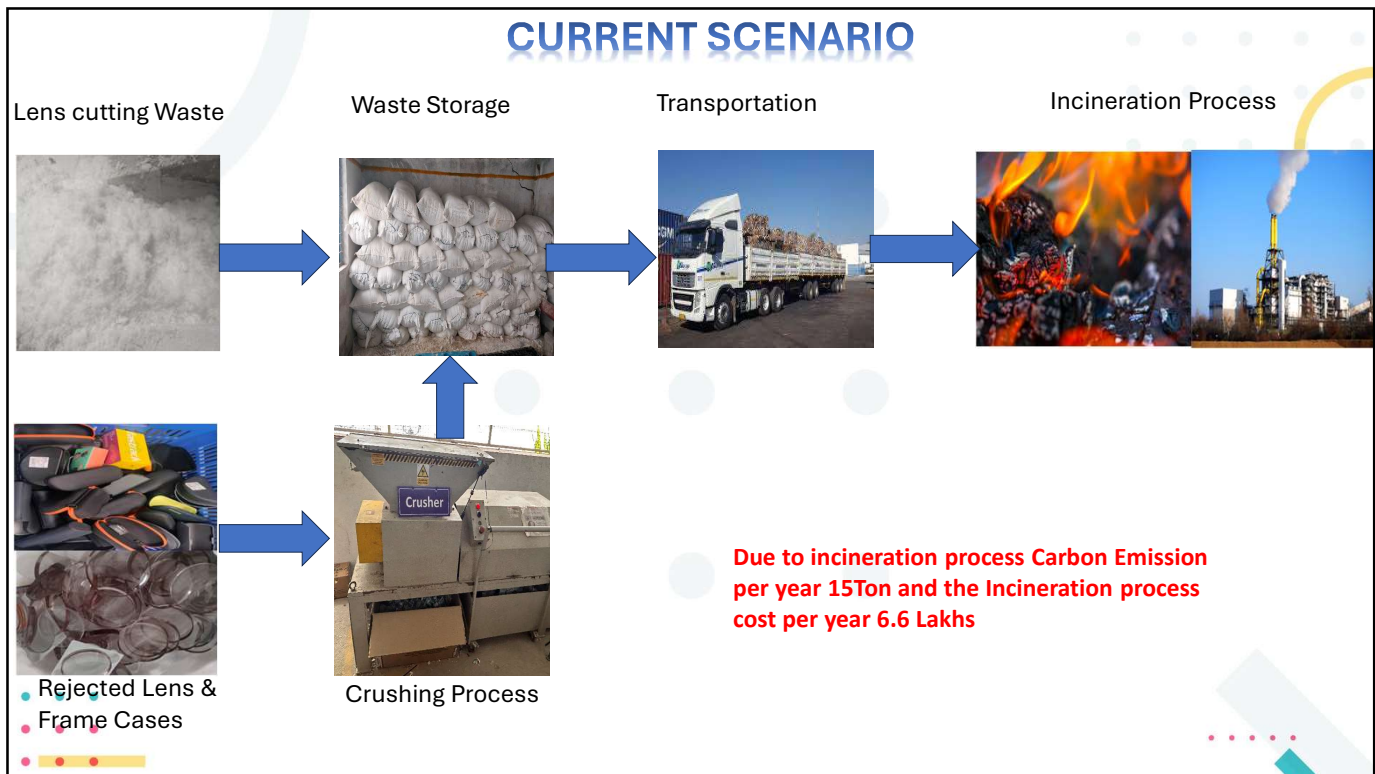


Dummy Lens



Rejected frame cases

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REPLACED CEMENT BLOCK & AGGREGATES BY WASTE CONTAINER AND SWARF

Swarf (lens cutting waste)



Used Container



Key stats:-

- **467** Containers & **3T** Swarf used.
- Concrete Ratio: **1:1.5:3** (Cement : M sand : Swarf)
- Area **408 Sqft.**

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REPLACED CINDER WITH SWARF

Lens cutting waste



Rejected Blanks



Key stats:-

- **1.1 Ton** of lens swarf used
- Area: **600 Sq.ft**

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ECO FRIENDLY RESTROOM AND COMPOUND WALL

Lens cutting Waste



Used Container



Key Stats:-

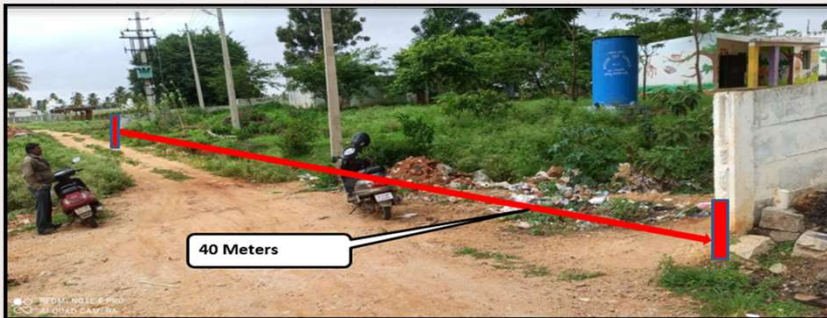
- **970** Containers & **20.8 T** of Swarf used
- Area **170 Sqft**(Rest Room)
- Area: **56 Running Mtr** (Compound Wall)
- Area: **52 Running Mtr** (Walkway)

Benefits:-

- CO2 Emission reduced by **5.3 T**
- Cost saving: ~ **3 lakhs**

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Before



Sensitivity: Internal

Cafe

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After



Sensitivity: Internal

Cafe

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IMPLEMENTATION OF LENS CUTTING WASTE INTO PAVER BLOCKS

We have studied and analysed the possibilities of converting process waste into usable product and finally we came up with heating and compress moulding the process waste into Paver Blocks and Kerb stone which is used for the platform and border of the parking, respectively.



SCREW BARREL



HYDRALLIC PRESS

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PROCESS FOLLOWED

MIXING LENS CUTTING WASTE WITH REVERSE SAND



LOADING MIXTURE TO SCREW BARREL



FEEDING IT TO PRESS MACHINE



PRESS OUTPUT



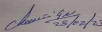
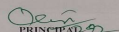
PRODUCT



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TESTING REPORTS

COMPRESSIVE STRENGTH

	Jai Sri Gurudev Sri Adichunchanagiri Shikshana Trust (Regd.) S J C INSTITUTE OF TECHNOLOGY (Affiliated to Vignansaraya Technological University, Belagavi & Approved by AICTE, New Delhi) NBA (CSE, ISE, ECE, ME, CE & AE) & NAAC Accredited and QS-1 Gauge (GOLD Rating) P.B. No. 20, B.B. Road, Chickballapur - 562 101, Karnataka.	Date : <u>25/02/23</u>														
	Ref. No. SJCTIC / <u>CED/C113/92/2022-23</u>															
To, Titan Company Limited Eye ware Division Chickballapura, Karnataka-562101																
<u>TEST RESULTS OF PAVER BLOCK (195X155X45MM)</u>																
<u>Crushing Strength Test</u>																
<table border="1"> <thead> <tr> <th>S.No</th> <th>Crushing load in KN</th> <th>Compressive strength in N/mm²</th> <th>Average Compressive strength in N/mm²</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>564</td> <td>21.52</td> <td rowspan="3">21.75</td> </tr> <tr> <td>2</td> <td>578</td> <td>22.06</td> </tr> <tr> <td>3</td> <td>568</td> <td>21.67</td> </tr> </tbody> </table>	S.No	Crushing load in KN	Compressive strength in N/mm ²	Average Compressive strength in N/mm ²	1	564	21.52	21.75	2	578	22.06	3	568	21.67		
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1	564	21.52	21.75													
2	578	22.06														
3	568	21.67														
Note: Test Results Based on the Samples Delivered By Client to Our Laboratory																
TESTED BY 	HOOD 	PRINCIPAL 														
	Professor & Head Dept. of Civil Engineering SJCI Institute of Technology Chickballapur-562101	SJCI Institute of Technology CHICKBALLAPUR-562101														

Phone : 08156-200193/155187 (0). Fax : 08156-200196. Principal: 08156-200184 (Dir). E-mail: principal@sjcit.ac.in. Website : www.sjcit.ac.in

S J C I T

CHEMICAL REACTION TEST

TEJUS ENTERPRISES

Testing Laboratory Division

Recognized under the E (P) Act 1986 by C P N (M&E & C) Govt. of India

ISO 9001:2015 & ISO 17025:2017 & certified Laboratory

#2, Prasannaiah Road, Near Horticulture Dept., Akkapete, Devanahalli, Bangalore Rural Dist.-562118
Tel: 080 75660886, Email: tejas372@gmail.com, info@tjselabs@gmail.com

TE-TLD/MB/7/17/20

TEST REPORT

ANALYSIS REPORT OF WASTE WATER

Sample Code: TE-TLD/2023/09/449

Name Of The Organization:

M/s/ ITAN COMPANY LTD.,

Eye Ware Division, Plot No-24, 24A,

KAJAN Industrial area,

Chikaballapur - 562101, Karnataka,

Sample Particulars : Recycled Paver Dipped Water

Source of Collection : —

Sampling Method : A PHA 24th Edition 1960

Date of Sampling

Date of Receipt

Date of Analysis Started

Date of Analysis Completed

Date of Report

Environmental Condition

Sample Drawn By

Report No.

Condition of the Sample

20-09-2023

20-09-2023

21-09-2023

22-09-2023

23-09-2023

23-09-2023

Ambient

Lab Representative

2023/09/24

Satisfactory

RESULTS

S.No	Parameter	Unit	Protocol	Result
1	pH @25°C	—	IS 3025 (Part 11) 2002	7.7
2	Conductivity	µS/cm	IS 3025 (Part -14) 2019	1473.6
3	Total Dissolved Solids	mg/L	IS 3025 (Part -14) 2019	786.0
4	Total Hardness as CaCO ₃	mg/L	APHA 24 th Edition 2360-C	394.0
5	Chemical Oxygen Demand,COD	mg/L	IS 3025 (Part 58) 2023	19.2

***End of the Report**


Authorized Signatory
(Signature MB)
Technical Manager

Terms and Conditions :-

- The Laboratory is responsible for all the information provided in the report, except when the information is provided by the customer.
- When the information is supplied by the customer, the Laboratory does not accept the validity of results.
- Laboratory is not responsible for the sampling stage if sample has been provided by the customer.
- Samples will be stored for a maximum of 15 days from the date of issue of report except the Microbiological samples.
- The report shall not be reproduced without the written approval of the Laboratory.
- This test report is submitted to info@tjselabs.com

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LOAD TEST & TRIALS



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IMPLEMENTATION OF GREEN PARKING

- Converted lens cutting waste into paver blocks(42000 No's) & Kerb stone (1000 No's).
- Built a 15,000 sq. ft. green two-wheeler parking area using 44.5 tons of waste.
- Planted 52 trees and installed 25 solar lights to support the green initiative

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EXTENT OF COLLABORATION WITH RELEVANT STAKE HOLDER

The project required collaboration with various Internal & External Departments. The stakeholders involved are:

1. **Projects & Maintenance team** – Ideation and concept development
2. **Store & Scrap Committee**– Arranging material for recycling.
3. **Safety Team** – Ensuring safety standards.
4. **Sourcing Team** – Cost Validation and PO.
5. **SMT's** - Approvals
6. **Vendor** – Recycling of waste into product by **Kalyani Ittige**

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INNOVATION / UNIQUENESS OF THE PROJECT

- Initially we made the estimation of providing concrete bed for flooring and then ideated to utilize the lens cutting waste mixed with concrete for flooring.
- But finally, we achieved the recycling by heating it to high temperature and then by compress molding it into the **product as Paver blocks & Brick**. And this is the innovation that implemented in this project.
- The uniqueness is we have recycled the lens cutting waste into civil materials like Paver blocks and kerb stone etc.,. **The development is first time in the lens manufacturing industries.**

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FOUR-WHEELER - GREEN PARKING

By using recycled paver blocks and kerb stone, we have built car parking area of 1950 sqft with 8 tons of lens cutting waste. We have planted 19 Trees in car parking for shades. And is inaugurated by our **CEO Mr.Saumen Bhaumik** & our **CMO Mr.Subrata Bhadra** on 6th of March 2023.



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TWO-WHEELER - GREEN PARKING

The Two-wheeler- Green parking is Inaugurated by **Mr. Subrata Sir** and **Mr. N E Shridhar Sir** on 03rd June 2024. The total parking area is 15000 Sqft and can accommodate 461 two-wheelers. We have planted 46 trees and installed 25 Nos solar lights in parking area. For this two-wheeler parking we have used 44.5 tons of lens cutting waste for making paver blocks and Kerb Stones.



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APPRECIATION TOWARDS THE UNIQUENESS

Titan CMO invited as Guest Speaker for a presentation to the Vision Council of America

It was a proud moment for Titan as CMO, Mr. Subrata Bhadra was invited for a guest presentation on 'Sustainable Use of Lens Waste' with the Vision Council of America, VCA, organised by the ESSAC Committee.



The Environmental Sustainability and Social Awareness Committee (ESSAC) works to provide the eyewear industry with information and direction on sustainability-related issues while also

exchanging the best practices and resources across North America.

On 14 June, Mr. Subrata Bhadra, Chief Manufacturing Officer of Titan Eyecare Division and Mr. Stefano Sonzogni, President of MEI Systems were invited as Guest Speakers to ESSAC. Mr. Subrata Bhadra presented

'how Lens and Frames waste may be recycled and the best practices of sustainable initiatives of Eyecare using Lens cutting waste.'

Mr. Michael C. Vitale, Vice President, responsible for Government Relations & Technical Affairs of the Vision Council, expressed his appreciation for the presentation given by Mr. Bhadra and offered him membership to the Vision Council of America. Other dignitaries from the optical industry of USA who were part of the presentation were, apart from MEI Systems, Hoya, Silhouette, Marchon, Cooper Vision, Transitions, and Zeiss to name a few. They too appreciated the initiatives made by Titan in their Sustainable Lens and Frames Manufacturing processes presentations.

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KEY OUTCOMES POST COMPLETION OF THE PROJECT

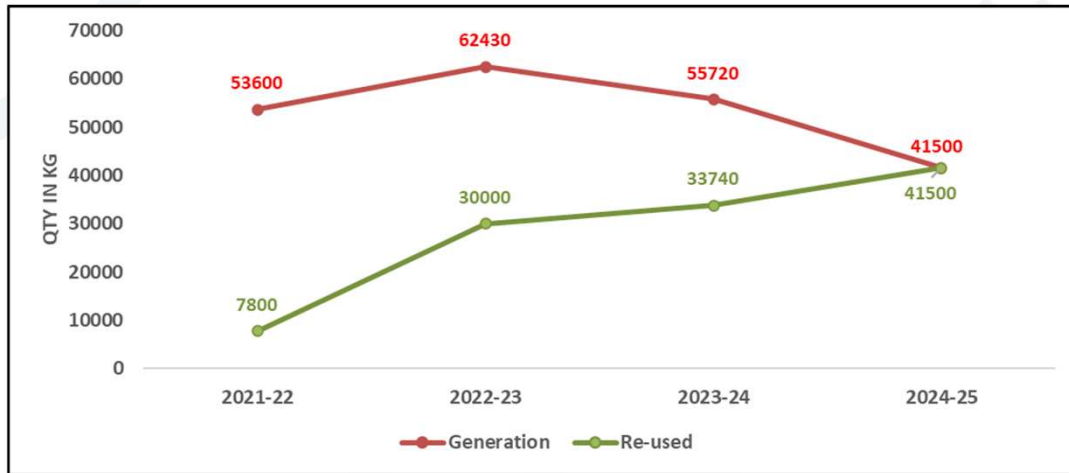
- Reduced lens cutting waste incineration quantity is **44.5 Tons & Incineration cost per KG is Rs. 11/-**.
- Cost saved Rs. 4.8 Lakhs of Incineration Cost.
- CO2 Emission per KG of Incineration is 0.253 KG & **Eliminated carbon emission of 12 Tons.**
- By utilizing the recycled paver blocks instead of buying concrete paver Blocks(Rs.18.9 Lakhs – Rs. 8.82 Lakhs) we **saved Rs. 10.08 Lakhs.**
- We have also found the few more solutions to sustain the incineration elimination **such as** Recycling waste into **Trays, Interlocking Bricks, Floor tiles etc, & Co-processing.**

Intangible Benefits

- Promotes a circular economy approach
- Demonstrates innovation and commitment to carbon neutrality
- Enhances sustainability across company

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SCRAP GENERATION & REUSED DETAILS



Waste Description	Generation				Incineration				Re-used			
	2021-22	2022-23	2023-24	2024-25	2021-22	2022-23	2023-24	2024-25	2021-22	2022-23	2023-24	2024-25
Lens Cutting Waste	53600	62430	55720	41500	45800	32430	21980	0	7800	30000	33740	41500

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TRANSFORMING WASTE INTO FLOOR & WALL TILES & BRICKS

New eco-friendly Initiative:

We have performed many trails for the way forward of our sustainable solutions for recycling and Now we have successfully developed process to make cushion tiles which can be used for the special play courts for playing Tennis, Badminton etc. Also, the new developed bricks which can be fitted with its interlocking designs without using cements, sands and water.



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INITIATED IMPLEMENTATIONS

DIGITAL PRINTED
WALL TILES



ANTI SKID FLOOR TILES LAID



INTERLOCK BRICK CONSTRUCTION



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POWER CONSUMPTION & CARBON: RECYCLING VS INCINERATION

Incineration Process:

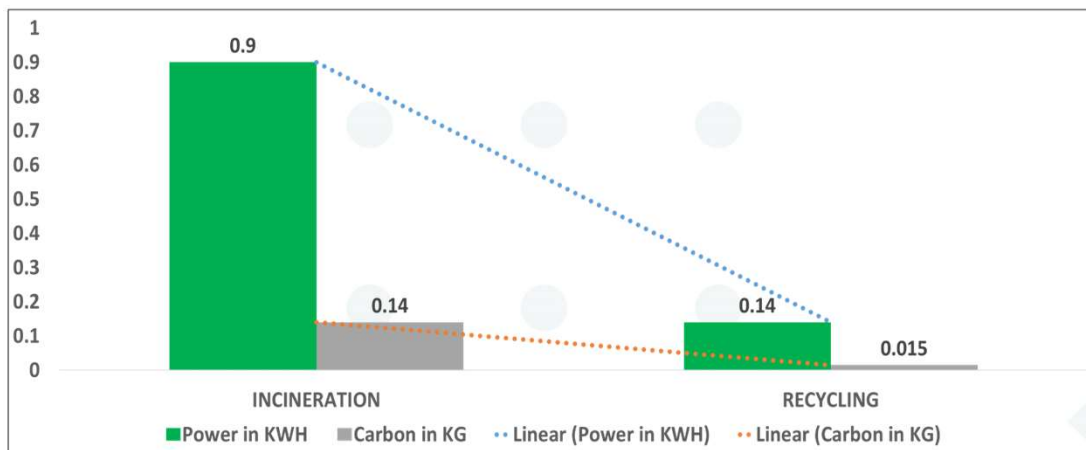


- Material Processed: **1 kg of lens cutting waste.**
- Power Consumed: **0.9 KWH.**

Recycling Process:



- Material Processed: **1 kg of lens cutting waste.**
- Power Consumed: **0.14 KWH.**



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WAY FORWARD



- To segregate the poly lens cutting waste and convert it to granules and then reform it as trays.

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Annual awards- Season'23



DT Award for Sustainability

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NATIONAL KAIZEN MELA 23-24



As a part of National KAIZEN MELA competition, The our entirely TITAN COMPANY LIMITED family has participated On December 6th, 2023, we achieved the **2nd Runner-up** position in the **National KAIZEN MELA 23-24** for our sustainability project titled **"ELIMINATION OF INCINERATION PROCESS."**

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KSPCB APPRECIATION



We got the appreciation from **KSPCB** Regional Officer regarding the **"EFFORTS IN BEST PRACTICES TOWARDS RECYCLING OF WASTE IN 2023-24"**.

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UNLIKE AWARDS 2025



We have won the Un-Like Awards, under the Sustainability impact innovation category.

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NATIONAL KAIZEN MELA 2025



We have won the National Kaizen Mela Awards, for Green Parking

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