PRAGATI ENGINEERING COLLEGE

(Autonomous)

#1-378, ADB Road, Surampalem – 533 437, Near Peddapuram, A.P.
(Approved by AICTE, Permanently Affiliated to JNTUK Kakinada)
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Ph: 08852 – 252233, 252234, 252235 Fax: 08852 – 252232, website: www.pragati.ac.in

DEPARTMENT OF MECHANICAL ENGINEERING

Academic year: 2024-25

Date: 28-02-2025

CIRCULAR

Additive Manufacturing Club of Mechanical Engineering Department in association with Career Guidance Cell is organizing a Seminar to the Mechanical Engineering students on 28th February 2025. The Theme of the Seminar is *"Role of Additive Manufacturing in Real Life"*.

Event	:	Seminar.
Date of the Event	:	28th February 2025.
Venue	:	MF-12.

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1. **HOD-ME.**
2. **Departmental file.**
3. **AM Club In-charge – ME.**
4. **Career Guidance Cell In-charge – ME.**

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INDUSTRY 4.0 CLUBS

ADDITIVE MANUFACTURING CLUB

ORGANISED BY DEPARTMENT OF MECHANICAL ENGINEERING IN ASSOCIATION
WITH
CAREER GUIDANCE CELL

ROLE OF ADDITIVE MANUFACTURING IN REAL LIFE

SPEAKER :
Ms.K.Aravinda
Assistant Professor

FACULTY COORDINATOR
Mr. P. Ram Prasad
Assistant Professor
Mechanical Engineering Department

VENUE: MF-12
DATE: 28th February 2025
TIME: 10:00 AM Onwards

STUDENT COORDINATOR
Mr. M.Yadidya
III Year Mechanical Engineering Department

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DEPARTMENT OF MECHANICAL ENGINEERING

A SEMINAR

ON

"ROLE OF ADDITIVE MANUFACTURING IN REAL LIFE"

A.Y 2024-25 Dt.28 .02.2025

A Seminar on "Role of Additive Manufacturing in Real Life " was conducted by Additive Manufacturing Club, Mechanical Engineering Department in association with Career Guidance Cell. A total of 35 students from II Year Mechanical Engineering students were participated for the event. Participations made to sit in room (MF-12) and all are interested students were allowed. **Ms. K.Aravinda** interacted well with the students.

Additive manufacturing (AM), or 3D printing, plays a significant and evolving role in real-life applications across various industries and daily life scenarios. It enables innovative solutions that weren't possible with traditional manufacturing methods. Here's a breakdown of the key roles it plays in real life:

1. **Personalized Healthcare**
   - Custom **Prosthetics and Implants**: AM allows for the production of prosthetic limbs, dental implants, and orthopedic devices that are tailor-made for an individual's specific needs. These custom devices provide better comfort and function than traditional mass-produced alternatives.
   - **Surgical Planning Models**: 3D printing creates accurate, patient-specific anatomical models, helping surgeons plan and practice complex procedures, leading to improved surgical outcomes and reduced risks.

2. **Consumer Products and Customization**
   - **Personalized Items**: From jewelry to footwear, AM enables consumers to design and print their own personalized products. For example, custom sneakers, bespoke phone cases, and unique accessories are becoming more popular.
   - **Home Decor**: People can print home decor items such as lampshades, wall art, and furniture that match their specific tastes, giving them control over the design process.

3. **Rapid Prototyping and Innovation**

- **Speeding Up Product Development**: AM allows engineers and designers to quickly create prototypes and iterate on product designs. This rapid prototyping process helps companies refine their products faster, leading to quicker time-to-market and more innovative products.
- **Testing and Experimentation**: It facilitates testing of new ideas with low initial investment, enabling small businesses and startups to innovate without the need for expensive molds or large-scale production runs.

4. **Sustainability and Waste Reduction**

- **Minimizing Material Waste**: Unlike traditional manufacturing methods like subtractive manufacturing, which involves cutting away material, AM uses only the material necessary for the object, significantly reducing waste.
- **Recycling and Upcycling**: Many 3D printers use recyclable materials such as plastics, which helps lower the environmental impact. Some companies even recycle old 3D-printed parts to create new objects.

5. **Supply Chain and Manufacturing Efficiency**

- **On-Demand Production**: AM enables the production of parts on-demand, reducing the need for large inventories and long lead times. Companies can print parts only when needed, which is especially useful for replacing broken parts in the field or when dealing with obsolete parts.
- **Decentralized Manufacturing**: Instead of relying on centralized factories, 3D printing allows localized manufacturing, meaning items can be produced closer to the end consumer, reducing transportation costs and increasing supply chain resilience.

6. **Construction and Architecture**

- **Building Custom Structures**: In construction, AM is used to print customized components for buildings, including facades, walls, and even entire houses. 3D printing allows for more efficient use of materials and can reduce construction time and costs.
- **Sustainable Construction**: 3D printing in architecture is also being used to build more sustainable and energy-efficient homes using alternative materials like recycled plastics and concrete.

7. **Space Exploration**

- **Manufacturing in Space**: NASA and other space agencies are exploring AM for manufacturing tools, spare parts, and even entire habitats in space. This would reduce the need to send large amounts of supplies from Earth, making space missions more sustainable and self-sufficient.
- **On-Demand Parts in Space**: Astronauts could use 3D printers to create needed tools or repair equipment in real-time, enhancing mission success and reducing dependency on Earth-based supply chains.

8. **Automotive and Aerospace Industries**

- **Lightweight Components**: AM allows for the production of lightweight, strong parts that are ideal for industries like aerospace and automotive, where reducing weight can improve fuel efficiency and performance.
- **Complex Geometries**: Engineers can design and print parts with complex internal structures that traditional manufacturing methods can't produce. These structures are often lighter and more durable, making them perfect for aerospace components or high-performance automotive parts.

9. **Education and Skill Development**

- **Hands-On Learning**: 3D printing is widely used in schools, universities, and technical programs to engage students in STEM (science, technology, engineering, and mathematics). Students can create their own models and prototypes, which enhances their learning experience and sparks innovation.
- **Skill Building**: As AM becomes more prevalent, it also creates new job opportunities in design, engineering, and 3D printing technology. Many people are learning skills that align with future workforce needs in manufacturing, design, and digital fabrication.

10. **Disaster Relief and Emergency Response**

- **Emergency Aid**: In disaster-stricken areas, 3D printing can be used to produce essential items like medical supplies, shelter components, and tools on demand, speeding up recovery and providing immediate relief.
- **Building in Remote Areas**: 3D printers can create structures and infrastructure in remote or resource-poor areas, providing sustainable solutions in places where traditional building methods are impractical or too expensive.

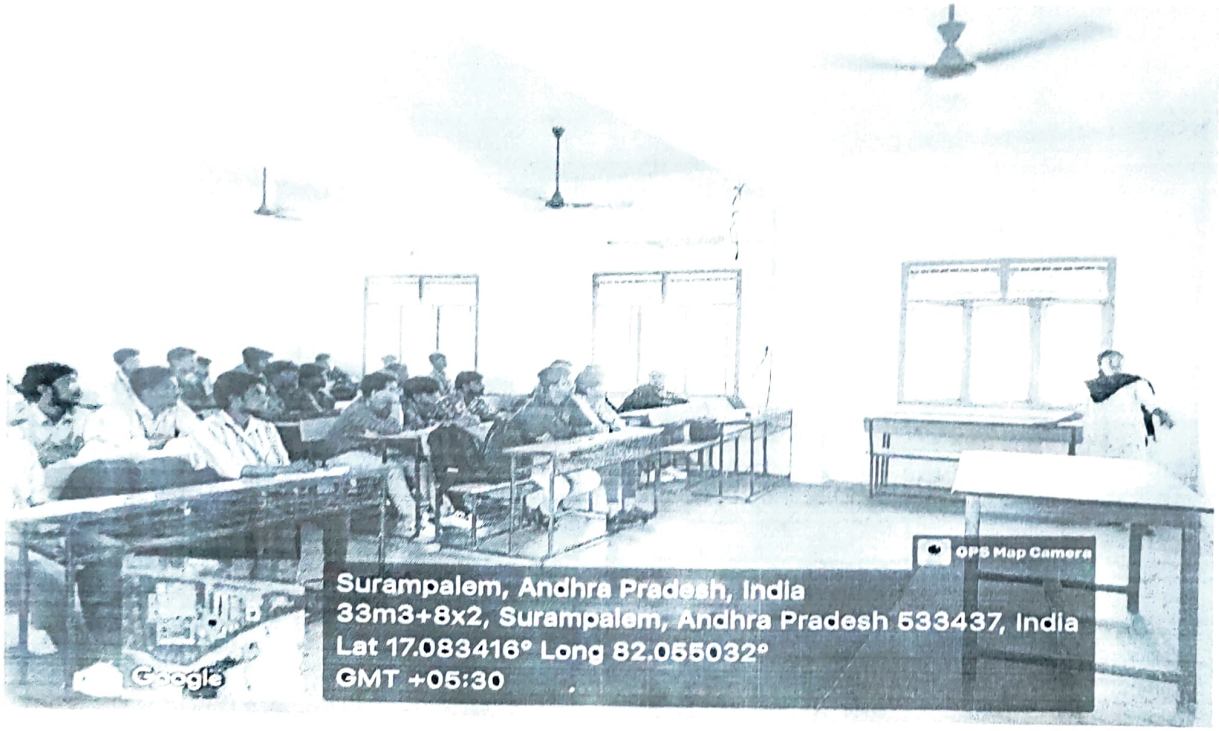
11. **Food Industry**

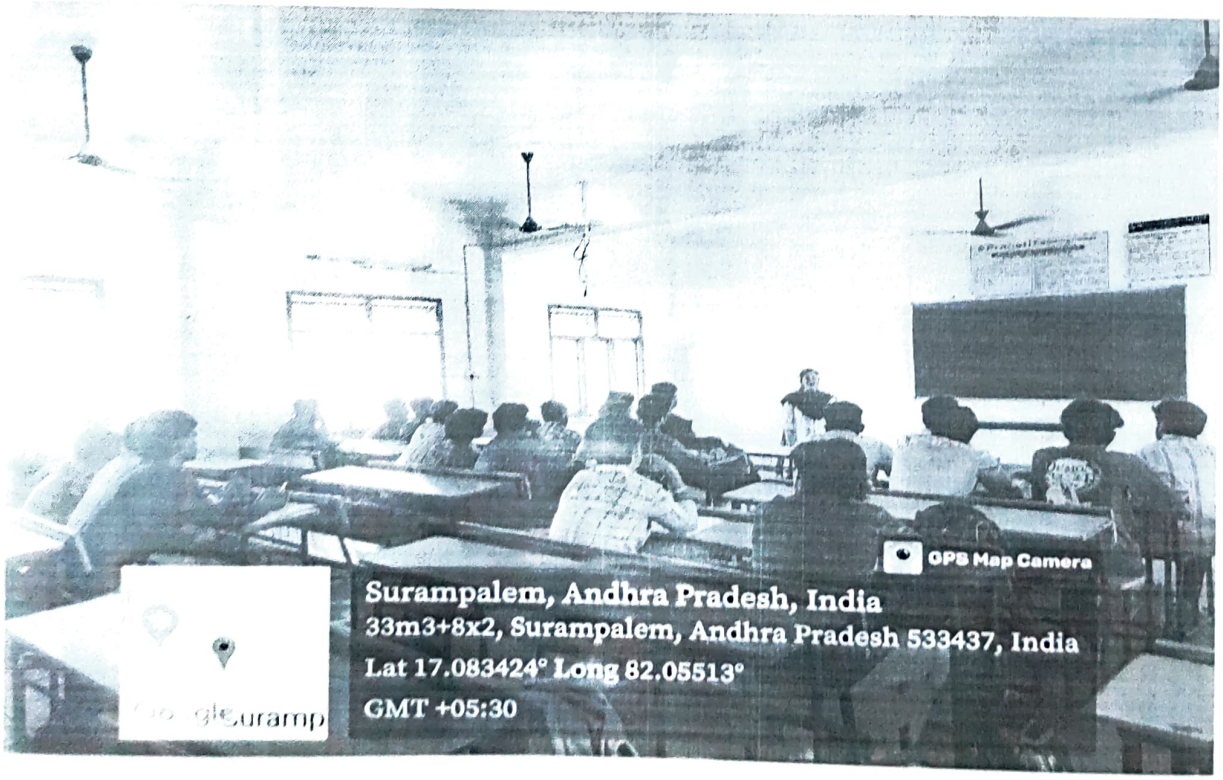
- **Customized Food**: In the food industry, AM is being explored for creating personalized food products. 3D printers can produce complex food designs or customize nutrients to meet specific dietary needs.
- **Food Production Innovation**: Researchers are also working on 3D printing alternative proteins, such as plant-based meat, providing a new way to produce food with less environmental impact.

12. **Art and Culture**

- **Creative Expression**: Artists use 3D printing to create intricate sculptures, artwork, and installations that would be impossible or extremely difficult to produce with traditional methods.
- **Cultural Preservation**: 3D printing is also used for preserving cultural heritage by creating replicas of artifacts, helping to protect them from damage and allowing wider access to cultural treasures.

PICTURES OF THE EVENT:





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DEPARTMENT OF MECHANICAL ENGINEERING

Participants List

Name of the Event: Role of additive manufacturing in real life.

Venue : MF-12

Date : 28/2/2025

S.No	Roll No	Name	Signature
1.	23A31A0344	R. KARTHIK	Karthik
2.	23A31A0348	T. A. Narasimhan	
3	23A31A0341	P. Prasanth	
4	23A31A0343	R. P. Arun Kumar	
5	23A31A0304	R. Renuka Vijaya Durga	R. Renuka
6	23A31A0313	B. Sarteja	
7	23A31A0315	B. Sivasai	
8	23A31A0324	Y. S. S satya Suresh	
9.	24A35A0306	K. parani surya kumar	
10.	24A35A0311	P. J. Neelesh Kumar	
11.	24A35A0312	R. H. Kiss. cha kradhar	
12	24A35A0304	D. MOULI	
13	24A35A0305	K. SATWIK	
14	23A31A0328	K. satya chakra Dhara	
15	24A35A0307	Mh. Bala Bhavani Sankar	

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16	23A31A0332	N. Yaswanth	N. yaswanth
17	23A31A0330	M. Hemanth	
18	23A31A0310	A. Rajesh	A. Rajesh
19	23A31A0316	CH. Santhosh Kumar	CH. Santhosh
20	23A31A0322	G. Kamal Kumar	G. Kamal
21	23A31A0337	P. Vamsi	P. Vamsi
22	24A35A0302	D. Lakshmi Narayana	D. Lakshmi
23	24A35A0313	S. Manikanta	S. Manikanta
24	23A31A0326	K. Kamesh	K. Kamesh
25	24A35A0303	D. Divakar	D. Divakar
26	24A35A0301	A. Deepak.	A. Deepak
27	24A35A0315	S. Chandu	S. Chandu
28	23A31A0319	Ch. Mohan Krishna	Ch. Mohan
29	23A31A0327	K. Sivaji Ganesh	K. Sivaji
30	24A35A0314	S. Sriram.	S. Sriram

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S.No	Roll No	Name	Signature
31	24A35A0308	M. Durga Suresh	M. Suresh
32	23A31A0320	G. Subbamanyam	
33	23A31A0317	CH. V V Satyanarayana.	Ch. VV satya
34	23A31A0309	A. Vasanth Surya	
35	23A31A0339	P. charles stanlin	P. Charles Stanlin

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