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**N. K. ORCHID COLLEGE OF ENGINEERING  
& TECHNOLOGY, SOLAPUR**

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E-mail : office@orchidengg.ac.in, Website : www.orchidengg.ac.in, Phone No. 9423084363  
Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.

## **Criterion 7.3 Institutional Distinctiveness**

### **Developing Competent Technocrats by Inculcating Holistic Approach through Techno-Societal Projects**

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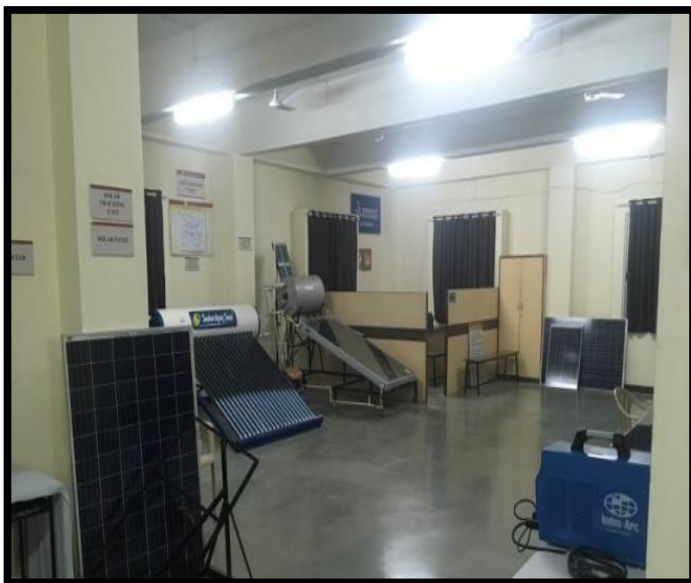
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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.

➤ **Inauguration of Solar Research Centre**



**Inauguration of Solar Research Centre at the auspicious hands of Hon. AICTE chairman Dr. Anil. D. Sahasrabudhe on 19<sup>th</sup> Jan 2019**





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➤ **Solar Domain Awareness Campaign**

- Sessions for 9<sup>th</sup> and 10<sup>th</sup> Standard Students.
- Sessions for ITI Students.
- Sessions for Diploma Engineering Students.
- Visits of Parents
- Campaign for Farmer Community





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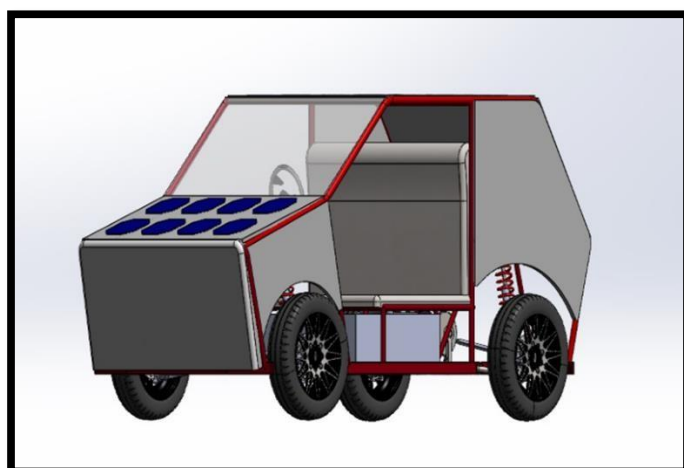
➤ **Solar Product Development**



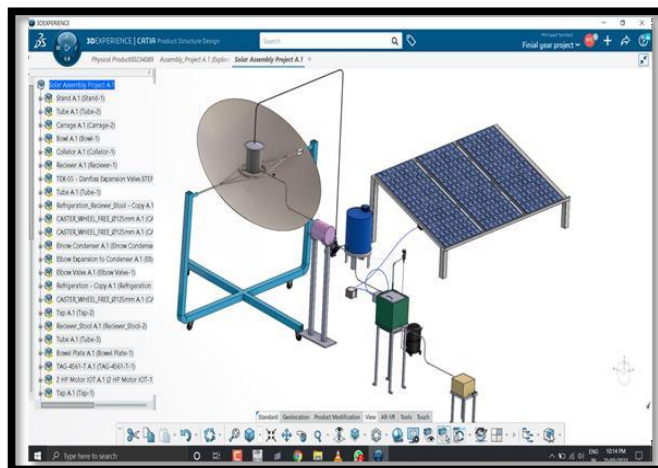
**IOT Based Solar Dehydration System**



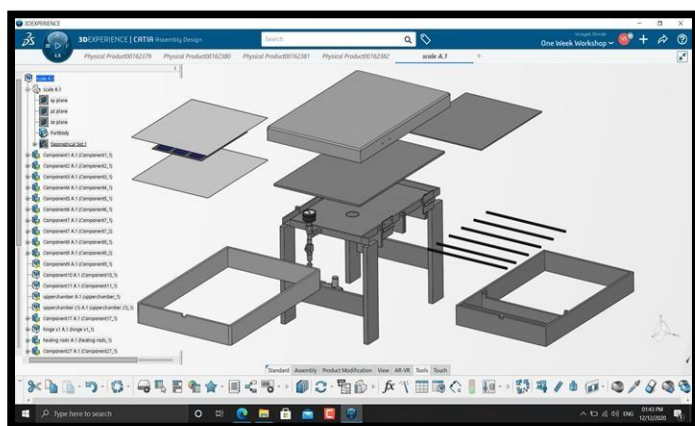
**SOLAR TREE**



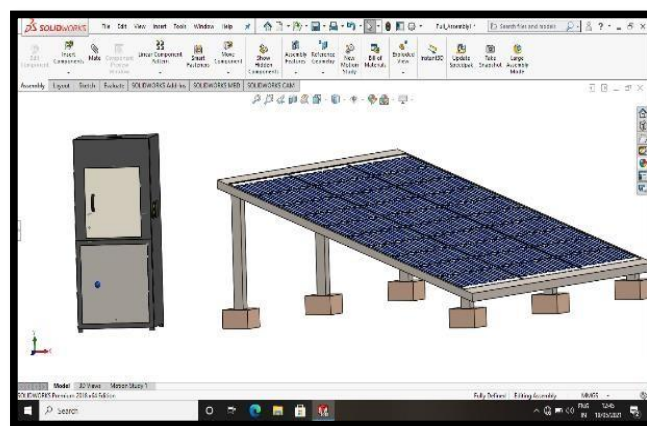
**2 Seater Solar Vehicle**



**Solar Operated Milk Pasteurization System**



**Solar Operated Laminating Machine**

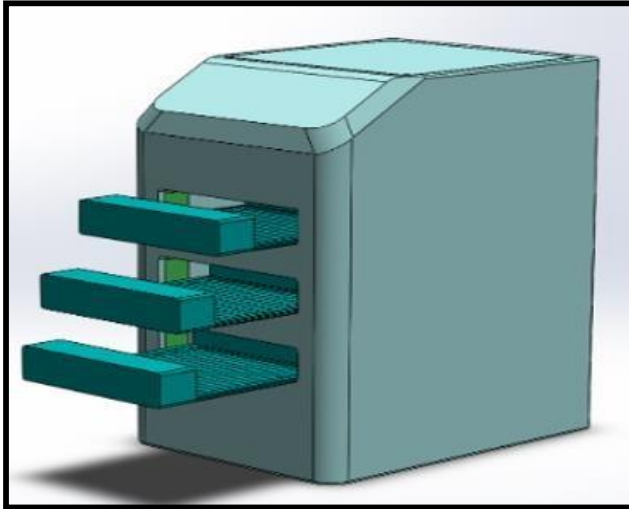


**Solar Thermoelectric Refrigerator**

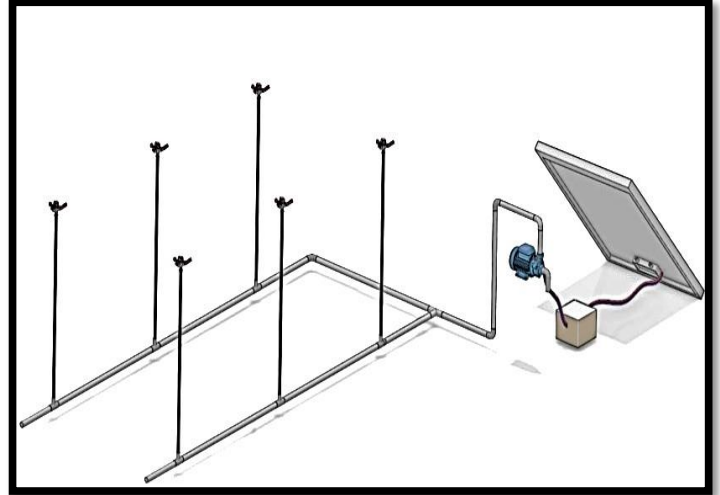


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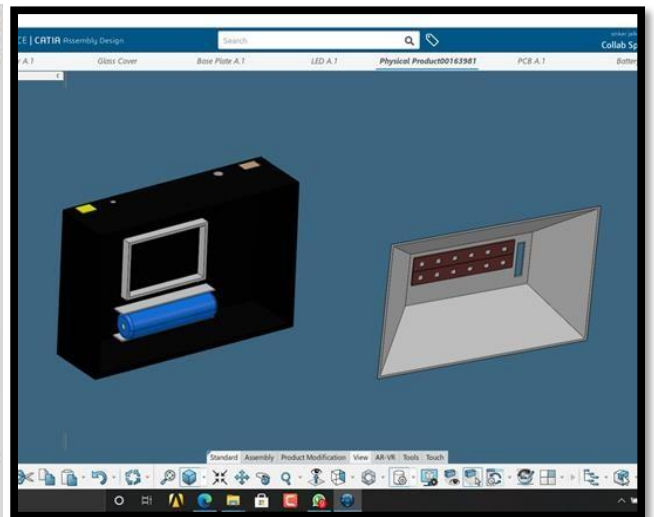
**Portable Vaccine Distribution System**



**Solar Operated Sprinkler System**



**Solar DC Water Pump**



**Solar Lamp**





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**Solar Self Balancing Vehicle**



**Solar Operated Milk Pasteurization System**



**Solar Operated Mawa Making Machine**



**Solar Dehydration System with energy storing material  
for Agricultural Products**





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➤ **Projects for Environmental Promotion and Sustainability**

| Sr. No. | Name of The Title  | Pg. No |
|---------|--|--------|
| 1       | Forensic Assessment of Soil Contamination Due to Spillage of Spent Wash                | 9      |
| 2       | Forensic Assessment of Ground Water Pollution Due to Spillage of Spent Wash            | 11     |
| 3       | Utilization of Waste from Various Industries in Brick Manufacturing                    | 13     |
| 4       | Effect of Partial Replacement of Soil by Industrial Waste on Characteristics of Brick  | 15     |
| 5       | Design and Development of Composter for Kitchen Waste                                  | 17     |
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| 7       | Partial Replacement of Coarse Aggregate by Marble and Granite Waste in Concrete        | 21     |
| 8       | Manufacturing of Bricks by using Road Dust   | 22     |
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| 11      | Solar Operated Floor Cleaning Machine  | 29     |
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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.

**CE-01: - Wash Forensic Assessment of Soil Contamination Due to Spillage of Spent Wash**


**CERTIFICATE**

This is to certify the project entitled **"FOREINSIC ASSESSMENT OF SOIL CONTAMINATION DUE TO SPILLAGE OF SPENTWASH"** Is completed by the following student of B-TECH (CIVIL) class in satisfactory manner under my guidance.

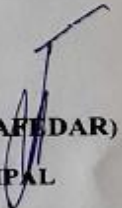
Ms. Chabukswar Renuka  
Ms. Chimman Ruchita  
Mr. Chaugule Chetan  
Ms. Gaikwad Shreya  
Ms. Jadhav Snehal  
Mr. Pujari Vijay

Mr. Kolhe Vinayak  
Ms. Mamdyal Sandhya  
Ms. Pawar Shivani  
Ms. Phadake Payal  
Ms. Sakhare Pratiksha  
Ms. Sawant Sneha

The Project is Found to Be Complete in Partial Fulfillment For The Award of Degree of Bachelor of Civil Engineering of Dr. Babasaheb Ambedkar Technological University, Lonere.

  
(Dr. V. K. PATKI)  
GUIDE

  
(Dr. V. K. PATKI)  
HEAD  
Dept. of Civil Engg.

  
(Dr. J. B. DABDAR)  
PRINCIPAL



DEPARTMENT OF CIVIL ENGINEERING  
NAGESH KARAJAGI ORCHID COLLEGE OF ENGINEERING AND  
TECHNOLOGY, SOLAPUR-413002.  
(AFFILIATED TO DBATU, LONERE)

2021-2022





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Sample collection from factory periphery





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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.

**CE-02: - Forensic Assessment of Ground Water Pollution Due to Spillage of Spent Wash.**

**CERTIFICATE**

This is to certify the project entitled FORENSIC ASSESMENT OF GROUND WATER POLLUTION DUE TO SPILLAGE OF SPENTWASH is completed by the following students of BE (civil) in satisfactory manner under my guidance.

Mr. Akshay Kalje

Mr. Yogesh Rathod

Mr. Pratik Sonawane

Mr. Aniket Rathod

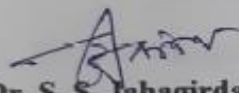
Mr. Sangram Kashid

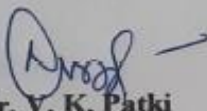
Mr. Tejas Gaikwad


Mr. Vinayak Ghule

Mr. Prabhupad Putta

The project is found to be complete in partial fulfilment for the award of degree of Bachelor of Civil Engineering of Dr. Babasaheb Ambedkar Technological University, Lonere.

  
Dr. S. S. Jahagirdar  
GUIDE

  
Dr. V. K. Patki  
HEAD  
Dept. of Civil Engg.

  
Dr. J. B. Dafedar  
PRINCIPAL



DEPARTMENT OF CIVIL ENGINEERING  
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**Map 1. Shree Siddheshwar Sugar Factory, Solapur**



**Map 2. Loknete Baburao Patil Sugar Factory, Angar, Mohol, Solapur**





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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.

**CE-03: - Utilization of Waste from Various Industries in Brick Manufacturing**

**CERTIFICATE**

This is to certify the project entitled **UTILIZATION OF WASTE FROM VARIOUS INDUSTRIES IN BRICK MANUFACTURING** completed by the following student of BE (CIVIL) class in satisfactory manner under my guidance.

Asharani Jogdankar (B39)

Priyanka Menase (B55)


Kalyani Mate (B54)

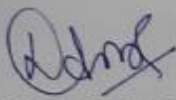
Ashish Jadhav (B36)

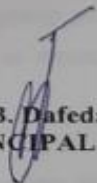
Ankita Nimbalkar (B58)

Prajwal Javanjal (B38)

The project is found to be complete in partial fulfilment for the award of degree of Bachelor of Civil Engineering of Dr. Babasaheb Ambedkar Technological University, Lonere

  
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GUIDE

  
Dr. V.K. Patki  
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DEPT. OF CIVIL ENGG.

  
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**Utilization of Waste from Various Industries in Brick Manufacturing**



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**CE-04: - Effect of Partial Replacement of Soil by Industrial Waste On Characteristics of Brick**


**CERTIFICATE**

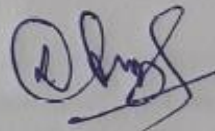
This is to certify the project entitled **EFFECT OF PARTIAL REPLACEMENT OF SOIL BY INDUSTRIAL WASTE ON CHARACTERISTICS OF BRICK** is completed by the following student of BE (CIVIL) class in satisfactory manner under my guidance.

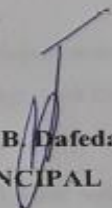
Ms. Shruti Arkal  
Mr. Dauad Badeghar  
Mr. Mustafa Qureshi

Mr. Anwar Siddiqui  
Ms. Apurva Shinde

The project is found to be complete in partial fulfillment for the award of degree of Bachelor of Civil Engineering of Dr. Babasaheb Ambedkar Technological University, Lonere.

  
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GUIDE

  
Dr. V.K. Patki  
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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.

**Project No.: -CE-05**

**Title: - Design and Development of Composter for Kitchen Waste**

**Team Members :-**

1. Hrishikesh B.Bharati
2. Yash S.Kshirsagar
3. Vinayak V.Hosale
4. Sudhakar A.Avatade
5. Nikhil R. Mali

**Guide: - Dr. S. S. Jahagirdar**

**Domain: - Civil Engineering-Environmental Engineering**

**A Novel Model for Composting of Kitchen Waste**



**Stainless Steel Kitchen Waste Composter**





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**CE 06:- NPK Evaluation Project**

**TEAM NAME :** *Team Automation*

**PROJECT NAME :** *TRATA-Crop Monitoring & Prediction using AI*

**THEME OF PROJECT:** *Artificial intelligence and open innovation.*

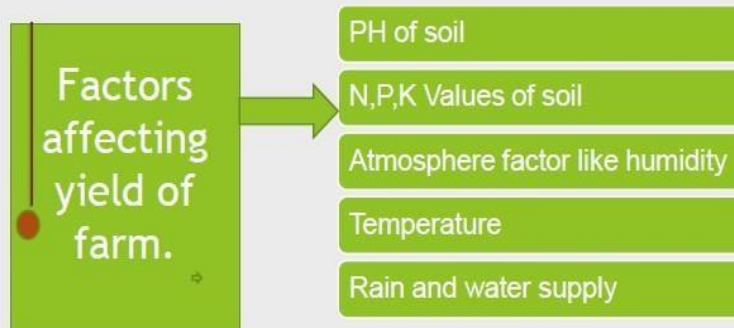
**•Keywords:**

*Precision agriculture, Smart agriculture, Mobile application for agriculture, Random forest algorithm, Improving crop yield, Machine learning, CNN*

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**Research on the subject**

- ▶ Smart agriculture market in Asia accounts for 40 % of the global market share out of which India's contribution is still nominal.



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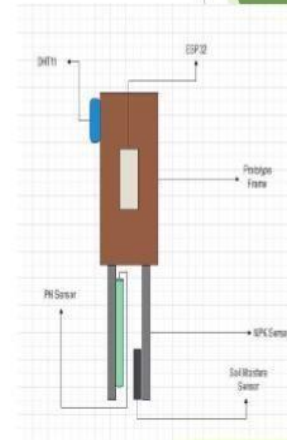
Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.



## The final design and our Team



Women Innovation 2023



15

## Initial testing In Real Time

- ▶ Our team has done real time testing of soil. The reports from the testing and the same soil then we tested into the laboratory. The accuracy in our result were 96%.

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**NPK Evaluation Project**





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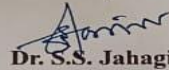
**CE 07:- Partial Replacement of Coarse Aggregate by Marble and Granite Waste in Concrete**

**CERTIFICATE**

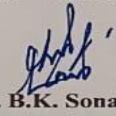
This is to certify that Project Entitled “**PARTIAL REPLACEMENT OF COARSE AGGREGATE BY MARBLE AND GRANITE WASTE IN CONCRETE**” is completed by the following students of T.Y (Civil) class in satisfactory manner under my guidance.

|                             |      |
|-----------------------------|------|
| Mr. Suhail I. Maniyar       | A-22 |
| Ms Tanaya S. Navghane       | A-27 |
| Mr. Muqueetur Rahman Shaikh | A-56 |
| Mr Muzammil F. Shaikh       | A-57 |
| Ms. Rukhsar A. Yalal        | A-73 |

The project is found to be complete in partial fulfilment for the award for Degree of Bachelor in Civil Engineering from Dr. Babasaheb Ambedkar Technological University, Lonere.

  
Dr. S.S. Jahagirdar  
GUIDE NAME

  
Dr. B.B. More  
HEAD  
CIVIL ENGG DEPT

  
Dr. B.K. Sonage  
PRINCIPAL



DEPARTMENT OF CIVIL ENGINEERING  
NAGESH KARAJAGI **ORCHID** COLLEGE OF ENGINEERING AND  
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**CE 08:- Manufacturing of Bricks by using Road Dust**

**CERTIFICATE**

This is to certify that Project Entitled **MANUFACTURING OF BRICKS BY USING ROAD DUST** has been completed by the following students of BE (CIVIL) class in satisfactory manner under my guidance.

**Vaibhav Jawale (A17)**

**Shantanu Gore (A13)**

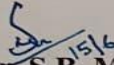
**Tejas Ghadage (A12)**

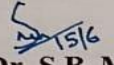
**Mahesh Koli (A18)**


**Akash Mashale (A23)**

**Madhav Patil (A30)**

The project is found to be complete in partial fulfilment for the award for Degree of Bachelor in Civil Engineering from Dr. Babasaheb Ambedkar Technological University, Lonere.

  
**Dr. S.B. More**  
PROJECT GUIDE

  
**Dr. S.B. More**  
HEAD OF CIVIL DEPT

  
**Dr. B.K. Sonage**  
I/C PRINCIPAL



DEPARTMENT OF CIVIL ENGINEERING  
NAGESH KARAJAGI **ORCHID** COLLEGE OF ENGINEERING  
AND TECHNOLOGY, SOLAPUR-413002  
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Compression Test

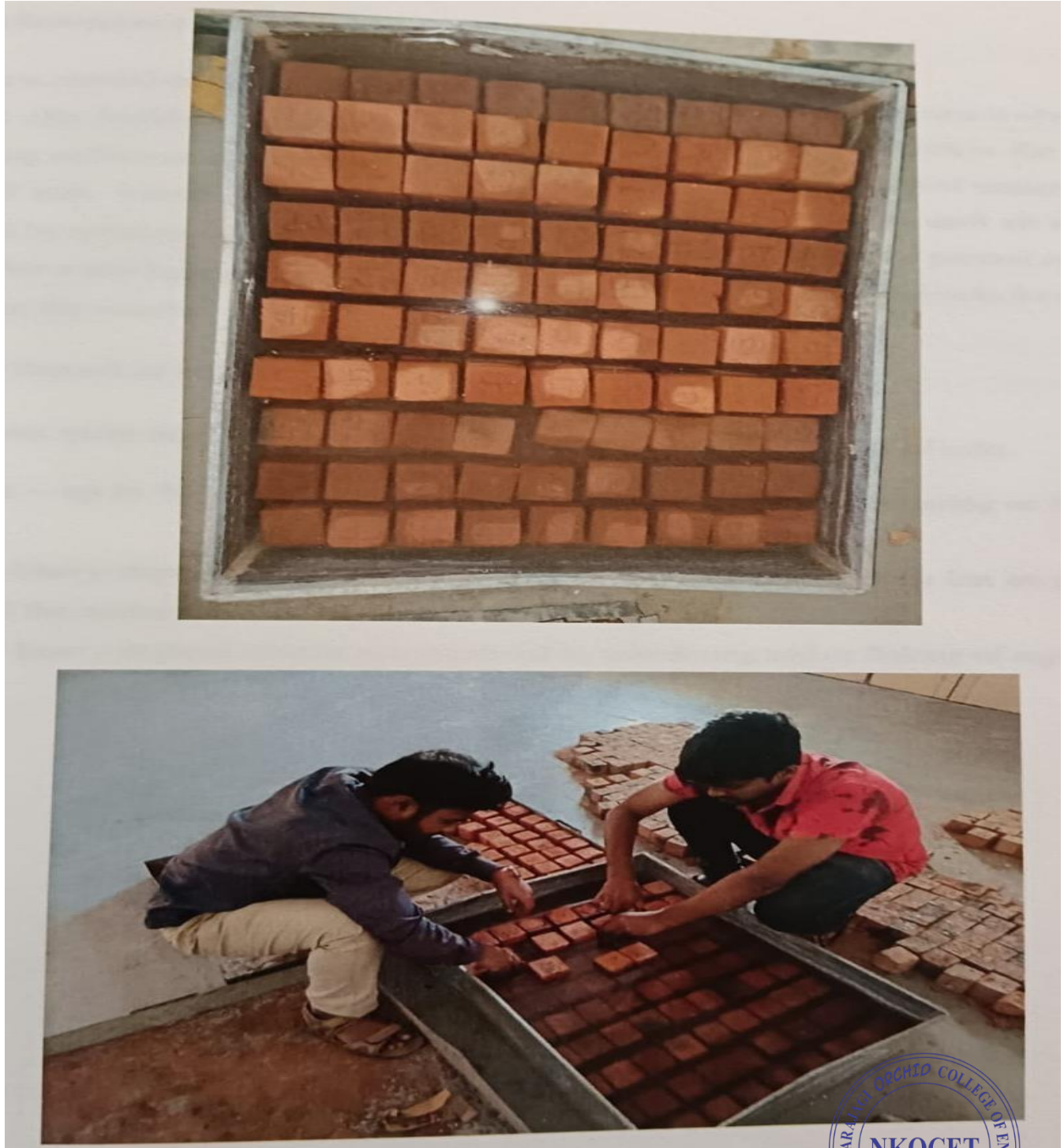


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**Water Absorption Test**







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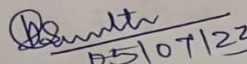
**CE 09:- Stabilization of Brick Cotton Soil using Stone Dust and Plastic Granules as a Subgrade Material**

**CERTIFICATE**


This is to certify that the Project entitled "Stabilization of Black Cotton Soil Using Stone Dust and Plastic Granules as a Subgrade Material" is completed by the following students of BE civil class in satisfactory manner under my guidance.

|                                |             |
|--------------------------------|-------------|
| MD.SHOAIB MD.RIYAZ PEERZADE    | (B.E. A 38) |
| SHOAIB SHAFI SAGRI             | (B.E. A 47) |
| MD ZIYAD SHOUKAT ALI SAYYED    | (B.E. A 53) |
| MD.KHALID HAJI FAROOQUE SHAIKH | (B.E. A 55) |
| UBEDULLAH YUSUF SHAIKH         | (B.E. A 58) |
| MD.JUHER AJAJ KAZI             | (B.E. B 51) |

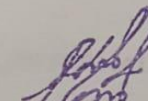
The Project is found to be complete in partial fulfillment forth reward of degree of Bachelor of Civil Engineering of Dr. Babasaheb Ambedkar Technological University Lonere, Maharashtra.

  
05/07/23  
Prof. V. A. SALIMATH

**GUIDE**

  
Dr. S. B. MORE

**HEAD**

  
Dr. B. K. SONAGE

**PRINCIPAL**

**CIVIL ENGG DEPT**



**DEPARTMENT OF CIVIL ENGINEERING**

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UNIVERSITY, LONERE, MAHARASHTRA)**

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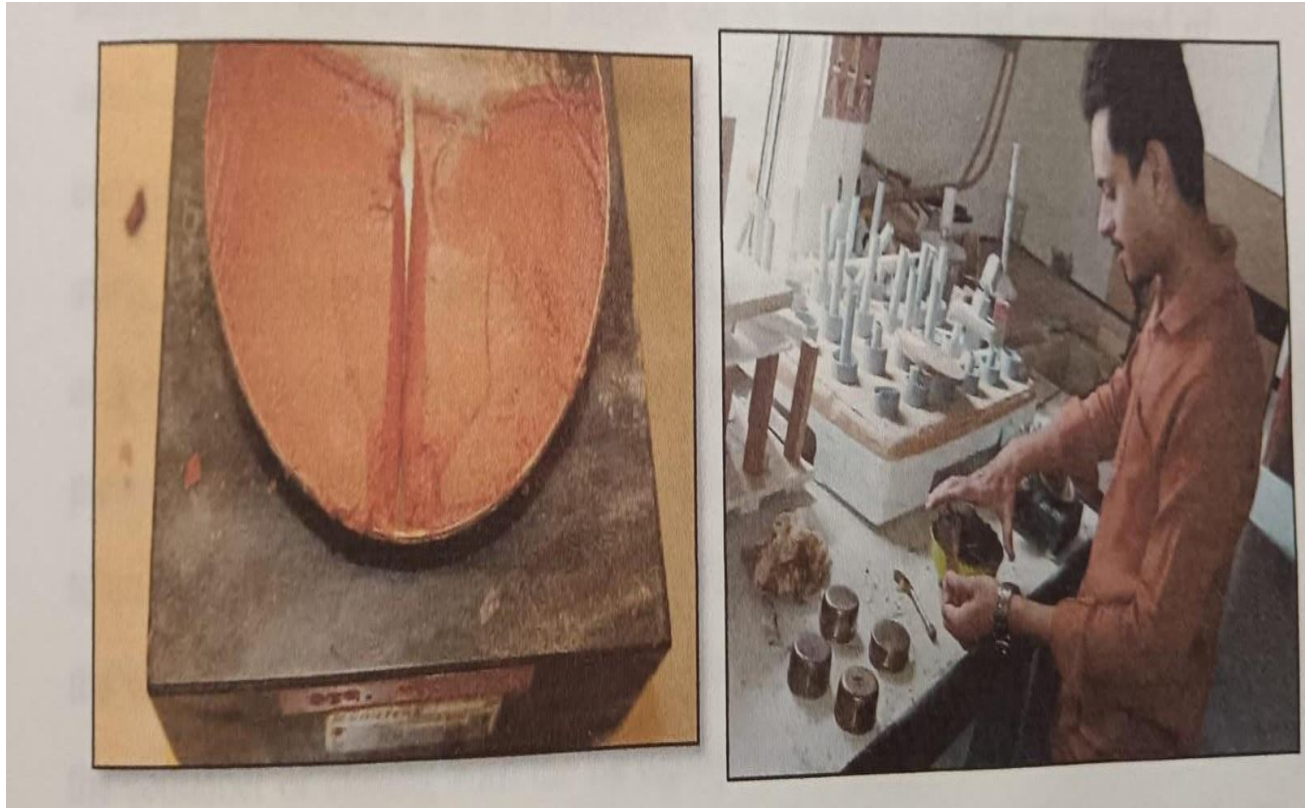


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**Liquid Limit Test**





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**CE 10: – Utilization of Industrial waste in partial replacement of cement and sand towards sustainable rigid pavement**


**CERTIFICATE**


This is to certify that the Project entitled “**Utilization Of Industrial Waste In Partial Replacement Of Cement And Sand Towards Sustainable Rigid Pavement**”, is completed by the following students of BE Civil class in satisfactory manner under my guidance.

Mr. BANSODE NAGESH B. (BTECH B 09)      Mr. BARBADE SWARAJ K. (BTECH B 12)  
Mr. BHADABGE ADITYA J. (BTECH B 13)      Mr. SALUNKE PRAMOD V. (BTECH A 48)  
Mr. KORE SAGAR E. (BTECH B 59)

The Project is found to be complete in partial fulfillment for the award of degree of Bachelor of Civil Engineering of Dr. Babasaheb Ambedkar Technological University, Lonere, Maharashtra.

  
**Prof. F. K. Maniyar**  
GUIDE

  
**Dr. S. B. MORE**  
HEAD  
CIVIL ENGINEERING DEPT

  
**Dr. B. K SONAGE**  
PRINCIPAL



DEPARTMENT OF CIVIL ENGINEERING  
NAGESH KARAJAGI ORCHID COLLEGE OF ENGG & TECH. SOLAPUR.  
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UNIVERSITY, LONERE, MAHARASHTRA)

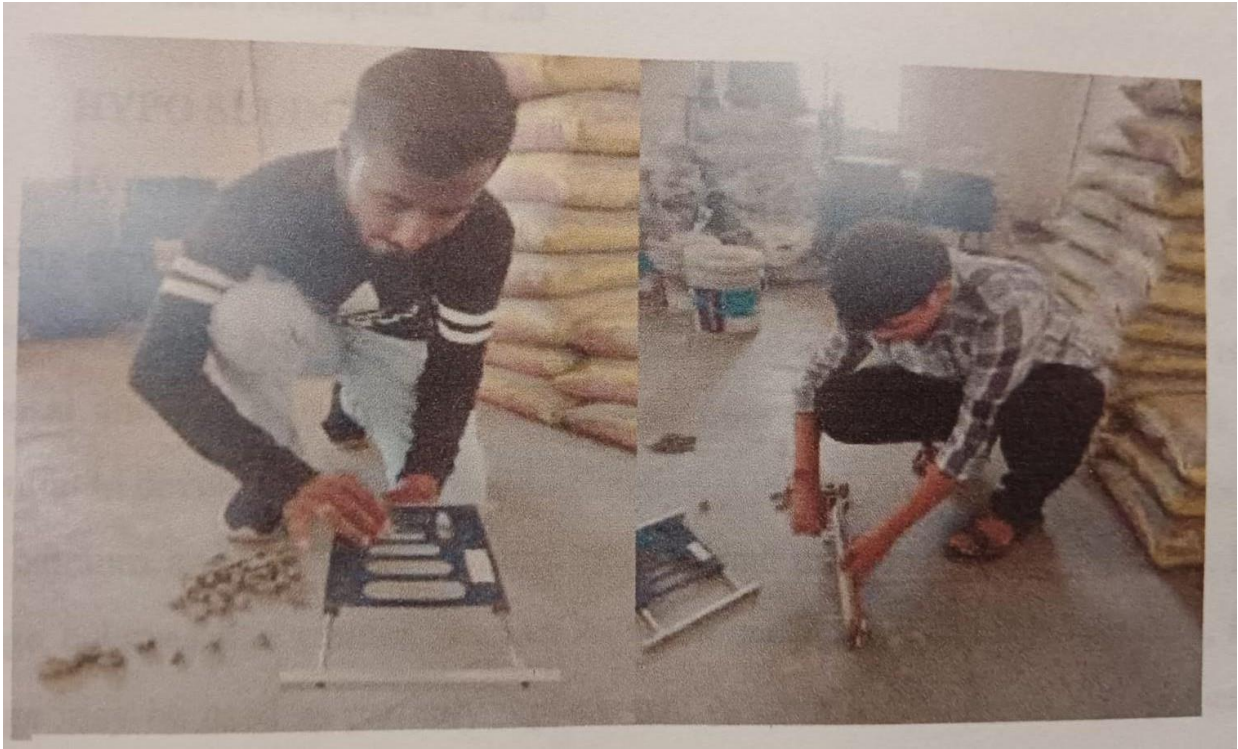
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II



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**Tests on Aggregate**







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## CE 11: –SOLAR OPERATED FLOOR CLEANING MACHINE

|                      |                                   |
|----------------------|-----------------------------------|
| <b>Team Members</b>  | : Mr. Mashyal Suraj Mallikarjun   |
|                      | : Mr. Jetithor Rushikesh Baliram  |
|                      | : Mr. Karkale Vinayak Suresh      |
|                      | : Mr. Kadam Dinesh Ramchandra     |
|                      | : Mr. Dasgonde Siddharam Mallappa |
|                      | : Mr. Bansode Akshay Ambadas      |
| <b>Project Guide</b> | : Prof. C. V. Papade              |

### Abstract

The conventional floor cleaning machine is most widely used in airport platforms, railway platforms, hospitals, bus stands, malls and in many commercial places. These devices need an electrical energy for its operation. In India, especially in summer, there is power crisis and most of the floor cleaning machines are not used effectively due to this problem but in India there is ample amount of solar energy available in summer.

The need of this project is because of busy schedule of humans. This research work is based upon an innovative project to design, development and manufacturing of floor cleaning machine which can operate on solar energy and having less environmental impact. So this has resulted in coming up with an objective of making a floor cleaning machine; which is developed by keeping basic consideration for less energy consumption as well as operational cost reduction, reduced human efforts, environmental friendly and easy to handle. This vehicle is designed to reduce the time and efforts of human for cleaning.

This vehicle is three wheeled. The front one is hub motor, which is driving wheel. The operation performed by this machine is scrubbing in which the stains on the floor is cleaned. There is an arrangement for seating a operator. Wet cleaning is also a part of this machine. There are two tanks of size 30 liters, one for clean water & other one for suck the dirty water. The floor also get dry with an attachment provided to this machine.

**Keywords:** - Floor Cleaning, Solar Energy, Hub Motor, Scrubbing





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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.



**Team Members :** Mr. Mashyal Suraj Mallikarjun, Mr. Jetithor Rushikesh Baliram,  
: Mr. Karkale Vinayak Suresh, Mr. Kadam Dinesh Ramchandra,  
: Mr. Dasgonde Siddharam Mallappa, Mr. Bansode Akshay Ambadas

**Project Guide :** Prof. C. V. Papade







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## **CE 12: – DESIGN AND DEVELOPMENT OF SUGARCANE CULTIVATION MACHINE**

**Team Members** : Miss. Birajdar Sushma  
: Miss. Survase Amruta  
: Miss. Kalshetti Shilpa  
: Miss Bhosale Shweta  
: Mr. Kalshetti Vishal  
: Mr. Belief Zafar

**Project Guide** : Prof. B. R. Birajdar

### **Abstract**

The agriculture sector has occupied 43% of geometrical area of India. Agriculture plays a vital role in Indian economy. Sugarcane is one of the most commercial crop grown in India. Maharashtra, Uttar Pradesh, Karnataka which are the largest sugarcane producer states in India.

From traditional method it was observed that farmers are doing cultivation of sugarcane in uneconomic manner so that to overcome this problem we introduced this sugarcane cultivation machine. We use software's like CATIA, ANSYS for modeling and checking the results of this machine. Sugarcane machine manufactured by mild steel material. The total area of sugarcane machine is approximately of 6.5\*3.4 feet. This machine can be adjustable for 4, 5, 6 feet for furrows opening. In this machine we can do all the operation like opening of furrows, feeding of sugarcane, cutting of sugarcane, spraying the pesticide on sugarcane bud, uniform distribution fertilizer into the soil and covering the bud by soil. As only two labours are required of plantation of sugarcane and seating arrangement is provided on machine only. Using this mechanism sugarcane plantation becomes much easy and faster, this can be done by using the cane plantation faster. It requires low cost and less time-consuming machine.





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**Team Members** : Mr. Kalshetti Vishal, Mr. Belief Zafar, Miss. Survase Amruta,  
: Miss. Birajdar Sushma, Miss Bhosale Shweta, Miss. Kalshetti Shilpa,  
**Project Guide** : Prof. B. R. Birajdar







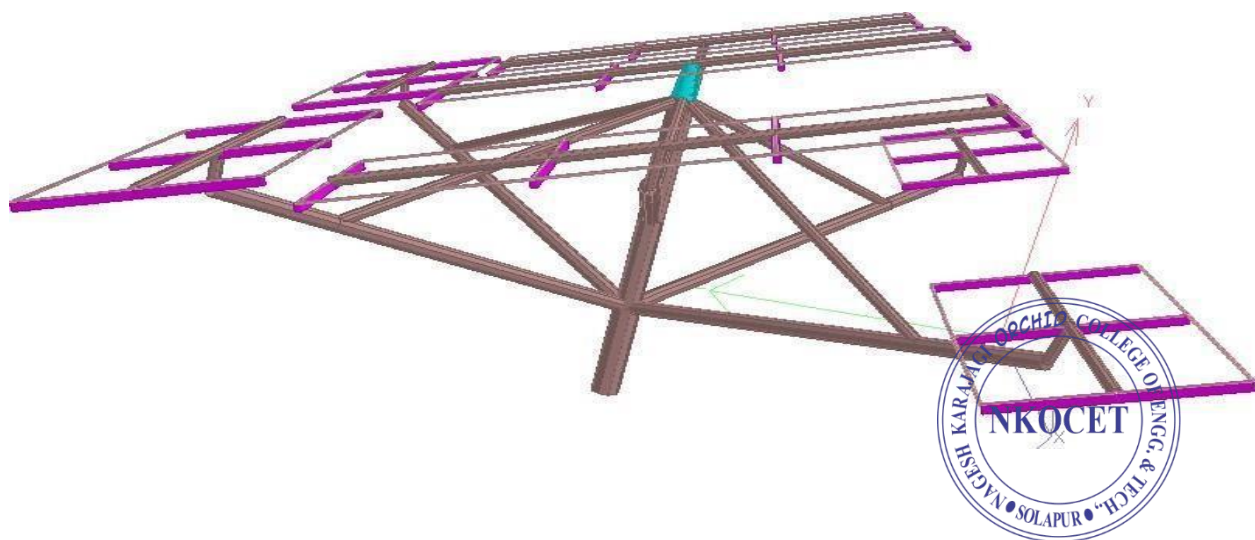
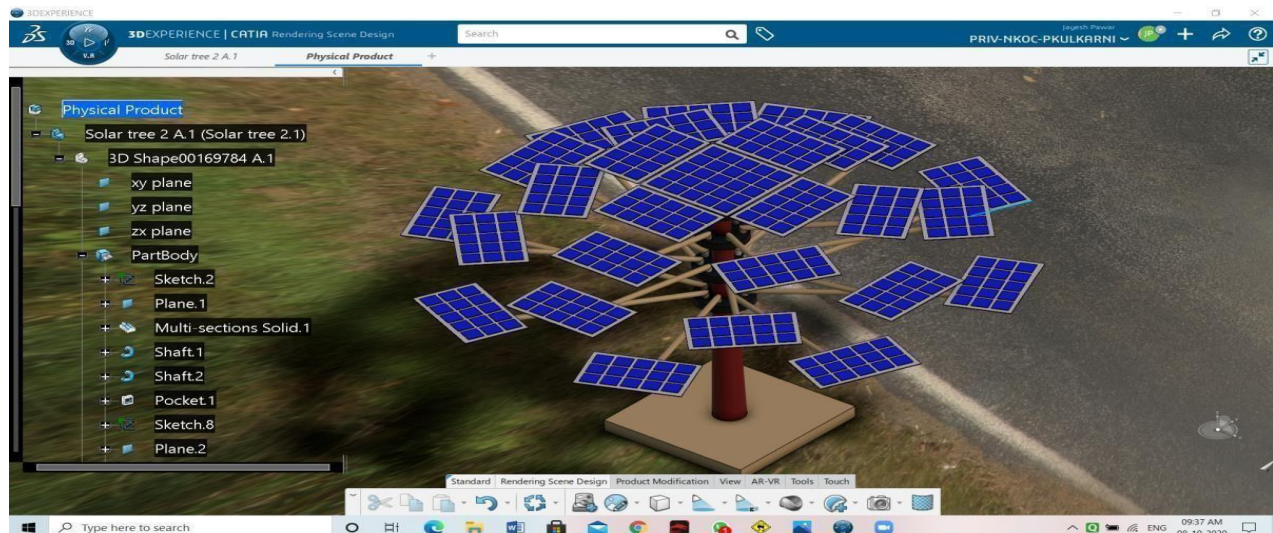
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### CE 13: - Development of Solar Tree for Sustainable Cities

#### Concept of Solar Tree:

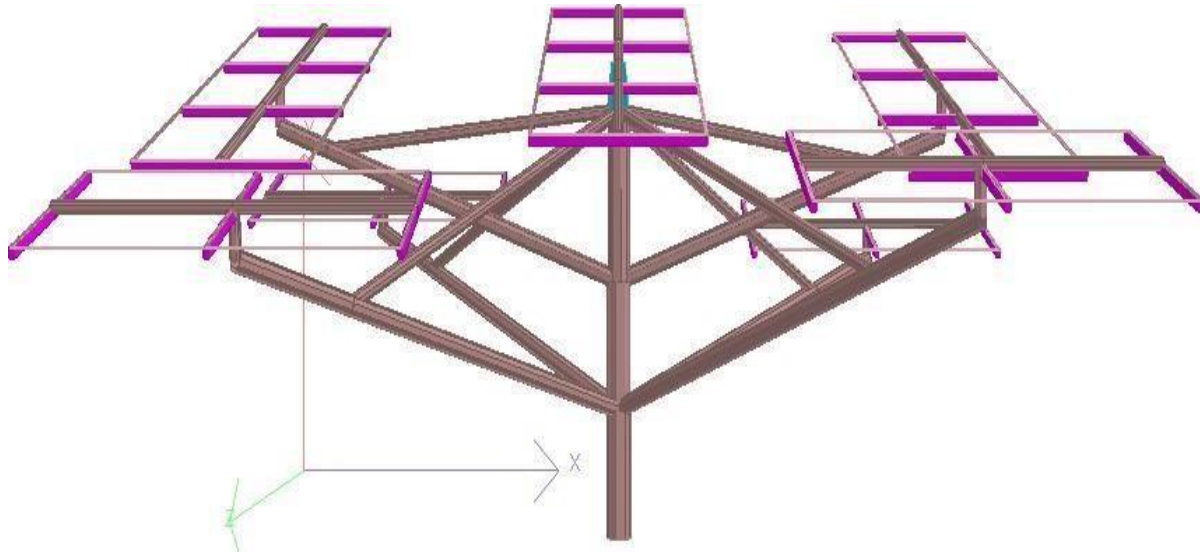
A Solar Tree is a structure incorporating solar energy technology on a single pillar, like a tree trunk. A solar tree is inspired by the branch-like spread of natural solar trees. The Structure in the project is designed specifically to maximize consumption while reducing the area. In 1998, Solar Trees were first introduced as artwork on roads and public places. The concept then spread into Europe and Austria. Since solar trees have gained a lot of traction and popularity due to their efficiency per ground unit area.





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**3D Modeling of Solar Tree of 13.6 KW Hr. Energy Generation**



**Prototype Model of Solar Tree**







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**Prototype Model of Solar Tree in Dassault Systems Pune Exhibition**





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## CE 14: - Solar Operated Water Sprinkler System

**Team Members** : Mr. Pujari J. B  
: Mr. Kolekar A. A  
: Mr. Shivshetti S. I  
: Mr. Bachute A. D  
: Mr. Wadkar K. A

**Project Guide** : Prof. S. S. Kale

### Abstract

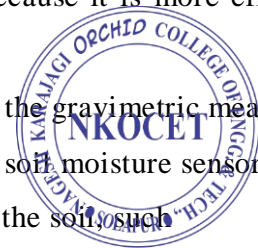
An irrigation sprinkler is a device used to irrigate agricultural crops, lawns, landscapes, golf courses and other areas. Sprinkler irrigation is a method of applying irrigation water which is similar to rain fall. Water is distributed through a system of pipes usually by pumping. Select desired area in lawn to water and place the sprinkler on ground. Adjust the disbursements distance of the water by turning the distance control dial located on the top of the unit.

The most common problems experienced is discontinuous also cost of electricity are very high. Furthermore, some of the rural places are not connected with electricity. One of the options for this is using I.C. Engine operated pump, but initial and running cost of engine is high.

However, with availability of sun solar technology can be used to pump water for farm lands and livestock. Solar operated water sprinkler system can be used for lawn and agricultural sector. In the current project we will be developing solar operated water sprinkler system. The demo model will be developed which can be extended for real farming.

In this project we are going to use a rotating head type sprinkler so that the water distributes in circular pattern. Rotating head of the sprinkler are capable to covering distance 10 feet. In this project we are using electronic parts such as soil moisture sensor, charge controller, cyclic timer. These parts are controlling the whole sprinkler system. Polycrystal type solar panel because it is more efficient as compare to other solar panel.

Soil moisture sensors measure the volumetric water content in soil. Since the gravimetric measurement free soil moisture requires removing, drying and weighting of a sample, soil moisture sensor measure the volumetric water content indirectly by using some other property of the soil, such







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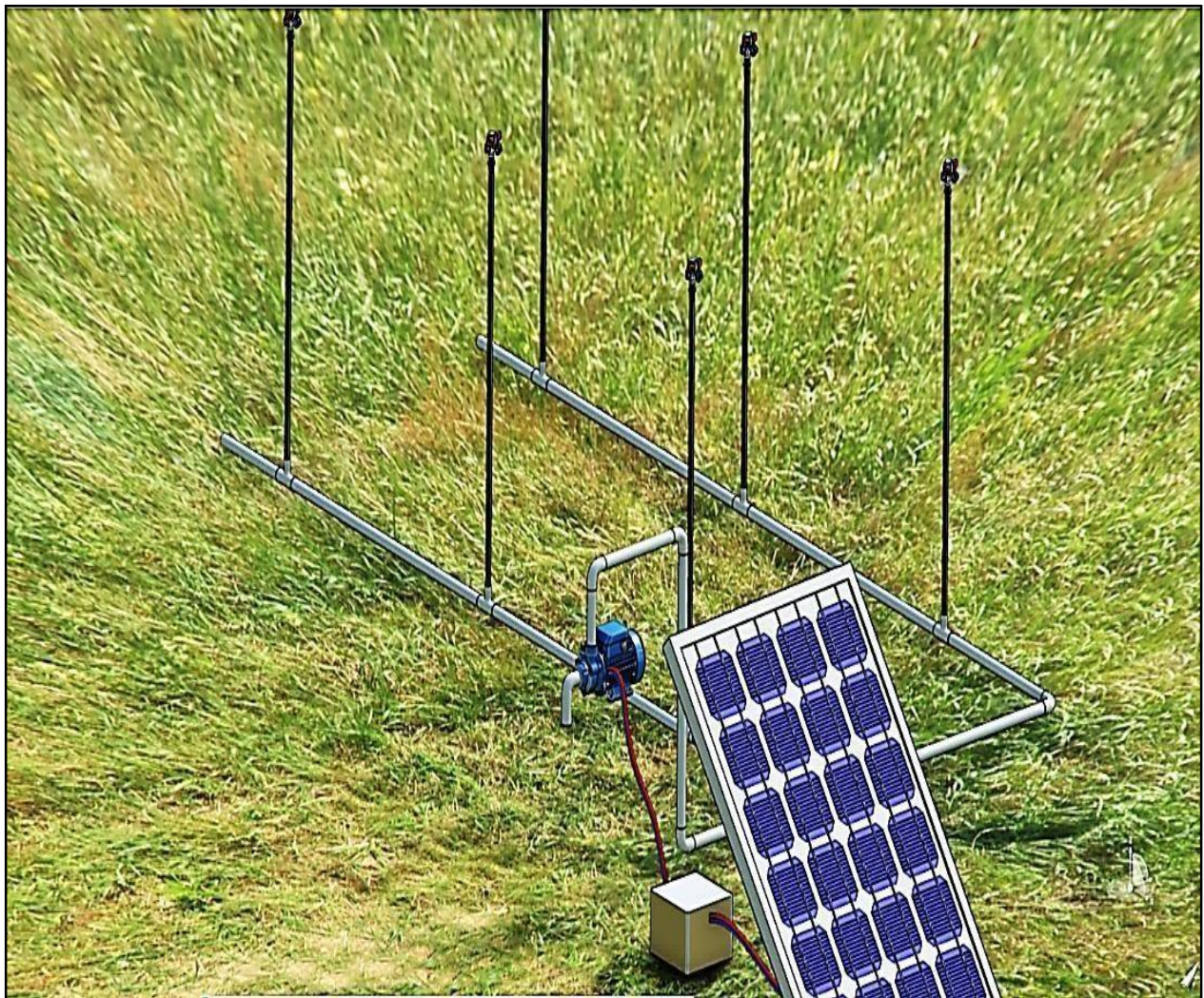
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as electrical resistance, dielectric content, interaction with neutrons as a proxy for the moisture content.

The soil moisture must be calibrated and it depending on environmental factor such as soil type, temperature or electric conductivity.

**Keywords:** - Solar DC Pump, Solar Energy, PV Panel, Sprinkler.



**Solar Operated Water Sprinkler System**







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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.



**Team Members:** Mr.Pujari Jyotiba, Miss. Kolekar Alisha, Mr. Sachin Shivshetti, Miss. Bachute Arati, Mr. Wadkar Kishor.

**Project Guide:** - Prof. S. S. Kale







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**CE 15: - Design and Fabrication of Solar Dehydration System**



**Experimental set up of Solar Dehydration**





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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.

**CE 16: - Fabrication and Analysis of Solar Operated Milk Pasteurization System**



PW99+XCM, Hipparge, Maharashtra 413002, India

Hipparge  
Maharashtra  
India

2023-02-04(Sat) 11:42(am)

29°C

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**Experiment Setup of Solar-Operated Milk Pasteurization System**







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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.

**CE 17: - Design of Roof Top Solar System for Pump Industry**



From Left Kusuma Mane, Rupali Sutar, Prof.I.I.Mujawar,VaralaxmiMaile, Sonali Vasamale.

**Project Guide:** Prof. I. I. Mujawar





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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.

**CE 18: - Energy Audit and Design of Solar System for Textile Mill**



From Left Manisha Awar, Kharatmal Pooja, Prof.S.S.Shaha, Halole Vijayalaxmi, Gaddam Yogeshwari







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## CE 19: - DESIGN AND DEVELOPMENT OF SOLAR OPERATED AGRISCARE CROW

### Team Member:

Mr. Abhishek Nagesh Yangali.

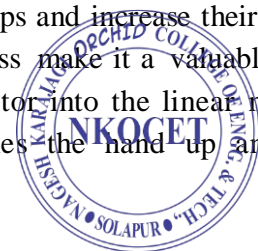
Mr. Pavan Vilas Nama

Mr. Rushikesh Vasudev Udata

**Project Guide:** Prof. C. V. Papade

**Abstract:** Scarecrows are used all around the world. The idea behind them is simple – take the form of a human to scare away birds and stop them from eating crops. As long as humans have farmed crops, birds have been there to peck at them. So, people have always needed a way to scare them away. Before scarecrows, farmers would use a variety of different methods as a deterrent. This was supposed to send a message to other birds that the same fate awaited them, if they ate the farmer's crops. Other farmers would instead use children to scare away birds. The children would use wooden clappers to make loud noises, throw rocks at birds, and even use fire to send smoke into the air as a deterrent.

As a solution on this problem an automatic Smart scarecrow or Smart scarecrow is more efficient than a normal scarecrow. Automatic smart scarecrow provides all time security to the crops from the birds and animals. It is effective in both day and night. It works automatically. Automatic smart scarecrow is equipped with sensors, movable arms and alarming device. We have seen that smart scarecrow has no movement when the birds are available field. In our project we are getting to modify this smart scarecrow that when the birds are available the sector, it'll sense the approaching of birds with the assistance of PIR sensor and move its hand up and down with the assistance of flapping mechanism and it'll start ringing with the assistance of buzzer, the aim of the flapping mechanism repellent methods, such as nets or scarecrows, which can be time consuming and labor-intensive. The solar scarecrow operates autonomously, is powered by solar energy, and produces sound to effectively deter birds. Its autonomous operation and reliance on renewable energy make it a convenient and sustainable option for farmers. In addition to its practical benefits, the solar scarecrow also offers an environmentally friendly solution to bird control. Unlike chemical repellents, the solar scarecrow does not harm birds or the environment, making it an ideal choice for farmers who prioritize sustainability. Its Eco friendliness aligns with the growing emphasis on sustainable farming practices. Overall, the solar scarecrow is a smart investment for farmers who want to protect their crops and increase their yield. Its low cost, effectiveness, adjustable height mechanism, and eco- friendliness make it a valuable addition to any farm or agricultural setting. is to convert the rotation of the motor into the linear motion of flapping hands. When the crank rotates, the connecting rods pushes the hand up and down. Additionally, it works day and night time.





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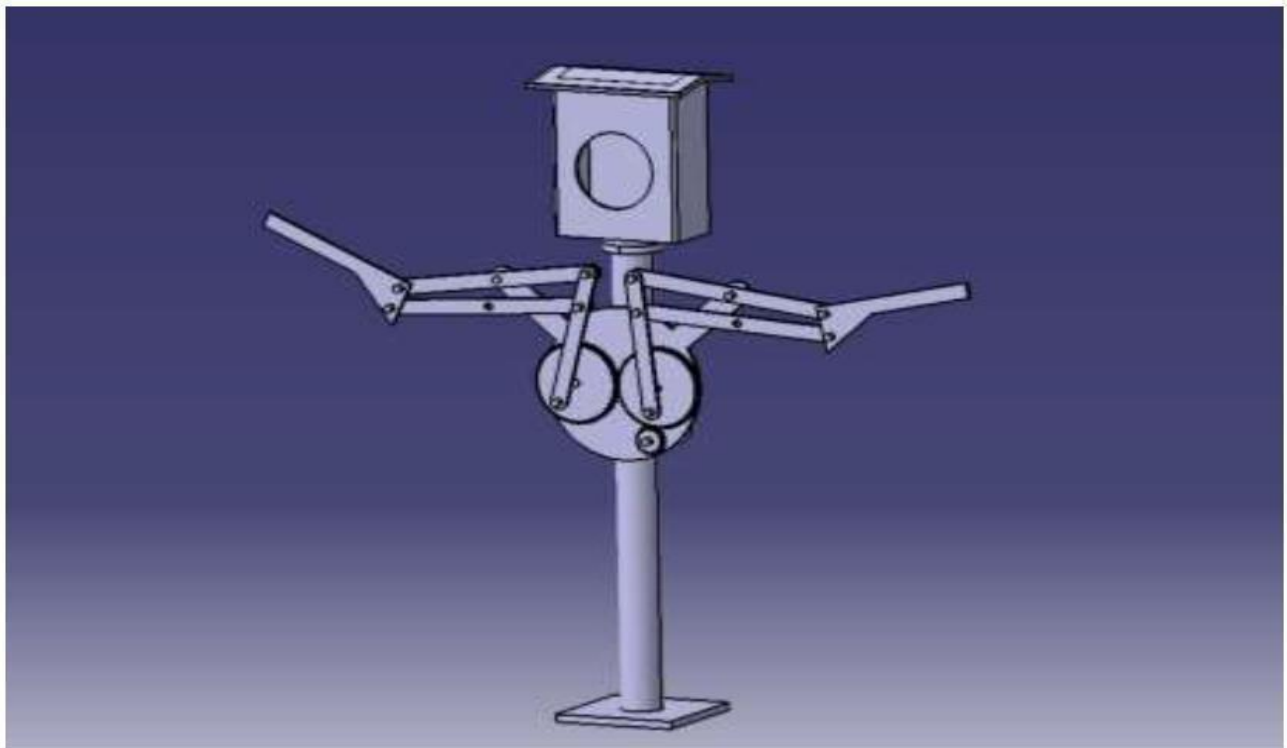
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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.

The solar scarecrow is an innovative and cost-effective solution for farmers to protect their crops from bird damage. With a payback period of only two years, this product provides a significant return on investment for farmers in terms of reducing crop loss and increasing yield. The solar scarecrow covers one acre of land, and its height is adjustable to accommodate different crop heights. For example, it can be set at 90-120 cm for wheat, 300-400 cm for jowar, 230-250 cm for bajra, 240-350 cm for corn, and 115-120 cm for ragi. The height adjustment mechanism allows farmers to adapt the scarecrow to the specific needs of their crops. Furthermore, the solar scarecrow's ability to cover one acre of land is a significant advantage over traditional bird-

**Keywords: Smart solar scarecrows, moving arms, Alert systems, PIR sensor, Flapping mechanism.**



**Fig. 3D Model of Solar Agri Scarecrow**







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**Fig. Solar Agri Scarecrow**





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## CE 20: - DESIGN AND DEVELOPMENT OF IOT BASED SOLAR BOAT

**Team Member:** Mr. Shridhar Sanjay Kulkarni

Mr. Shardul Prafull Kulkarni

Mr. Kiran Nurandappa Dindure

Mr. Tanveer Tayyab Shaikh

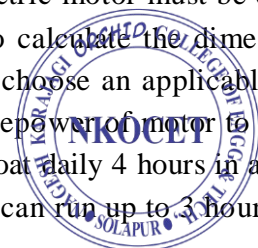
**Sponsored by:** LA Foundation Dassault Systems

**Project Guide:** Prof. C. V. Papade

**Abstract:** Solar energy is radiant light and heat from the Sun that is harnessed using a range of technologies such as solar power to generate electricity, solar thermal energy including solar water heating, and solar architecture. It is an essential source of renewable energy, and its technologies are broadly characterized as either passive solar or active solar depending on how they capture and distribute solar energy or convert it into solar power. Active solar techniques include the use of photovoltaic systems, concentrated solar power, and solar water heating to harness the energy. Passive solar techniques include orienting a building to the Sun, selecting materials with favorable thermal mass or light-dispersing properties, and designing spaces that air. The large magnitude of solar energy available makes it a highly appealing source of electricity.

It's good for the environment the difference between solar energy and conventional electricity is that solar energy does not rely on the use of fossil fuels, does not pollute air or water, and does not contribute to global warming, making it the preferable option for many. It's a Reliable, Cost-Effective Energy Source the sun is a renewable energy source. Fossil fuels will eventually run out, but sunlight won't. For that reason, solar energy is highly reliable. And unlike fossil fuels which are expensive to mine and utilize, it doesn't cost anything to receive sunlight. A one-time installation of solar equipment is all that's needed to reap the benefits. Electric boats have been playing on waterways in Europe since around 1890. Solar boats are electric boats with independent, quiet, and clean engines, whose batteries store free energy from the sun.

This project was designed and developed because there are a lot of problems with the ordinary boat that uses electric power which gets its supply from the generator. The solar electric boat is one of the alternative energies that can possibly solve this problem. The solar electric boat also has an electric motor to move it easily and efficiently on water. So, the selection of electric motor must be exact and applicable to solar electric boats. The main objective of a project is to calculate the dimensions of each part required for solar boats. The aspects that must be stressed to choose an applicable electric motor are the types of motor either AC motor or DC motor and the horsepower of motor to move the solar electric boat. The outcome expected from this project is to run the boat daily 4 hours in a day with the help of direct solar radiation collected on the solar PV Panels and it can run up to 3 hours at







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night with the help of battery and another important parameter such as power. The speed of the boat is 6.07 km/hr. The boat length was calculated as 8 feet and a beam width of 3.5 feet and height of the boat 3 feet. These are the parameters which will help to increase the efficiency of the boat. We have made a small prototype of such a type of boat with the same functioning ability. To design the boat CATIA V-5 Platform is used. To find the dimensions of prototype boat we taken it in the proportion of large boat. The finalized dimensions of prototype boat are length is 2.5 feet, width is 1.25 feet and height is 0.4 feet. The aim is to use the IOT marine kit to study the difference parameters of boat such as temperature, pressure, and speed of in single message.

**Keywords:** Design, Development, Solar Energy, IOT, Analysis



REDMI NOTE 9 PRO MAX  
64 MP QUAD CAMERA

**Experiment Setup IOT Based Solar Boat**





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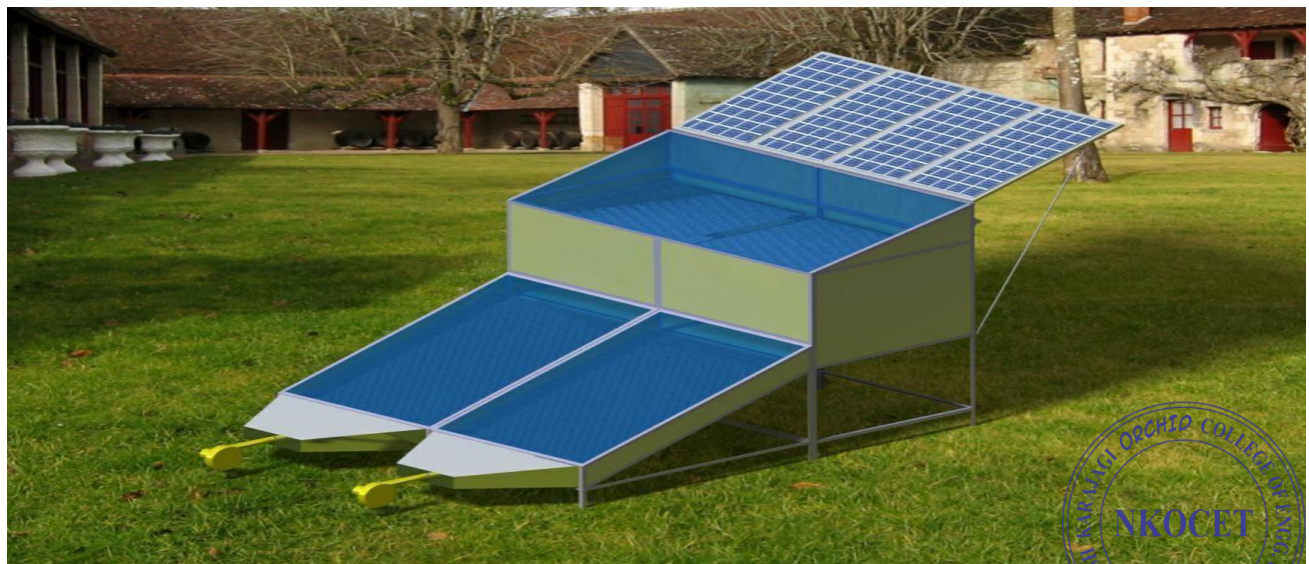
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### CE 21: - Solar Energy Based Manuka Yantra

Team Members: -

- 1) Pawan Satpute
- 2) Chiranjeevi Aganur
- 3) Guruprasad Ajgunde
- 4) Akash Gurram
- 5) Vijay Sanga
- 6) Shubham Kshirsagar
- 7) Shubham Vibhute
- 8) Omprakash Gatti
- 9) Satyajit Pardeshi
- 10) Praveen Fundipalli
- 11) Lakhan Pardeshi
- 12) Praveen Kanki

**Abstract:** As more energy is received on Earth in the form of solar radiation, the same solar energy can be used to dry food, thus increasing the shelf life of food. In a developing country like India, producing pearls is a challenge for farmers, as it takes a lot of time if one decides to produce pearls naturally. Keeping this in mind, we have made a machine that can produce 50 kg of nuts in a short time by using solar energy, and with the help of this machine, we can produce daily staples like potato, chili, onion, spices.







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Post Box No. 154, Gut No. 16, Solapur-Tuljapur Road, Tale Hipparaga, Solapur- 413 002.

## CE 22: - A Smart Chair is a Boon to the Disabled Persons

### Team Members: -

1. Pawankumar Devkrishna Kondi
2. Arvind Audumber Rapelli
3. Shubham Rajesh Katakdhond
4. Sandeep Mohan Sonkamble
5. Raju Laxman Gaikwad

**Project Guide:** Prof. VV Birangane

**Abstract:** The main objective of this project is to develop a chair structure for easy sitting. The important objectives of this project are to develop a new mechanism for various human body movements, to study it and to obtain detailed information. In the company it is known as the chairless chair and the workers in the company can attach their legs to the chairless chair like a skeleton. This skeletal device is already available in the market but due to some flaws it is not widely used. This structure tries to support the extra mass on the body by controlling the struts based on the air pressure. So that bone loss is reduced. In the presented concept, when the chair is activated, you can walk normally. If the chair is activated, you can sit and lock it in different positions (120 degrees). This tool is very easy to handle as it does not come in contact with the terrain. Due to the special design and mechanism, the chair comes into contact with the terrain only in the relaxed position.





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**A Smart Chair is a Boon to the Disabled Persons**

