PRAGATI ENGINEERING COLLEGE

(AUTONOMOUS)

INDUSTRY 4.0 CLUBS

ADDITIVE MANUFACTURING CLUB

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

"DESIGNING FOR ADDITIVE MANUFACTURING"

SPEAKER :

Mr. B.Bharath Kumar
Assistant Professor

VENUE: MF-12
DATE: 20th May 2024
TIME: 3:00 PM Onwards

FACULTY COORDINATOR

Mr. P. Ram Prasad
Assistant Professor
Mechanical Engineering Department

STUDENT COORDINATOR

Mr. D.Ashish Varma
III Year Mechanical Engineering Department
Contact No. : +91 7095338669

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DEPARTMENT OF MECHANICAL ENGINEERING

Academic year: 2023-24 Date: 04-05-2024

CIRCULAR

Additive Manufacturing Club of Mechanical Engineering Department in association with Career Guidance Cell is organizing a Seminar to the Mechanical Engineering students on 20th May 2024. The Theme of the Seminar is *"Designing for Additive Manufacturing"*.

Event	:	Seminar.
Date of the Event	:	20th May 2024.
Mode	:	Offline.

INCHARGE **HOD-ME**

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

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Participants List

Name of the Event: Designing for Additive Manufacturing

Venue : MF-12

Date : 20-05-2024

S.No	Roll No	Name	Signature
1	20A31A0302	G.V.V.K. Sai Madhuri	G.Sai Madhuri
2	20A31A0303	K. Jyothi	K. Jyothi
3	20A31A0304	M. Priyanka	M. Priyanka
4	20A31A0305	S. Chandana	S. Chandana
5	21A35A0301	P. Hema Priya	P. Hema Priya
6	21A35A0302	P. Lakshmani	P. Lakshmani
7	21A35A0303	P. Mohana	P. Mohana
8	21A35A0304	V. Sravanthi	V. Sravanthi
9	20A31A0317	G. Siva Ram Kumar	G.S.R.K.
10	20A31A0336	N. Naga Surya	N.N. Surya
11	20A31A0307	K. Chandra Lokesh	K.C. Lokesh
12	21A35A0308	P.D.M.C. prasanth	P.D.M.C. prasanth
13	20A31A0306	Y.S.K. Rajkantha	Y.S.K.Raj
14	20A31A0339	N. Charan Kumar	N. Charan
15	20A31A03A2	Y. Krishnarjun	Y. K. Arjun

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1	20A31A03A1	V. Ravi Kiran	V. R. Kiran
2	20A31A0395	SK. Jilani	SK. Jilani
3	20A31A0392	S. Ravindranath Tagore	S R Tagore
4	20A31A0390	B. Surya Prasanth	B Surya Prasanth
5	20A31A0358	B. Ram	B. Ram
6	20A31A0386	P. Ramesh	Ramesh
7	20A31A0366	Ch. Nikith	Ch. Nikith
8	20A31A0360	B. Manohar	B. Manohar
9	20A31A0381	M. Simon Augustine	M. Simon
10	20A31A0379	K. Mahesh Sanjay	K. Mahesh Sanjay
11	20A31A0397	S. Sai Sagar	S. Sai Sagar
12	20A31A0385	P. Murali Gangadhar	P. Murali
13	21A35A0320	M. Hemanth Kumar	M. Hemanth
14	20A31A0361	B. Sri Sai Upendra	B. Sri Sai Upendra
15	21A35A0321	O. Rajesh	Rajesh

Total – 30

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Designing for Additive Manufacturing

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Abstract

Additive manufacturing technologies can now be used to manufacture metallic parts. This breakthrough in manufacturing technology makes possible the fabrication of new shapes and geometrical features. Although the manufacturing feasibility of sample parts with these processes has been the subject of several studies, the breakthrough in manufacturing is yet to be followed by a breakthrough in designing process. In this paper, after reviewing the principle of additive manufacturing of metallic parts, the manufacturing capabilities and constraints of these processes will be examined. A designing methodology will then be suggested and illustrated with the redesign of an example part.

Keywords: Designing process; Designing methodology; Additive manufacturing; Rapid manufacturing; Direct manufacturing

1. Introduction

Additive manufacturing (AM) processes have been commonly used for rapid prototyping purposes during the last 30 years. They consist in building an object "from scratch" or from a semi-finished part acting as substrate. Thanks to many technological improvements, these processes can now be used for rapid manufacturing purposes [1]. This means that it is possible, for example, to create a metallic part from metallic alloy powder by binding these particles in a layer-based fashion or by directly spraying the material onto the part to obtain an end-use part. Many studies focus on improving the technology of these processes [2], on comparing the different additive manufacturing technologies to conventional processes or to one another [3], on trying to assess their environmental impact [4], etc. Few concern the modification that these processes can bring into the designing process. In spite of the designer's (and eco-designers) interest [5], the breakthrough in manufacturing technology is yet to be followed by a breakthrough in design.

In this paper a designing process will be investigated to take into account the specificities of additive manufacturing metallic processes. To identify the characteristics of these processes, we will review the principle of current metallic additive manufacturing. We will then focus on the characteristics of highest importance for the designers. We will, in particular, deal with the manufacturing constraints and capabilities of these processes. We will then propose a four step designing methodology to take advantage of these new manufacturing processes based on the generation of an initial shape, its analysis to define a set of geometrical parameter, the tuning up of these parameters to obtain an optimized shape and the validation of this shape. At the end, we will conclude this study and discuss some prospects on the future of additive manufacturing.

2. Designing for additive manufacturing

To take advantage of additive manufacturing processes, it is necessary to identify their specific manufacturing capabilities as well as their manufacturing constraints that must be respected. These two topics will be addressed before turning to a quick literature review to see how the designing process can be modified by AM technologies.

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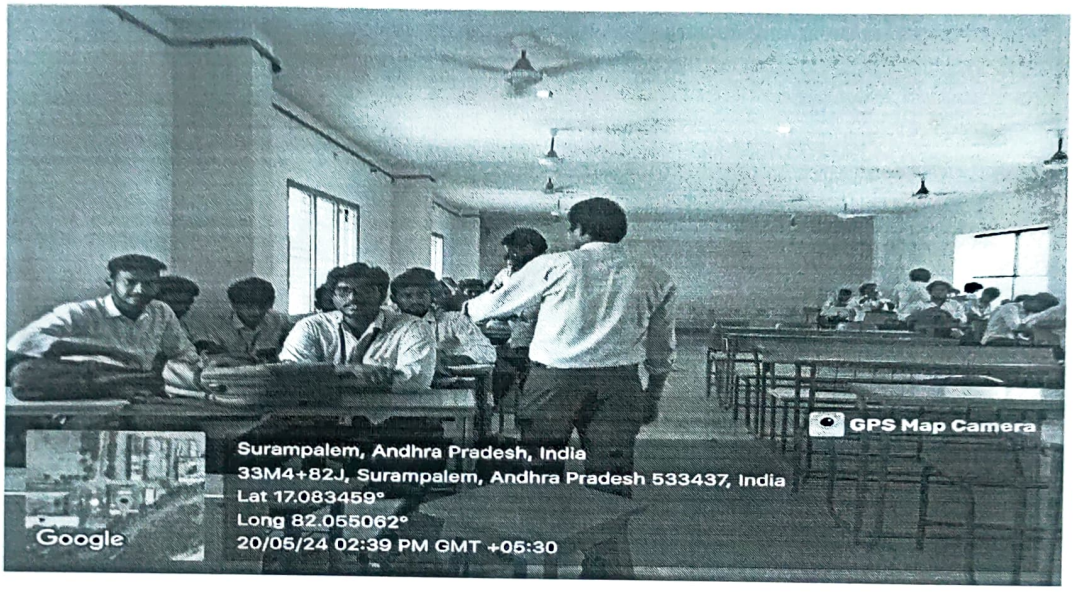

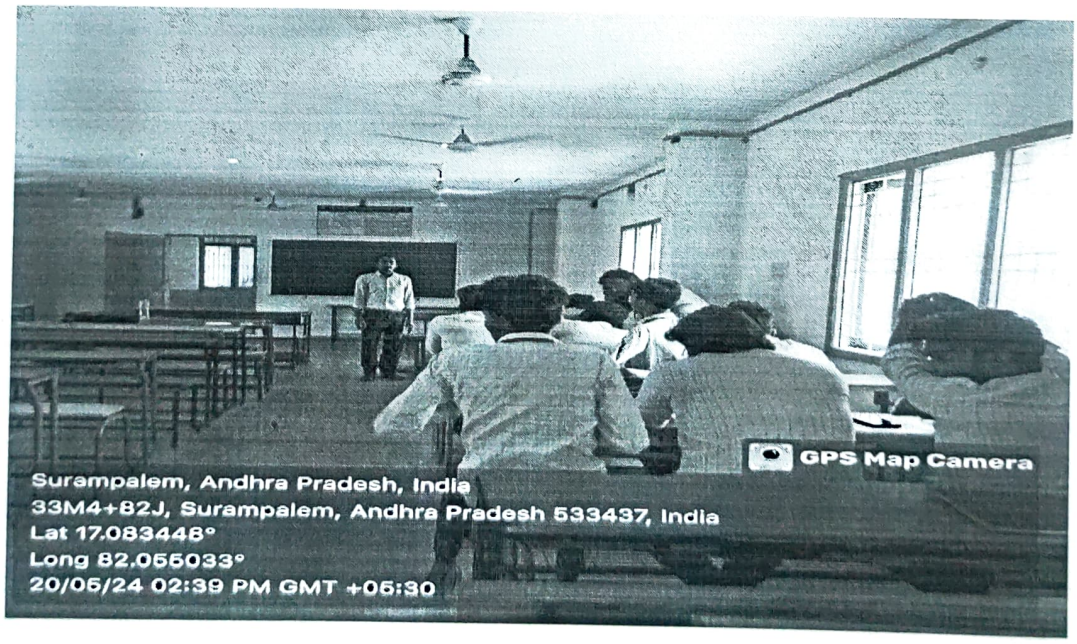

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Additive Manufacturing Club Organized By Department Of Mechanical Engineering In Association With Career Guidance Cell

Topic:	Designing for Additive Manufacturing	Date : 20/05/2024

INSTRUCTION: - Put ☑ mark in the box

Q1	Indicate the rating of the session as per your Opinion				
	1. Poor ☐	2. Average ☐	3. Good ☑	4. Very Good ☐	5. Excellent ☐
Q.2	Please provide us with ideas and suggestions if any				

THANK YOU for your feedback. Happy Learning!

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