



Sandip Institute of Technology and Research Centre

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Department of Mechanical Engineering Academic Year 2024-25

Report on Expert lecturer on “Identifying and Resolving Challenges in Metal 3D printing for Alloys and Composites”

1. Expert Title: Event on “Identifying and Resolving Challenges in Metal 3D Printing for Alloys and Composites”

2. Name of Recourse Person: **Dr. Vijay Mandal**
Assistant Professor, NIT Mizoram, India

3. Event Date: 6th September 2024

4. Event Conduction Duration: 2 Hour

5. Event Venue: Online mode (Google meet)

6. Name of Event Coordinator: Dr. Vikas Kumar & Dr. Chandrmani Yadav

7. Objectives of Activity:

- To explore knowledge in the field of 3D printing and additive manufacturing technology, one of the cutting-edge in the field of engineering
- To identified different challenges and their resolving in 3D-Printing.

8. Outcomes of Activity:

- Students understood the significance of Additive Manufacturing and 3D Printing.
- Students are awared of selecting different materials either Metals/alloy/ceramics, based of their characteristics & uses.

9. Event Details

Department of Mechanical Engineering, SITRC, Nashik has organized an online Expert talk on “Identifying and Resolving Challenges in Metal 3D printing for Alloys and Composites”. Students and Participants from different institute/organization have actively participated. The primary goal of expert talk has explained about significance of 3D-Printing/Additive Manufacturing Technology in industries. Also, participants learnt about the application of additive manufacturing-based products in today’s modern technology era. Such as in the field of aerospace, defence, automobile and medical industries. This talk was organized by Dr. Vikas Kumar and Dr. Chandrmani Yadav, Assistant Professor, Department of Mechanical Engineering.

Total 65 participants have been registered and participated in this expert talk. The certificate of participation has been provided to all participants.

Event Photos:

Additive Manufacturing

- Direct energy deposition (DED)
 - Applications: Repair of all kind of turbine parts
 - Handling is difficult at very high speed.
 - Low catching efficiency.
- Electron beam melting (EBM)
 - Advantages:
 - Design freedom: SLM can make essential any geometry at low as well as high scanning speed.
 - Saves material: Due to near net shape creates less waste than machining
 - No tooling: SLM can make a parts from start to finish with no other tooling required
 - Versatility: Easy to change deign complexity
- Powder bed fusion (PBF)
 - Selective laser melting (SLM)
 - Challenges:
 - Porosity: Keyhole, balling and fusion
 - Defects and wettability
 - Surface finish
 - High cost

Source: Karim et al
Source: additivemanufacturingindia.blog

Photo: - Resource person has explained the classification of Additive Manufacturing

Direct Energy Deposition (DED)

नाशिक, Mahiravani Trayambakeshwar Road, India
 Sandip Institute of Technology and Research Centre Nashik Maharashtra
 Lat 19.964374°
 Long 73.668366°
 06/09/24 01:26 PM GMT +05:30

Photo: Resource person has explained the Direct Energy Deposition

[Signature]
[Signature]
Dr. Vikas Kumar & Dr. Chandrmani Yadav
 Event Coordinator

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HOD

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Principal
SITRC

