SREE VIDYANIKETHAN ENGINEERING COLLEGE
(AUTONOMOUS)
Sree Sainath Nagar, Tirupati – 517 102, A.P.

DEPARTMENT OF CIVIL ENGINEERING
ASCE SVEC Student Chapter

ASCE STUDENT CHAPTER
Sree Vidyanikethan Engineering College

No. SVEC/CE/ASCE SVEC Student Chapter/Circulars/2020-21/07 **25 March 2021**

CIRCULAR

The Department of Civil Engineering is organizing a **Poster Presentation Competition** on **"Civil Engineering Infrastructure for the Development of Smart Cities"** under **ASCE SVEC Student Chapter** on **19-04-2021** i.e., **2.45 to 4.45 P.M.** All the students of I B.Tech. I Semester, II, III & IV B.Tech. II Semester Civil Engineering (A & B Sections) are encouraged to participate in the competition. **The Registration in NIVA is mandatory. Prizes and participation certificates** will be provided for **Student Members of ASCE SVEC Student Chapter.**

For further details, contact **Mr. D. V. Purushotham**, Coordinator - ASCE SVEC Student Chapter and Assistant Professor, Department of Civil Engineering, SVEC or **Office Bearers** of ASCE SVEC Student Chapter or Email id: **asce@vidyanikethan.edu**

25/03/2021

(Dr. O. Eswara Reddy)
Faculty Advisor
ASCE SVEC Student Chapter
Professor, HoD and Chairman-BOS

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(AUTONOMOUS)
Sree Sainath Nagar, Tirupati – 517 102, A.P.
DEPARTMENT OF CIVIL ENGINEERING
ASCE SVEC Student Chapter

No. SVEC/CE/ASCE SVEC Student Chapter/Circulars/2020-21/08 **01 May 2021**

CIRCULAR

Online Poster Presentation Competition on **"Civil Engineering Infrastructure for the Development of Smart Cities"** under ASCE SVEC Student Chapter scheduled on 19-04-2021 is postponed to **30-05-2021**. All the students of I, II, III & IV B.Tech. II Semester Civil Engineering (A & B Sections) are encouraged to participate in the competition. Prizes and participation certificates will be provided for register students. For further details, contact **Mr. D. V. Purushotham**, Coordinator - ASCE SVEC Student Chapter or Office Bearers of ASCE SVEC Student Chapter or Email id: **asce@vidyanikethan.edu**.

01/05/2021

(Dr. O. Eswara Reddy)
Faculty Advisor
ASCE SVEC Student Chapter
Professor, HoD and Chairman-BOS

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(AUTONOMOUS)

Sree Sainath Nagar, Tirupati – 517102
(Affiliated to JNTUA Anantapuramu, Approved by AICTE, Accredited by NBA; NAAC with 'A' Grade)

ASCE STUDENT CHAPTER
Sree Vidyanikethan Engineering College

Online Poster Presentation on

"Civil Engineering Infrastructure for the Development of Smart Cities"

May 30, 2021 (Sunday)

Organized by

ASCE SVEC Student Chapter

Department of Civil Engineering

Last Date of Registration: **29-05-2021**
Registration Link:
https://forms.gle/Fs2u6KNWdBt914jPA

Eligibility:

- *All the students of B.Tech Civil Engineering from SVEC are eligible to participate in the event.*

E-Certificates will be provided for all participants and Prize Winners

Contact us:
ASCE SVEC Office Bearers - 2021
asce@vidyanikethan.edu

Event Platform:
zoom

Rules to follow:

- *The poster entry must have an impact on the topic.*
- *Each participant should submit one entry only.*
- *File Format: Save your file as a PDF for quick and easy upload.*
- *All Poster should be original work of participant and follow the given format.*
- *The following headings are suggested to structure your abstract, but you can amend as necessary – Introduction/Background, Methods, Findings, Conclusions.*
- *During the event, the maximum two participants in each team are given 7 minutes to present their poster and 3 minutes for queries.*

Chief Patrons

Dr. M. Mohan Babu
Chairman, SVET

Sri. Vishnu Manchu
CEO, SVET

Patron

Dr. B. M. Satish
Principal,SVEC

Convener

Dr. O. Eswara Reddy
Faculty Advisor, ASCE SVEC Student Chapter
HoD and Chairman-BoS, Dept. of Civil Engg.

Coordinator

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Coordinator
ASCE SVEC Student Chapter

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DEPARTMENT OF CIVIL ENGINEERING
ASCE SVEC Student Chapter

ASCE STUDENT CHAPTER
Sree Vidyanikethan Engineering College

Online Poster Presentation on
"Civil Engineering Infrastructure for the Development of Smart Cities"
30-05-2021 i.e., 2.00 to 5.00 P.M.

Participation List

S.No	Name of the Student	Roll No	Class & Section
1.	Mr. SHAIK ARKAT MAHAMUDA	20121A0191	I CE B
2.	Ms. SHAIK MAHABOOB GOUSE ANISHA	20121A0191	I CE B
3.	Ms. C JYOSHNA	19121A0116	II CE A
4.	Ms. O MONISHA	19121A0178	II CE A
5.	Ms. GINKALA HARSHITHA	19121A0129	II CE A
6.	Ms. KOLA LIKHITHA SREE	19121A0142	II CE A
7.	Ms. DASARI TEJASWINI	20125A0103	II CE B
8.	Mr. ARAGONDA YUGANDHAR	20125A0115	II CE B
9.	Mr. KANCHARLA REDDAIAH	20125A0122	II CE B
10.	Mr. GURRAM RANGANATHA TEJA	20125A0105	II CE B
11.	Mr. KALLURI PRANEETH KUMAR REDDY	20125A0121	II CE B
12.	Mr. ACHAKATLA MOHAMMED ZAHID	18121A0101	III CE A
13.	Ms. CHIRUTANI THEJASWI	18121A0123	III CE A
14.	Ms. ANUPALA NAVYA	18121A0105	III CE A
15.	Ms. PALLAVI NALLATURU	18121A0169	III CE A
16.	Ms. PATHIKONDA PRATHYUSHA	18121A0170	III CE A

30/05/2021

Faculty Advisor
ASCE SVEC Student Chapter

SREE VIDYANIKETHAN ENGINEERING COLLEGE
(AUTONOMOUS)
Sree Sainath Nagar, Tirupati – 517 102, A.P.

DEPARTMENT OF CIVIL ENGINEERING
ASCE SVEC Student Chapter

ASCE STUDENT CHAPTER Sree Vidyanikethan Engineering College

No. SVEC/CE/ASCE SVEC Student Chapter/Circulars/2020-21/10 **21 June 2021**

CIRCULAR

The Department of Civil Engineering **"Congratulates"** the following students on winning the online **Poster Presentation** on **"Civil Engineering Infrastructure for the Development of Smart Cities"** under **ASCE SVEC Student Chapter** on **30-05-2021**.

S.No.	Roll No.	Name of the Student	Class & Section	Prize
1	18121A0169	Ms. PALLAVI NALLATURU	III B.Tech. II-Sem A-section	**First Prize**
2	18121A0105	Ms. ANUPALA NAVYA	III B.Tech. II-Sem A-section	**Second Prize**
3	20125A0103	Ms. DASARI TEJASWINI	II B.Tech. II-Sem B-section	**Second Prize**
4	20121A0191	Ms. SHAIK ARKAT MAHAMUDA	I B.Tech. II-Sem B-section	**Third Prize**
5	20121A0192	Ms. SHAIK MAHABOOB GOUSE NISHA	I B.Tech. II-Sem B-section	

21/06/2021

(Dr. O. Eswara Reddy)
Faculty Advisor
ASCE SVEC Student Chapter
Professor, HoD and Chairman-BOS

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Department: CIVIL ENGINEERING| Date: 30th May 2021

Online Poster Presentation on "Civil Engineering Infrastructure for the Development of Smart Cities" 30th May 2021

The Department of Civil Engineering of Sree Vidyanikethan Engineering College has organized a Online Poster Presentation on **"Civil Engineering Infrastructure for the Development of Smart Cities"** under ASCE SVEC Student Chapter on 30th May 2021. The objective of the program is to motive and nurture the Poster Presentation skills and impart knowledge on Civil Engineering Infrastructure for the Development of Smart Cities.

A total of 16 students (04 individuals and 6 teams of each 2) from II, III and IV B.Tech. Civil Engineering I Semester has participated in the event. The whole event was conducted with great zeal and enthusiasm. The competition was conducted through **Zoom Platform** from 02:00 pm to 4:30 pm on 30th May 2021.

Dr. O. Eswara Reddy, Professor, Head, BOS Chairman, and Faculty Advisor - ASCE SVEC Student Chapter, Department of Civil Engineering, SVEC and Convener of the event addressed the gathering and motivated the participants; Mr. D. V. Purushotham, Assistant Professor, Coordinator-ASCE SVEC Student Chapter and Coordinator of the event are judged the participants on different criteria such as knowledge, presentation, demonstration, creativity and content. Office barriers of ASCE SVEC Student Chapter were the organizers of this program.

On the whole, the event has proved successful. The prize winners were judged purely based on subject knowledge and presentation skills. The **First Prize** to **Ms. Pallavi Nallaturu** of III B. Tech. CE-A; **Second Prize** to **Ms. Anupala Navya** of III B. Tech. CE-A and **Ms. Dasari Tejaswini** of II B. Tech. CE-B and **Third Prize** to **Ms. Shaik Arkat Mahamuda** and **Ms. Shaik Mahaboob Gouse Anisha** were awarded in poster presentation on "Civil Engineering Infrastructure for the Development of Smart Cities". Participation certificates were distributed to all the participants.

The students were enriched with knowledge on latest technologies used in the poster presentation. Further, it is believed that this event has ignited the young minds to learn and participate and to participate and learn.

The photographs of the event are as follows.

SREE VIDYANIKETHAN ENGINEERING COLLEGE
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ASCE STUDENT CHAPTER
Sree Vidyanikethan Engineering College

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May 30, 2021 (Sunday)

Organized by
ASCE SVEC Student Chapter
Department of Civil Engineering

Last Date of Registration: 29-05-2021
Registration Link:
https://forms.gle/Fs2u6KNWdBt914jPA

Eligibility:
- *All the students of B.Tech Civil Engineering from SVEC are eligible to participate in the event.*

E-Certificates will be provided for all participants and Prize Winners

Contact us:
ASCE SVEC Office Bearers - 2021
asce@vidyanikethan.edu

Event Platform: zoom

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- *The poster entry must have an impact on the topic.*
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- *All Poster should be original work of participant and follow the given format.*
- *The following headings are suggested to structure your abstract, but you can amend as necessary – Introduction/Background, Methods, Findings, Conclusions.*
- *During the event, the maximum two participants in each team are given 7 minutes to present their poster and 3 minutes for queries.*

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Dr. M. Mohan Babu, Chairman, SVET	Sri. Vishnu Manchu, CEO, SVET	Dr. B. M. Satish, Principal,SVEC	Dr. O. Eswara Reddy, Faculty Advisor, ASCE SVEC Student Chapter, HoD and Chairman-BoS, Dept. of Civil Engg.	Mr. D. V. Purushotham, Coordinator, ASCE SVEC Student Chapter

Event Brochure

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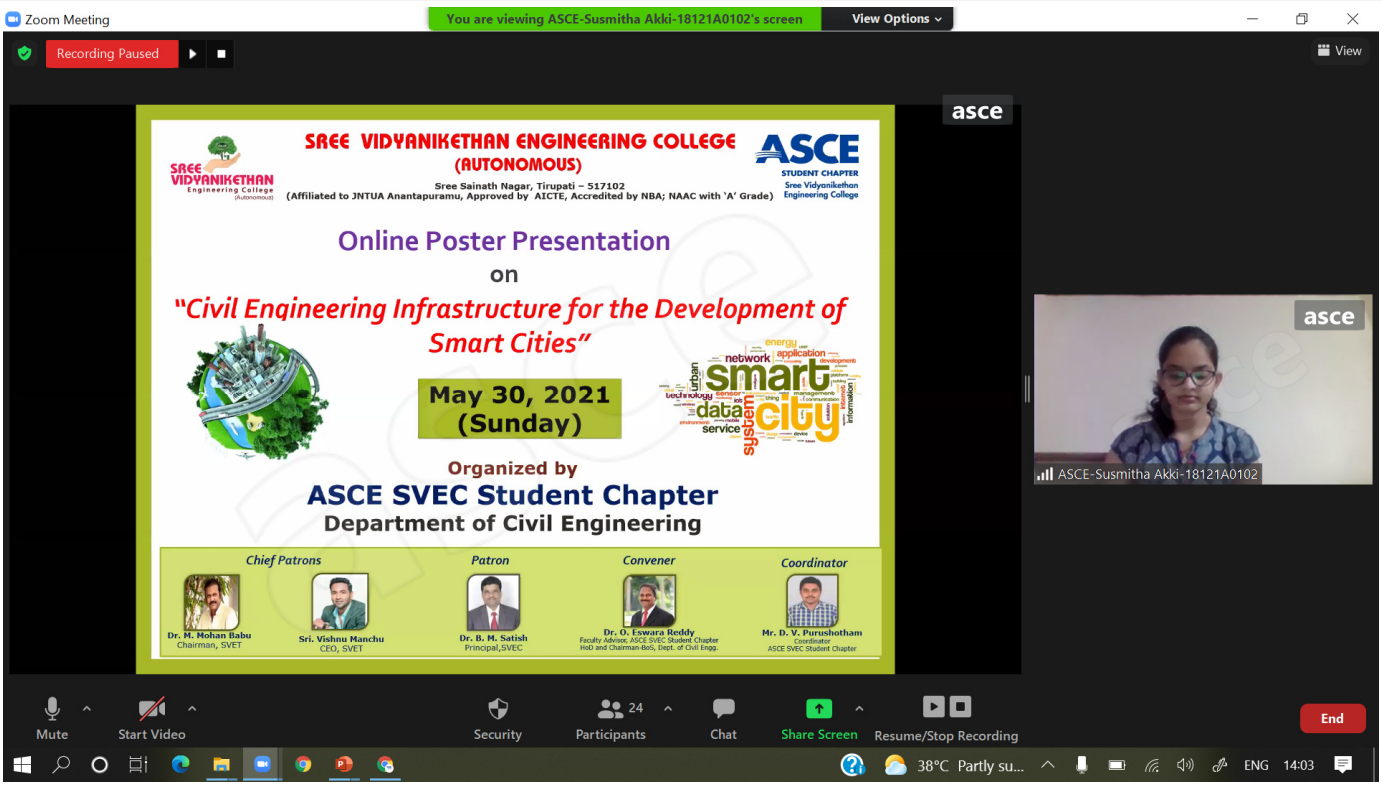
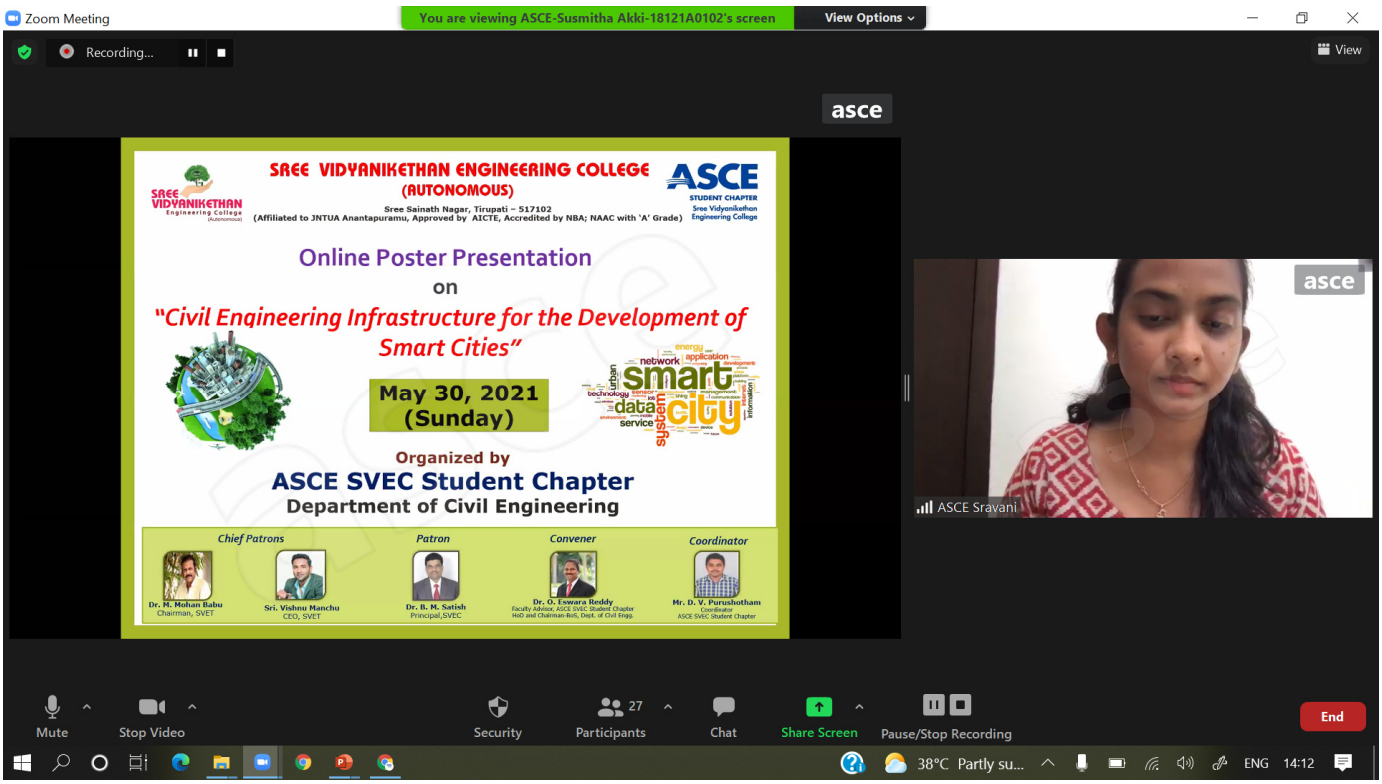
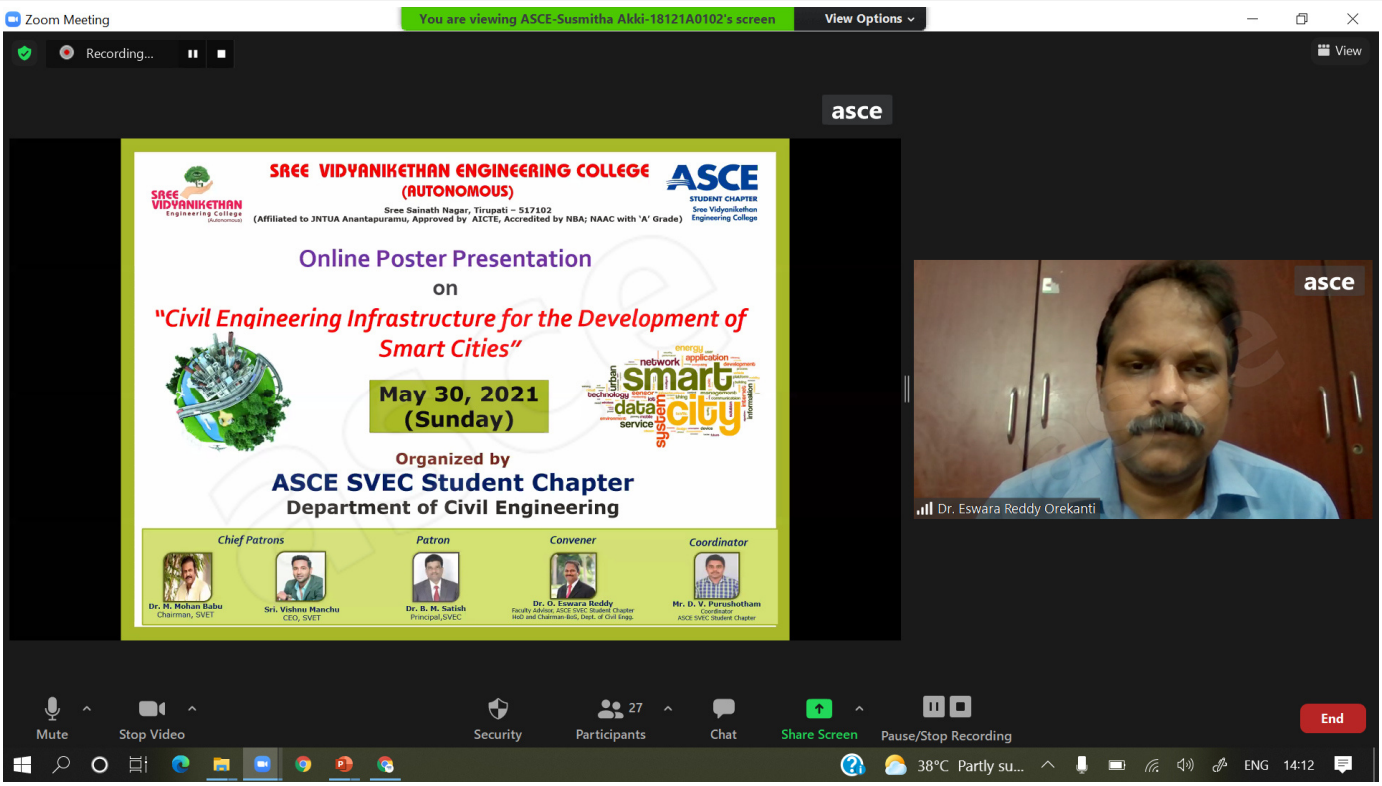
Event Banner



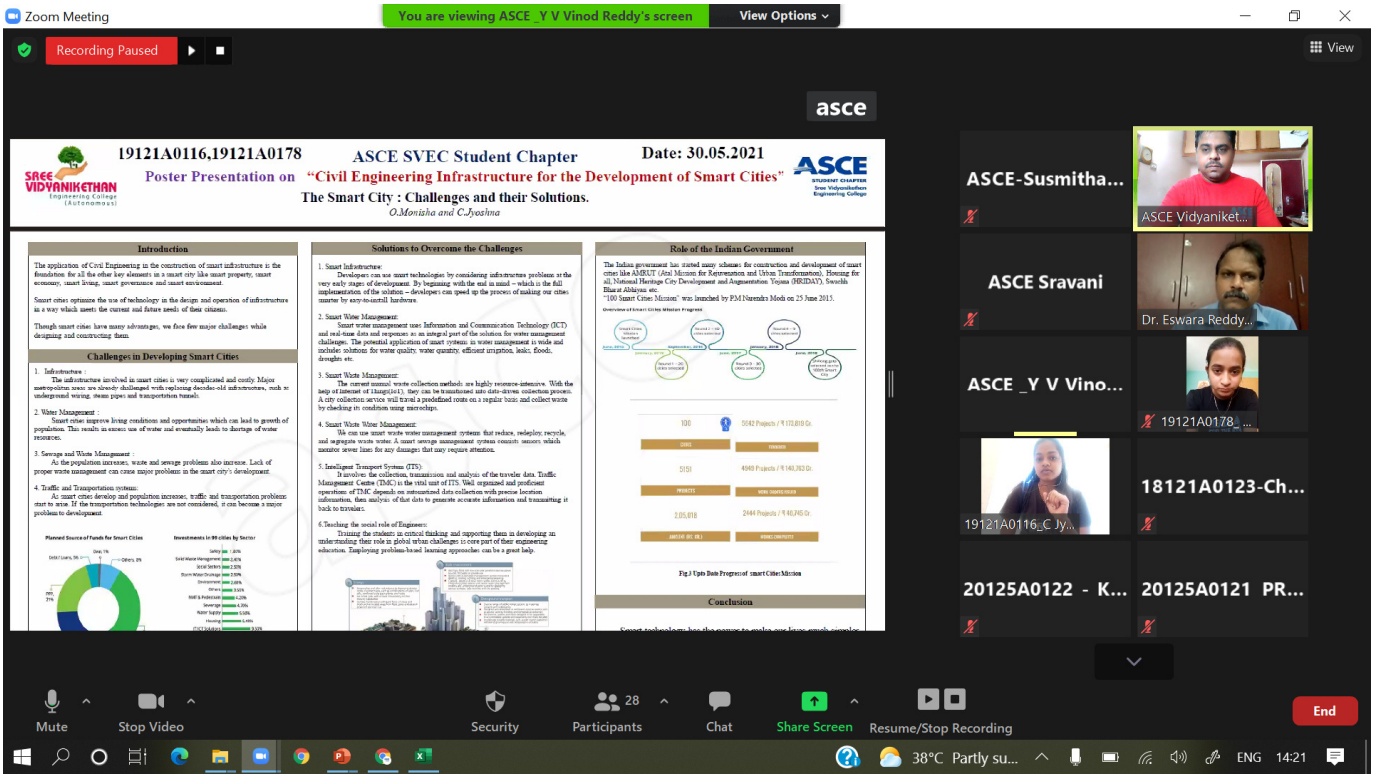
Ms. A. Susmitha, President of ASCE SVEC Student Chapter welcoming the Participants of Poster Presentation Competition



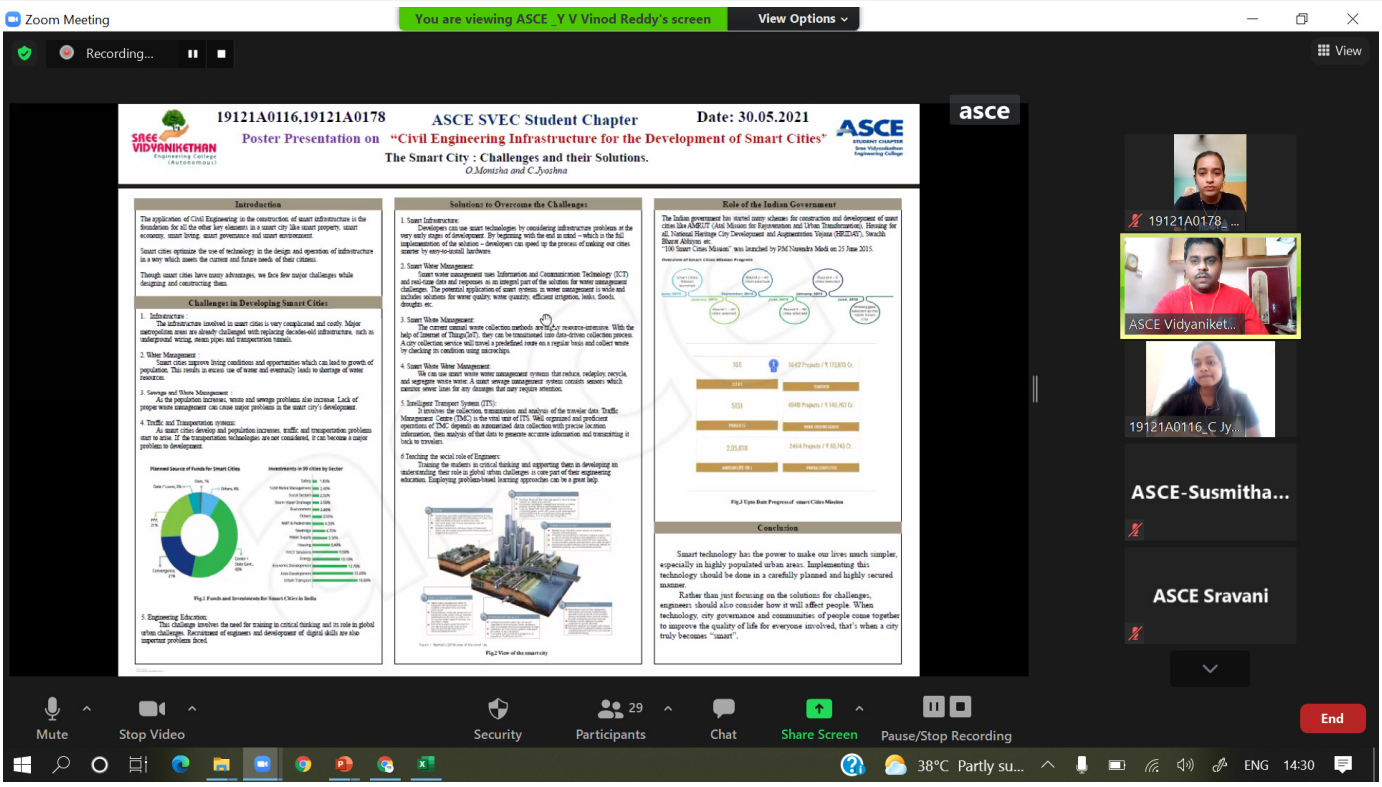
Ms. E. Sravani, Corresponding Secretary, ASCE SVEC Student Chapter welcoming the Dr. O. Eswara Reddy, Faculty Advisor of ASCE SVEC Student Chapter



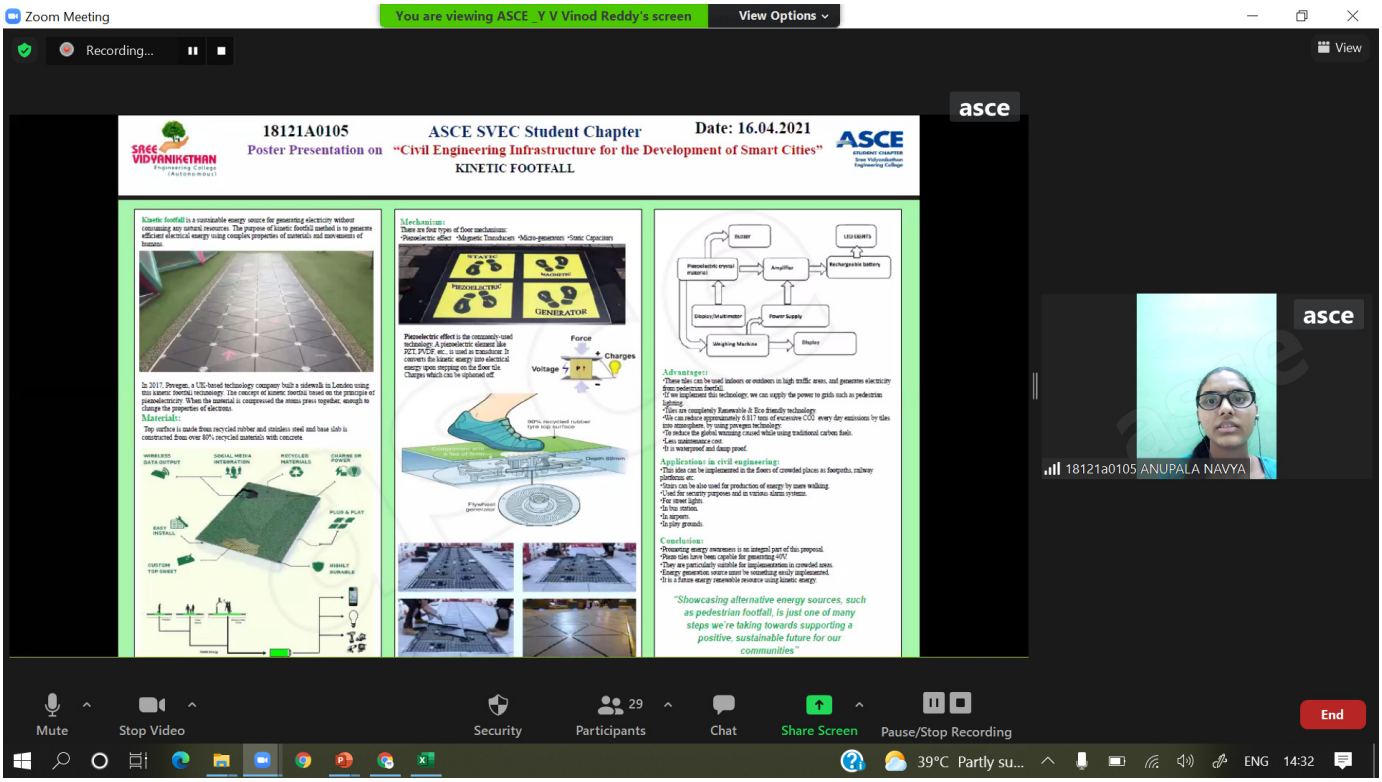
Dr. O. Eswara Reddy, Professor, HoD and BOS Chairman & Faculty Advisor of ASCE SVEC Student Chapter addressing the Students



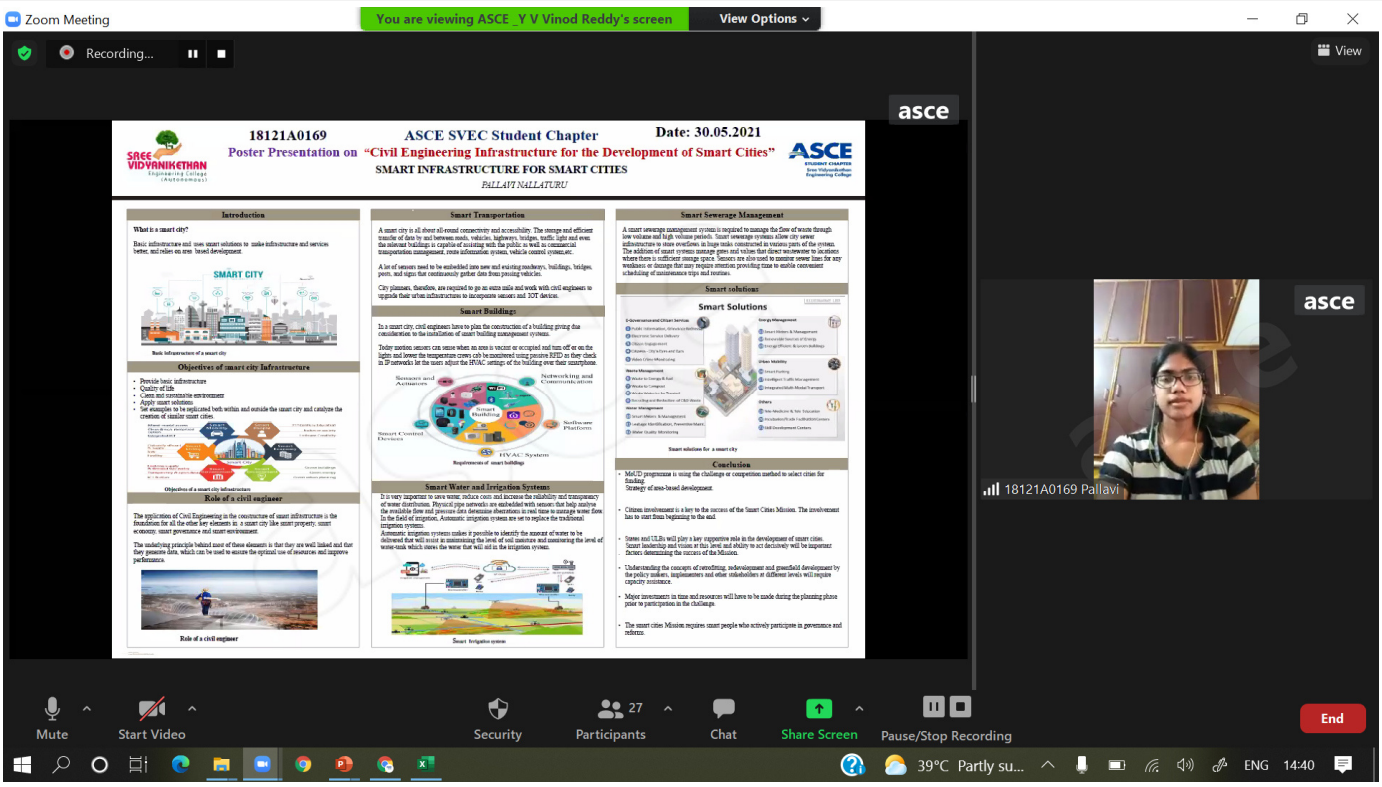
Mr. D.V. Purushotham, Coordinator of ASCE SVEC Student Chapter explaining the Instructions to Participants in Poster Presentation



Participation by Ms. C. Jyoshna and Ms. O. Monisha of II B.Tech. CE II Semester

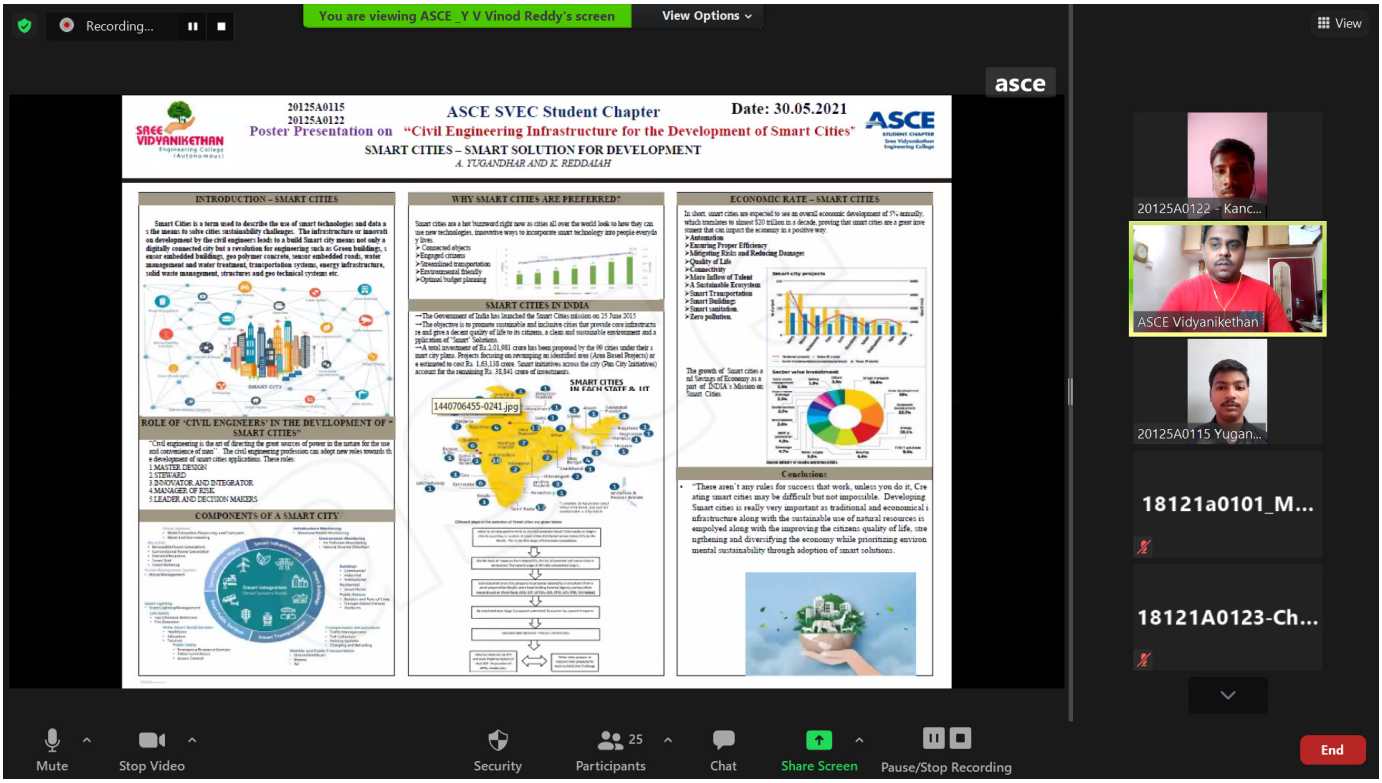


Participation by Ms. Anupala Navya of III B.Tech. CE II Semester

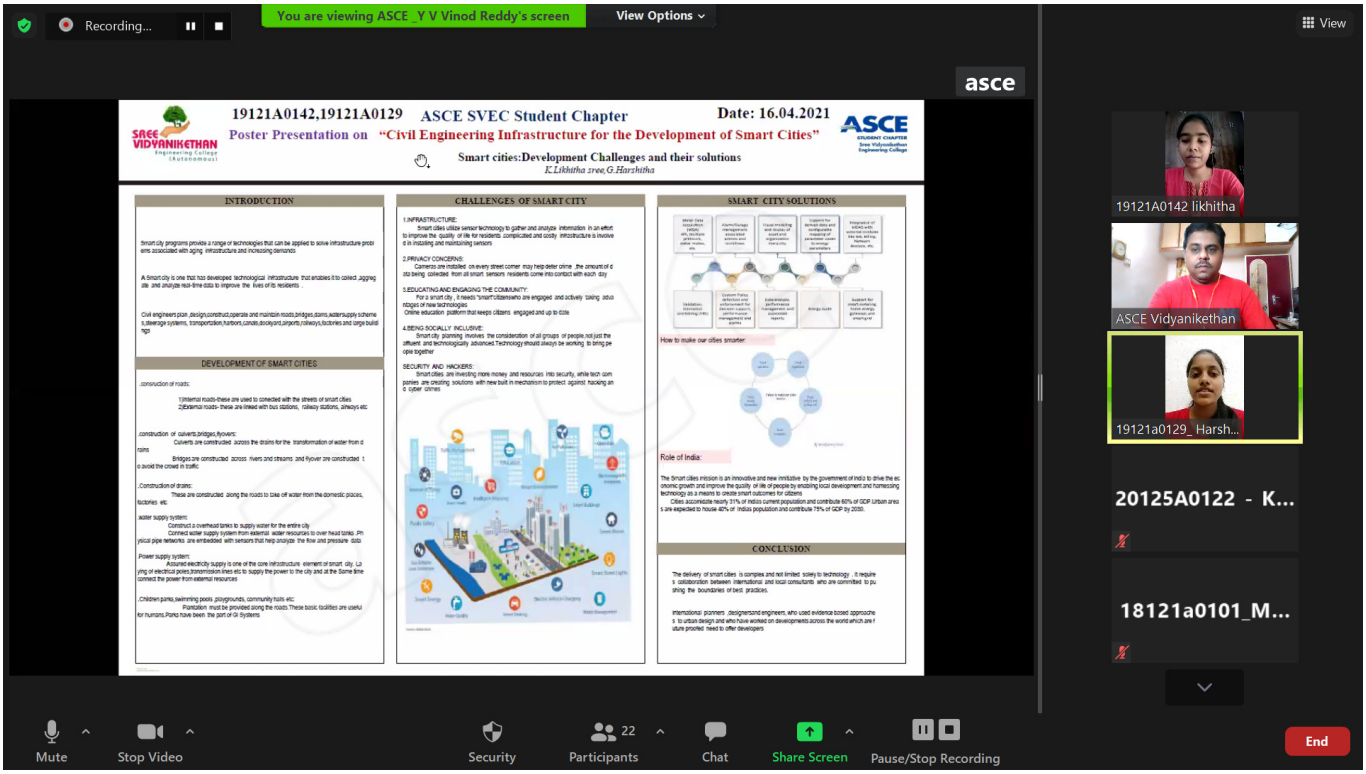


Participation by Ms. N. Pallavi of III B.Tech. CE II Semester

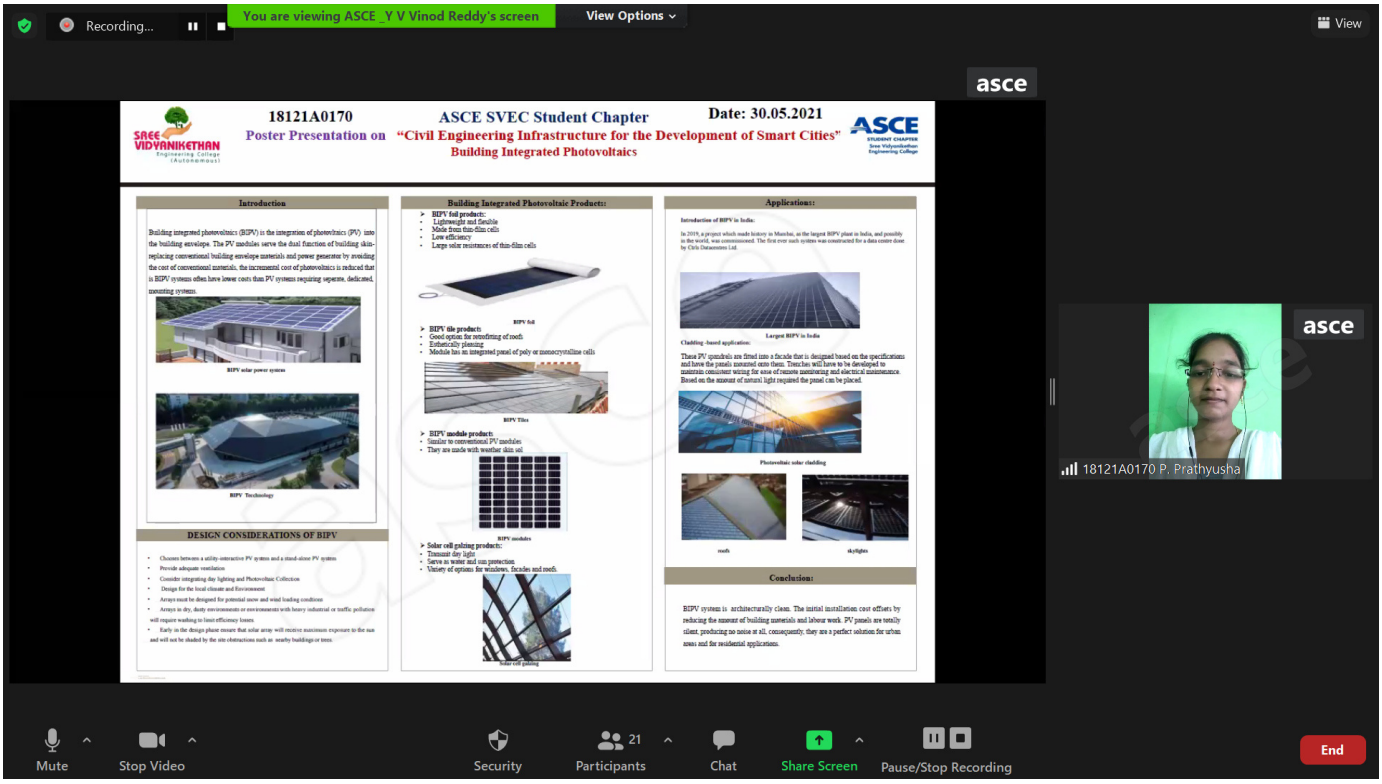
Participation by Mr. Achakatla Mohammed Zahid and Ms. Chirutani Thejaswi of III B.Tech. CE II Semester



Participation by Ms. N. Pallavi of II B.Tech. CE II Semester

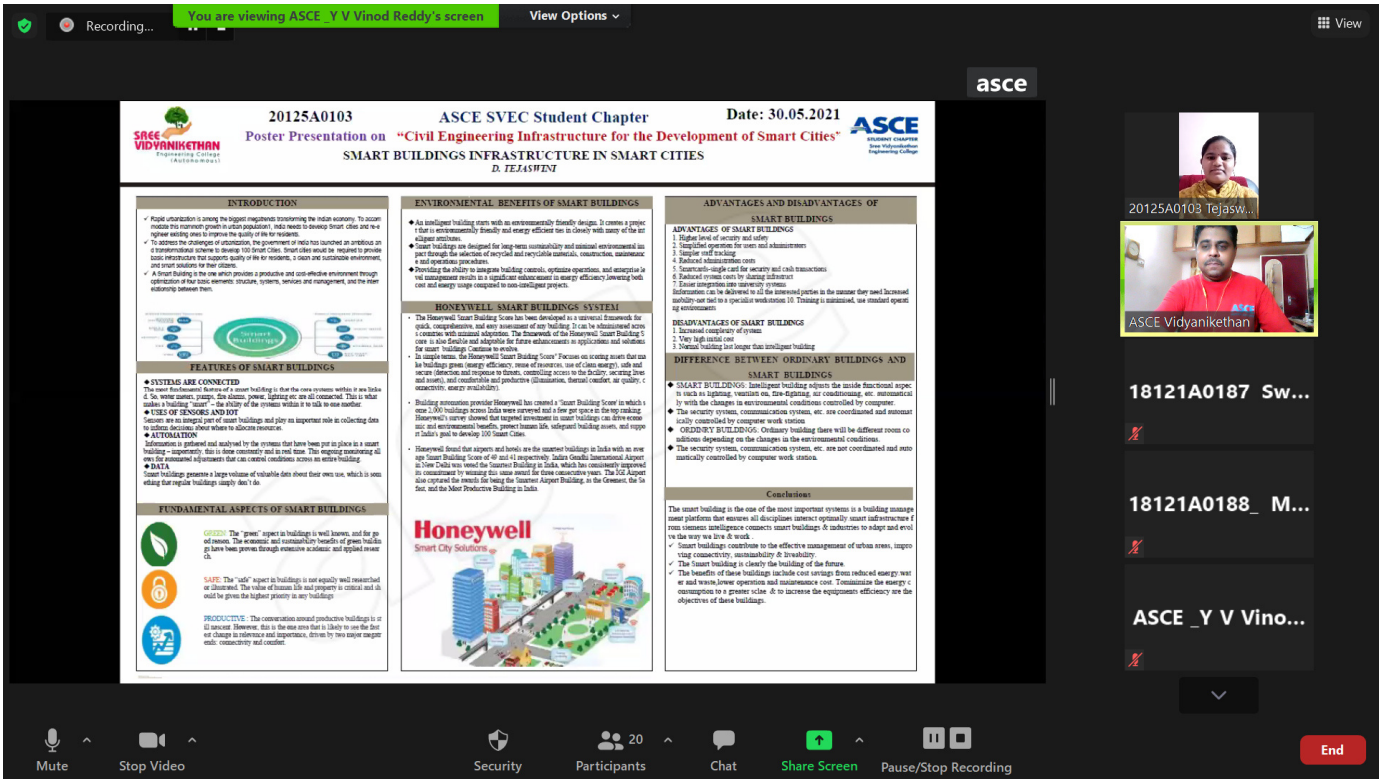


Participation by Ms. N. Pallavi of II B.Tech. CE II Semester

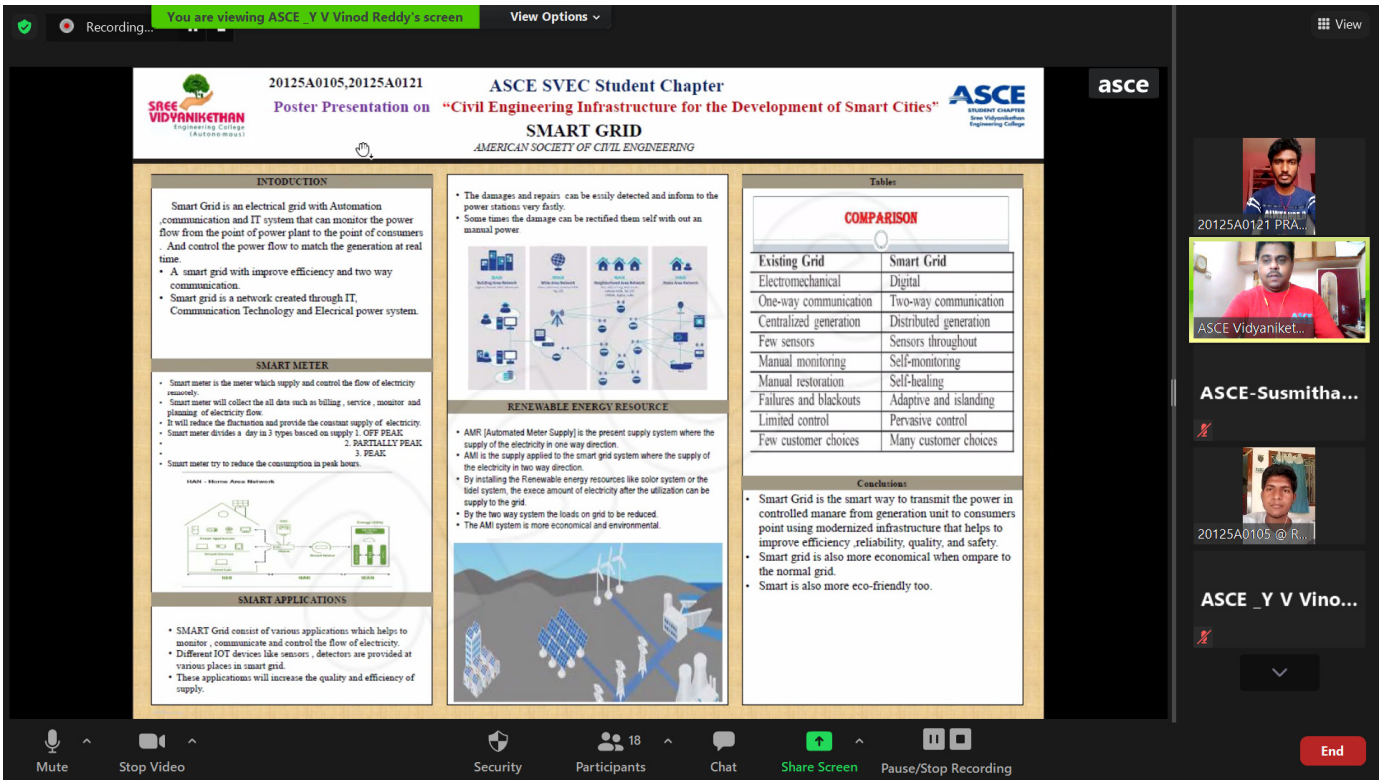


Participation by Ms. Pathikonda Prathyusha of III B.Tech. CE II Semester

Participation by Ms. Swetha Priya Gadikota and Ms. T. Manasa of III B.Tech. CE II Semester

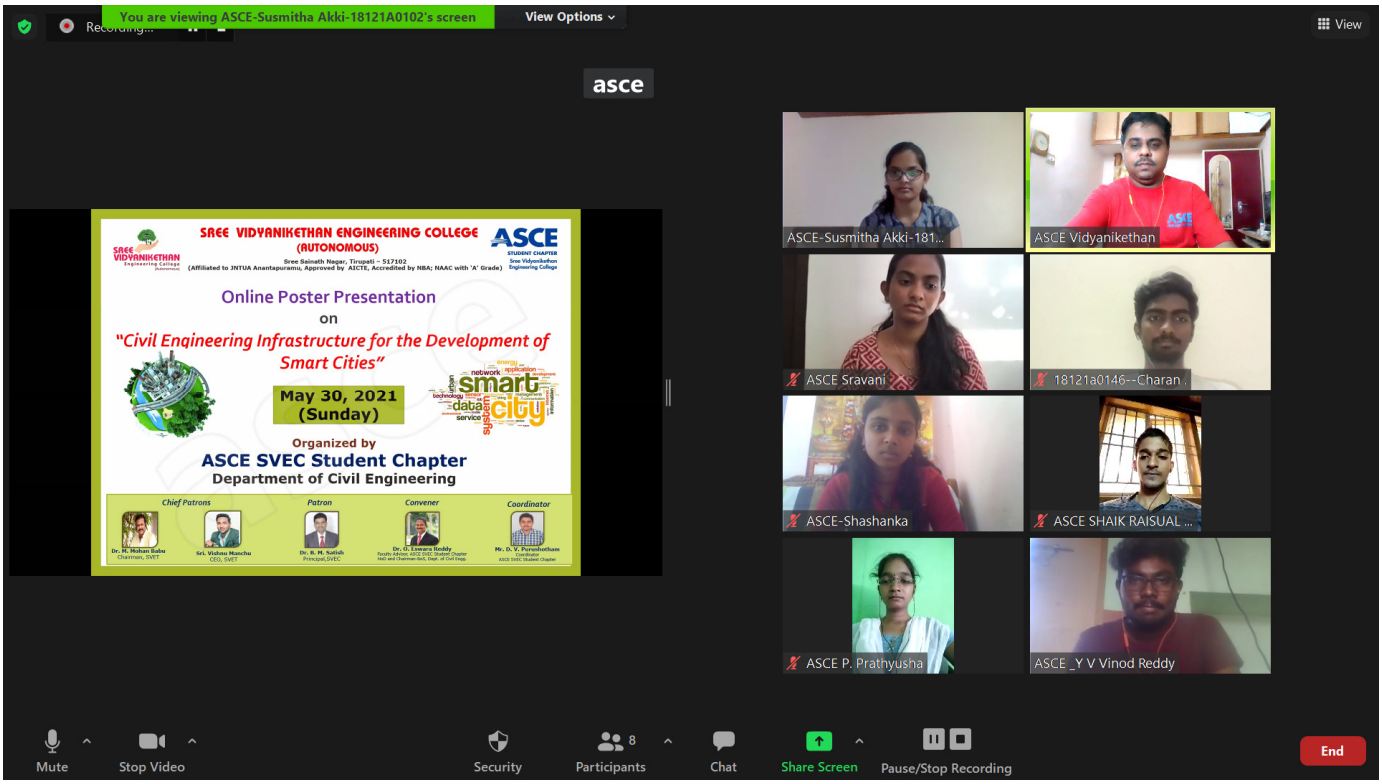


Participation by Ms. Dasari Tejaswini of II B.Tech. CE II Semester

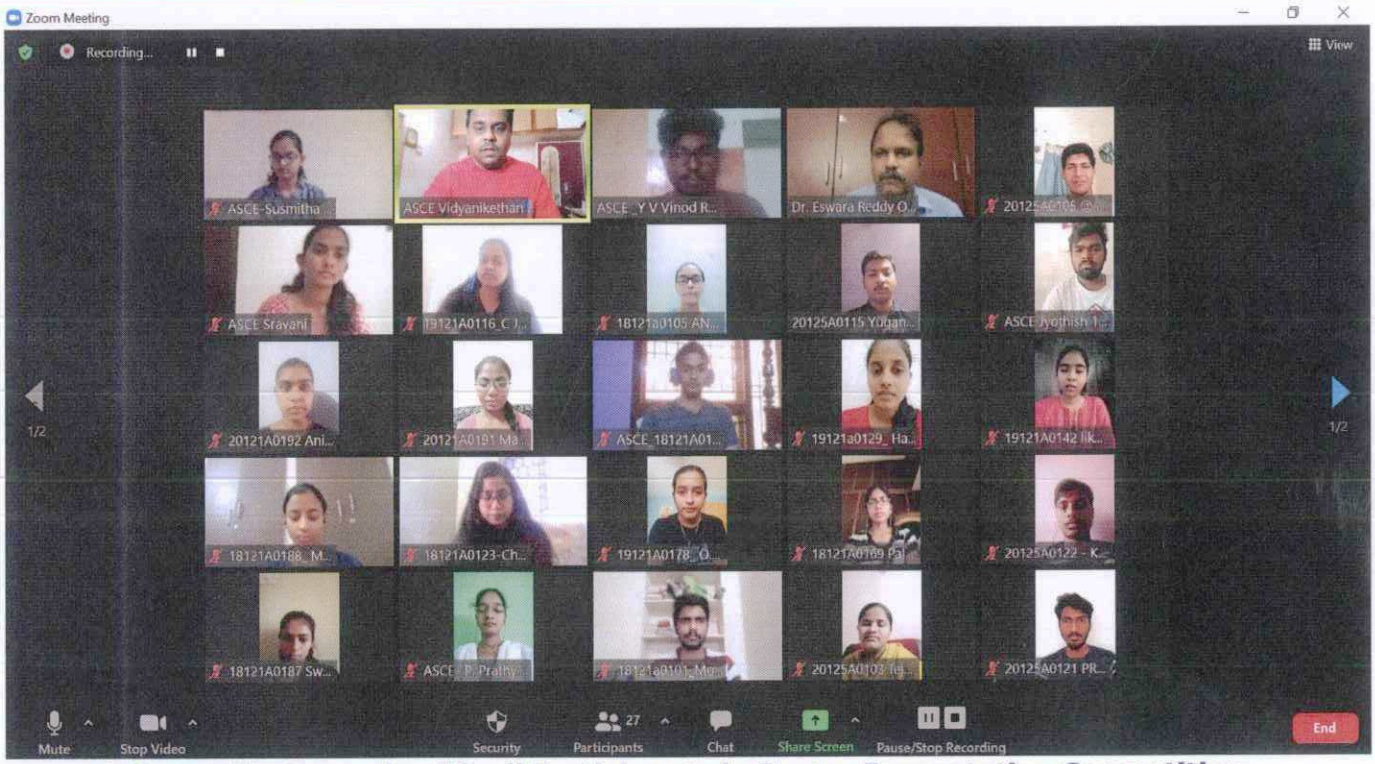


Participation by Mr. Gurram Ranganatha Teja and Kalluri Praneeth Kumar Reddy of II B.Tech. CE II Semester

Participation by Ms. Shaik Arkat Mahamuda and Ms. Shaik Mahaboob Gouse Anisha of I B.Tech. CE II Semester



Mr. D.V. Purushotham, Coordinator of ASCE SVEC Student Chapter announcing the Prize Winners of Poster Presentation



A Group Photograph with all Participants in Poster Presentation Competition

21/06/2024

(Dr. O. ESWARA REDDY)
Faculty Advisor
ASCE SVEC Student Chapter
Professor, HoD and Chairman-BOS

18121A0169

ASCE SVEC Student Chapter

Date: 30.05.2021

Poster Presentation on "Civil Engineering Infrastructure for the Development of Smart Cities"

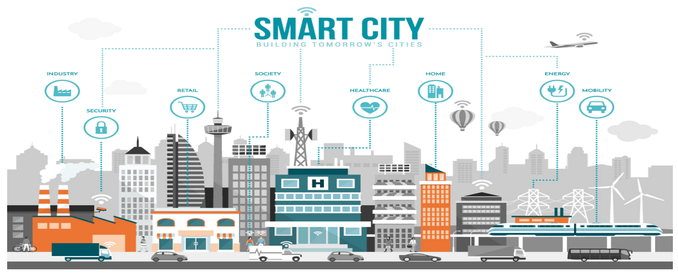
SMART INFRASTRUCTURE FOR SMART CITIES

PALLAVI NALLATURU

Introduction

What is a smart city?

Basic infrastructure and uses smart solutions to make infrastructure and services better, and relies on area based development.



Basic infrastructure of a smart city

Objectives of smart city Infrastructure

- Provide basic infrastructure
- Quality of life
- Clean and sustainable environment
- Apply smart solutions
- Set examples to be replicated both within and outside the smart city and catalyze the creation of similar smart cities.

Objectives of a smart city infrastructure

Role of a civil engineer

The application of Civil Engineering in the constructure of smart infrastructure is the foundation for all the other key elements in a smart city like smart property, smart economy, smart governance and smart environment.

The underlying principle behind most of these elements is that they are well linked and that they generate data, which can be used to ensure the optimal use of resources and improve performance.

Role of a civil engineer

Smart Transportation

A smart city is all about all-round connectivity and accessibility. The storage and efficient transfer of data by and between roads, vehicles, highways, bridges, traffic light and even the relevant buildings is capable of assisting with the public as well as commercial transportation management, route information system, vehicle control system,etc.

A lot of sensors need to be embedded into new and existing roadways, buildings, bridges, posts, and signs that continuously gather data from passing vehicles.

City planners, therefore, are required to go an extra mile and work with civil engineers to upgrade their urban infrastructures to incorporate sensors and IOT devices.

Smart Buildings

In a smart city, civil engineers have to plan the construction of a building giving due consideration to the installation of smart building management systems.

Today motion sensors can sense when an area is vacant or occupied and turn off or on the lights and lower the temperature crews cab be monitored using passive RFID as they check in IP networks let the users adjust the HVAC settings of the building over their smartphone.

Requirements of smart buildings

Smart Water and Irrigation Systems

It is very important to save water, reduce costs and increase the reliability and transparency of water distribution. Physical pipe networks are embedded with sensors that help analyse the available flow and pressure data determine aberrations in real time to manage water flow. In the field of irrigation, Automatic irrigation system are set to replace the traditional irrigation systems.
Automatic irrigation systems makes it possible to identify the amount of water to be delivered that will assist in maintaining the level of soil moisture and monitoring the level of water-tank which stores the water that will aid in the irrigation system.

Smart Irrigation system

Smart Sewerage Management

A smart sewerage management system is required to manage the flow of waste through low volume and high volume periods. Smart sewerage systems allow city sewer infrastructure to store overflows in huge tanks constructed in various parts of the system. The addition of smart systems manage gates and values that direct wastewater to locations where there is sufficient storage space. Sensors are also used to monitor sewer lines for any weakness or damage that may require attention providing time to enable convenient scheduling of maintenance trips and routines.

Smart solutions

Smart solutions for a smart city

Conclusion

- MoUD programme is using the challenge or competition method to select cities for funding.
  Strategy of area-based development.
- Citizen involvement is a key to the success of the Smart Cities Mission. The involvement has to start from beginning to the end.
- States and ULBs will play a key supportive role in the development of smart cities. Smart leadership and vision at this level and ability to act decisively will be important
  . factors determining the success of the Mission.
- Understanding the concepts of retrofitting, redevelopment and greenfield development by the policy makers, implementers and other stakeholders at different levels will require capacity assistance.
- Major investments in time and resources will have to be made during the planning phase prior to participation in the challenge.
- The smart cities Mission requires smart people who actively participate in governance and reforms.

20125A0103

ASCE SVEC Student Chapter

Date: 30.05.2021

Poster Presentation on "Civil Engineering Infrastructure for the Development of Smart Cities"

SMART BUILDINGS INFRASTRUCTURE IN SMART CITIES

D. TEJASWINI

INTRODUCTION

- ✓ Rapid urbanization is among the biggest megatrends transforming the Indian economy. To accommodate this mammoth growth in urban population1, India needs to develop Smart cities and re-engineer existing ones to improve the quality of life for residents.
- ✓ To address the challenges of urbanization, the government of India has launched an ambitious and transformational scheme to develop 100 Smart Cities. Smart cities would be required to provide basic infrastructure that supports quality of life for residents, a clean and sustainable environment, and smart solutions for their citizens.
- ✓ A Smart Building is the one which provides a productive and cost-effective environment through optimization of four basic elements: structure, systems, services and management, and the interrelationship between them.

FEATURES OF SMART BUILDINGS

◆ **SYSTEMS ARE CONNECTED**

The most fundamental feature of a smart building is that the core systems within it are linked. So, water meters, pumps, fire alarms, power, lighting etc are all connected. This is what makes a building "smart" – the ability of the systems within it to talk to one another.

◆ **USES OF SENSORS AND IOT**

Sensors are an integral part of smart buildings and play an important role in collecting data to inform decisions about where to allocate resources.

◆ **AUTOMATION**

Information is gathered and analysed by the systems that have been put in place in a smart building – importantly, this is done constantly and in real time. This ongoing monitoring allows for automated adjustments that can control conditions across an entire building.

◆ **DATA**

Smart buildings generate a large volume of valuable data about their own use, which is something that regular buildings simply don't do.

FUNDAMENTAL ASPECTS OF SMART BUILDINGS

GREEN: The "green" aspect in buildings is well known, and for good reason. The economic and sustainability benefits of green buildings have been proven through extensive academic and applied research.

SAFE: The "safe" aspect in buildings is not equally well researched or illustrated. The value of human life and property is critical and should be given the highest priority in any buildings

PRODUCTIVE : The conversation around productive buildings is still nascent. However, this is the one area that is likely to see the fastest change in relevance and importance, driven by two major megatrends: connectivity and comfort.

ENVIRONMENTAL BENEFITS OF SMART BUILDINGS

◆ An intelligent building starts with an environmentally friendly desigm. It creates a project that is environmentally friendly and energy efficient ties in closely with many of the intelligent attributes.

◆ Smart buildings are designed for long-term sustainability and minimal environmental impact through the selection of recycled and recyclable materials, construction, maintenance and operations procedures.

◆ Providing the ability to integrate building controls, optimize operations, and enterprise level management results in a significant enhancement in energy efficiency,lowering both cost and energy usage compared to non-intelligent projects.

HONEYWELL SMART BUILDINGS SYSTEM

- The Honeywell Smart Building Score has been developed as a universal framework for quick, comprehensive, and easy assessment of any building. It can be administered across countries with minimal adaptation. The framework of the Honeywell Smart Building Score is also flexible and adaptable for future enhancements as applications and solutions for smart buildings Continue to evolve.
- In simple terms, the Honeywelll Smart Buiding Score" Focuses on scoring assets that make buildings green (energy efficiency, reuse of resources, use of clean energy), safe and secure (detection and response to threats, controlling access to the facility, securing lives and assets), and comfortable and productive (illumination, thermal comfort, air quality, connectivity, energy availability).

- Building automation provider Honeywell has created a 'Smart Building Score' in which some 2,000 buildings across India were surveyed and a few got space in the top ranking. Honeywell's survey showed that targeted investment in smart buildings can drive economic and environmental benefits, protect human life, safeguard building assets, and support India's goal to develop 100 Smart Cities.

- Honeywell found that airports and hotels are the smartest buildings in India with an average Smart Building Score of 49 and 41 respectively. Indira Gandhi International Airport in New Delhi was voted the Smartest Building in India, which has consistently improved its commitment by winning this same award for three consecutive years. The IGI Airport also captured the awards for being the Smartest Airport Building, as the Greenest, the Safest, and the Most Productive Building in India.

ADVANTAGES AND DISADVANTAGES OF SMART BUILDINGS

ADVANTAGES OF SMART BUILDINGS

1. Higher level of security and safety
2. Simplified operation for users and administrators
3. Simpler staff tracking
4. Reduced administration costs
5. Smartcards-single card for security and cash transactions
6. Reduced system costs by sharing infrastruct
7. Easier integration into university systems

8nformation can be delivered to all the interested parties in the manner they need Increased mobility-not tied to a specialist workstation 10. Training is minimised, use standard operating environments

DISADVANTAGES OF SMART BUILDINGS

1. Increased complexity of system
2. Very high initial cost
3. Normal building last longer than intelligent building

DIFFERENCE BETWEEN ORDINARY BUILDINGS AND SMART BUILDINGS

◆ SMART BUILDINGS: Intelligent building adjusts the inside functional aspects such as lighting, ventilati on, fire-fighting, air conditioning, etc. automatically with the changes in environmental conditions controlled by computer.

◆ The security system, communication system, etc. are coordinated and automatically controlled by computer work station

◆ ORDINRY BUILDINGS: Ordinary building there will be different room conditions depending on the changes in the environmental conditions.

◆ The security system, communication system, etc. are not coordinated and automatically controlled by computer work station.

Conclusions

The smart building is the one of the most important systems is a building management platform that ensures all disciplines interact optimally.smart infrastructure from siemens intelligence connects smart buildings & industries to adapt nad evolve the way we live & work .

- ✓ Smart buildings contribute to the effective management of urban areas, improving connectivity, sustainability & liveability.
- ✓ The Smart building is clearly the building of the future.
- ✓ The benefits of these buildings include cost savings from reduced energy.water and waste,lower operation and maintenance cost. Tominimize the energy consumption to a greater sclae & to increase the equipments efficiency are the objectives of these buildings.

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ASCE SVEC Student Chapter

Date: 16.04.2021

Poster Presentation on "Civil Engineering Infrastructure for the Development of Smart Cities"

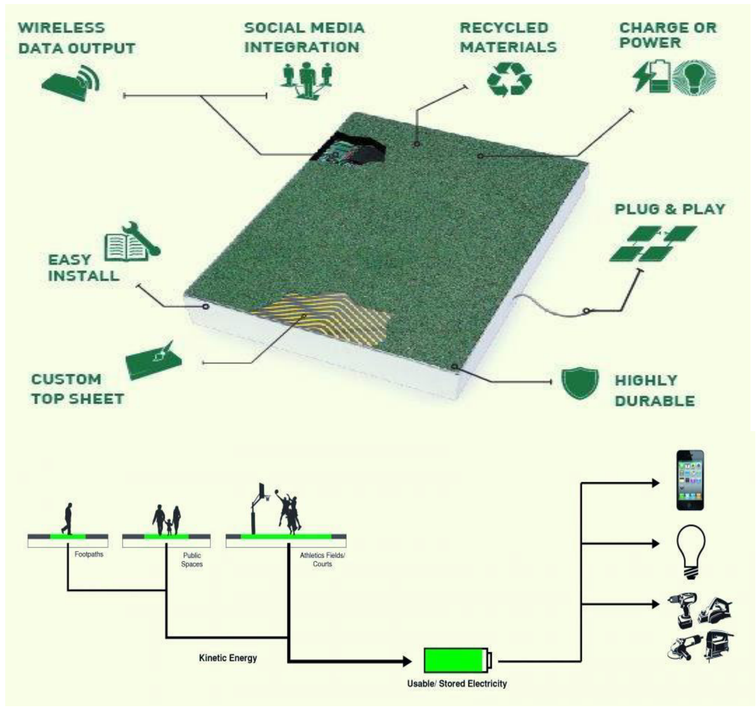
KINETIC FOOTFALL

Kinetic footfall is a sustainable energy source for generating electricity without consuming any natural resources. The purpose of kinetic footfall method is to generate efficient electrical energy using complex properties of materials and movements of humans.

In 2017, Pavegen, a UK-based technology company built a sidewalk in London using this kinetic footfall technology. The concept of kinetic footfall based on the principle of piezoelectricity. When the material is compressed the atoms press together, enough to change the properties of electrons.

Materials:

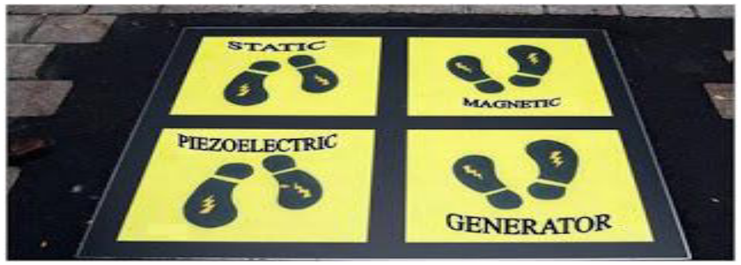
Top surface is made from recycled rubber and stainless steel and base slab is constructed from over 80% recycled materials with concrete.



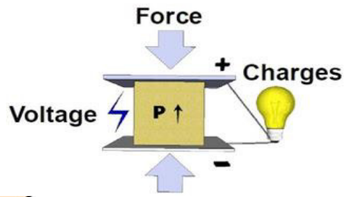
Mechanism:

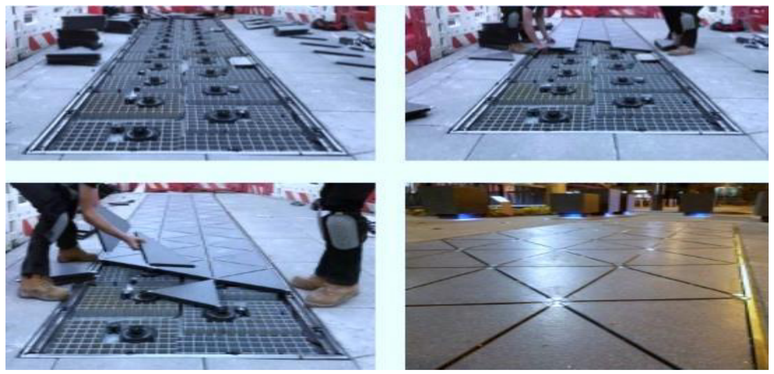
There are four types of floor mechanisms:

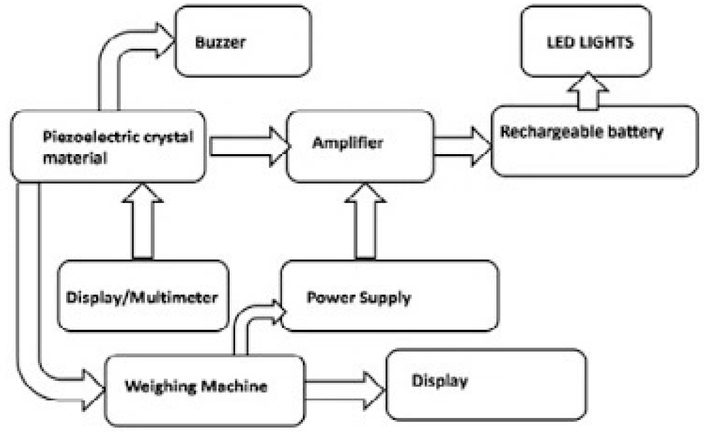
•Piezoelectric effect •Magnetic Transducers •Micro-generators •Static Capacitors



Piezoelectric effect is the commonly-used technology. A piezoelectric element like PZT, PVDF, etc., is used as transducer. It converts the kinetic energy into electrical energy upon stepping on the floor tile. Charges which can be siphoned off.







Advantages:

•These tiles can be used indoors or outdoors in high traffic areas, and generates electricity from pedestrian footfall.
•If we implement this technology, we can supply the power to grids such as pedestrian lighting.
•Tiles are completely Renewable & Eco friendly technology.
•We can reduce approximately 6.817 tons of excessive CO_2 every day emissions by tiles into atmosphere, by using pavegen technology.
•To reduce the global warming caused while using traditional carbon fuels.
•Less maintenance cost.
•It is waterproof and damp proof.

Applications in civil engineering:

•This idea can be implemented in the floors of crowded places as footpaths, railway platforms etc.
•Stairs can be also used for production of energy by mere walking.
•Used for security purposes and in various alarm systems.
•For street lights.
•In bus station.
•In airports.
•In play grounds.

Conclusion:

•Promoting energy awareness is an integral part of this proposal.
•Piezo tiles have been capable for generating 40V.
•They are particularly suitable for implementation in crowded areas.
•Energy generation source must be something easily implemented.
•It is a future energy renewable resource using kinetic energy.

"Showcasing alternative energy sources, such as pedestrian footfall, is just one of many steps we're taking towards supporting a positive, sustainable future for our communities"