

VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University)
AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

CIRCULAR

Ref No: 25-26/Odd/Mech/FDP 03

Date: 13.08.2025

The Department of Mechanical Engineering is organising One Week FDP on “Industry 5.0: Generative Design and Additive Manufacturing for Lightweight Structural Components”. All the faculty and research scholar are requested to participate for the FDP. The invitation is herewith attached.




HOD

Circulated to:	1. All the faculty members 2. All the Research Scholar
Copy to	1. Principal Office 2. Department Notice Board

Department of Mechanical Engineering
Cordially Invite you all to
AICTE – ATAL Sponsored a
One Week FDP on
**“Industry 5.0: Generative Design
& Additive Manufacturing for
Lightweight Structural Components”**



 **18th August - 23rd August 2025**

 **6.00pm – 9.30pm**

 **Mode : Online**

Registration

No Registration Fee

Scan to Register



About AVIT

Aarupadai Veedu Institute of Technology (AVIT) is a prestigious multidisciplinary institution located in Chennai. AVIT is Committed towards active implementation of project-based learning and innovative curriculum design as part of its educational approach. AVIT adapts Choice Based Credit System (CBCS) pedagogy that personalizes the learning experience for each student.

About Department

The department offers UG and PG programmes and hosts the 'Association of Mechanical Engineers of AVIT'. Collaborating with professional bodies like ENFUSE, SAE Collegiate Club, and NIQR, it organizes seminars, workshops, FDPs, symposia, conferences, industrial visits, and training programmes to enhance faculty and student expertise. Through Centres of Excellence, including the Alternative Fuel Testing Centre and BOSCH Automotive Research Centre, the department actively undertakes research and consultancy projects, fostering academic growth and industry engagement.

About FDP

The AICTE-ATAL sponsored One-Week Faculty Development Programme (FDP) on "Industry 5.0: Generative Design and Additive Manufacturing for Lightweight Structural Components", organized by the Department of Mechanical Engineering, AVIT, will be held from 18th to 23rd August 2025. The FDP aims to provide participants with a comprehensive understanding of the transition from Industry 4.0 to 5.0, focusing on human-machine collaboration, generative design principles, additive manufacturing techniques, and lightweight engineering. Renowned national and international experts from institutions such as NITs, IIT (BHU), SSN, and Teesside University (UK) will deliver expert sessions, along with practical demonstrations and industry insights to enhance teaching, research, and innovation in emerging manufacturing technologies.

Chief Patron	Dr. A. S. Ganesan , Chancellor, VMRF-DU Dr. Anuradha Ganesan , Vice President, VMRF-DU
Chair Person	Dr. Janet , Principal, AVIT.
Coordinator	Dr. M. Prabhakar , Professor & Head, Mech, AVIT
Co-Coordinator	Dr. S. Prakash , Associate Professor/Mech, AVIT

Organizing Committee

Dr. D. Bubesh Kumar Professor /Mech, AVIT	Dr. G. Antony Casmir Assistant Professor Gr II /Mech, AVIT
Dr. S. Sangeetha Professor /Mech, AVIT	Dr. P. Kumaran Assistant Professor Gr II /Mech, AVIT
Dr. K. Surendra Babu Professor /Mech, AVIT	Mr. K. Vijayakumar Assistant Professor Gr II /Mech, AVIT
Dr. M. Saravana Kumar Associate Professor /Mech, AVIT	Mr. S. Sathya Raj Assistant Professor Gr II /Mech, AVIT
Mr. C. Thiagarajan Associate Professor /Mech, AVIT	Mr. S. Kalyana Kumar Assistant Professor Gr II /Mech, AVIT
Mr. J. Senthil Associate Professor /Mech, AVIT	Mr. B. Selva Babu Assistant Professor Gr II /Mech, AVIT
Mr. S. Ashok Kumar Assistant Professor Gr II /Mech, AVIT	Mr. A. Imthiyas Assistant Professor Gr II /Mech, AVIT
Dr. R. Mahesh Assistant Professor Gr II /Mech, AVIT	Mr. M. Saravanan Assistant Professor Gr II /Mech, AVIT

PROGRAMME AGENDA

Time	Speaker	Topic
18th August 2025		
6:30PM to 8:00PM	 Dr. M. Joseph Davidson Professor & NIT, Warangal	Overview of Industry 4.0 to Industry 5.0: The Rise of Human–Machine Collaboration
8:00PM to 9:30PM	 Dr. N. Siva Shanmugam Professor, NIT Trichy	Comparative Analysis of 3D Printing Techniques for Engineering Applications
19th August 2025		
6:00PM to 7:30PM	 Dr. G. M. Karthik IIT (BHU) Varanasi, Uttar Pradesh	Characterization and Testing of Metal Additive Parts
7:30PM to 9:00PM	 Dr. A. Baskar Technical Consultant & Butterfly Gandhimathi Appliances Ltd	Synergy Between Design Algorithms & Manufacturing Processes
20th August 2025		
6:00PM to 7:30PM	 Dr. J. Arackal Narayanan School of Computing, Engineering & Digital Technologies Teesside University, UK	Principles of Design for Additive Manufacturing (DfAM)
7:30PM to 9:00PM	 Dr. A. K. Lakshminarayanan Associate Professor Sri Sivasubramaniya Nadar College of Engineering	Overview of Additive Manufacturing: Fundamentals and Evolution
21st August 2025		
6:00PM to 7:30PM	 Dr. A. Rajesh Kannan Incheon National University, South Korea	Case Studies in Lightweight Engineering and Product Innovation
7:30PM to 9:00PM	 Mr. Altaf Hussain Khanday Training & Development Consultant ICT Academy	Practical Session: Generative Workflow using Fusion 360

PROGRAMME AGENDA

Time	Speaker	Topic
22nd August 2025		
6:00PM to 7:30PM	 Mr. Balasubramanyam Kavili General Manager M/s Premier Cutting tools	Environmental and Economic Considerations in Lightweight Design
7:30PM to 9:00PM	 Dr. S. Prakash Associate Professor Aarupadai veedu Institute of Technology	Parametric Design and Topology Optimization Methods
23rd August 2025		
2:00PM to 3:30PM	 Dr. L. Poovazhagan Professor, SSN college of engineering	Materials Selection for Additive Manufacturing of Lightweight Structures
3:30PM to 5:00PM	 Dr. A. K. Lakshminarayanan Associate Professor Sri Sivasubramaniya Nadar College of Engineering	Live Demo: 3D Printing Workflow & Post-Processing Insights
5:00PM to 7:30PM	 Mr. R. Praveen Manager Incubation and Operation Bangalore Bio Innovation Centre	Project-Based Presentations and Industry Expert Feedback Panel

Contact Details

Dr. M. Prabhakar

Professor & Head – Mechanical Engineering
 FDP Coordinator
 Aarupadai Veedu Institute of Technology (AVIT)
 Vinayaka Mission's Research Foundation
 (Deemed to be University)



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AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

Ref: 2025-2026/Odd /Mech/FDP 03

Date: 25.08.2025

From

Dr S Prakash
Associate Professor
Mechanical Engineering
Aarupadai Veedu Institute of Technology
Paiyanoor-603 104

To

The Principal,
Aarupadai Veedu Institute of Technology
Paiyanoor-603 104

Respected Sir,

Sub: Submission of Mechanical Engineering Department Event-Report- Reg.

The Department of Mechanical Engineering has organized – **One Week FDP on “Industry 5.0: Generative Design and Additive Manufacturing for Lightweight Structural Components”** “on **18th to 23rd August 2025**. The report of the programme is herewith attached for your kind perusal.

Thanking you,

With regards,



Event Coordinator



HOD



DEPARTMENT OF MECHANICAL ENGINEERING

Faculty Development Program on Industry 5.0: Generative Design and Additive Manufacturing for Lightweight Structural Components-18th to 23rd August 2025

Inauguration of the Faculty Development Programme

The AICTE-sponsored one-week Faculty Development Programme (FDP) on “Industry 5.0, Generative Design and Additive Manufacturing for Lightweight Structural Components” was formally inaugurated by Mr. Prabhakar M, Mr. Senthil J, Dr. Sangeetha and the Principal, in the presence of 138 participants. The coordinators introduced the objectives, structure and distinguished speakers of the FDP, setting the tone for the sessions ahead.

Chief Guest Address

The Chief Guest of the programme, Dr. Ganesh Shankaran, General Manager, Ford Motor Company, delivered the inaugural address. In his talk, he highlighted the importance of industry-academia collaboration, urging faculty members to actively engage in practical exposure and collaborative research projects. He also assured his support in facilitating industry visits and problem-based learning initiatives to strengthen academic-industry partnerships.

The screenshot displays a virtual meeting interface. The main window shows a presentation slide titled "Cordially invites you to the Inauguration of AICTE-ATAL Sponsored One-Week Faculty Development Programme (FDP) on 'Industry 5.0: Generative Design & Additive Manufacturing for Lightweight Structural Components'". The slide features a photo of Dr. Ganesh Sankaran, General Manager, Product Development Vehicle Programs, Ford Global Technology & Business Centre, Chennai. It also mentions the event is organized by the Department of Mechanical Engineering, AVIT, on 18 August 2025, from 6:00PM to 8:30PM IST, in an online mode. Logos for AVIT, Vinayaka Mission's Research Foundation, NAAC, and AICTE are visible. On the right side, there are three video feeds of participants: Senthil J, Ganesh Sankaran, and Prabhakar M. At the bottom right, there are icons for 'DU' and '+52'.

Technical Session - 1

Title: Overview of Industry 4.0 to Industry 5.0: The Rise of Human–Machine Collaboration 18.08.2025 6:30PM to 8:00PM

The first technical session was delivered by Dr. M. Joseph Davidson, who presented a comprehensive overview on “*The Evolution from Industry 1.0 to Industry 5.0*”. He elaborated on the technological advancements, societal impacts and the paradigm shift towards human-centric, sustainable and resilient manufacturing systems that define Industry 5.0.

During the interactive session, participants raised a question on the *role of mechanical engineers in Industry 5.0*. Dr. Davidson responded by emphasising that mechanical engineers must integrate their core knowledge with emerging technologies such as AI, ML and IoT to contribute to advanced manufacturing and predictive maintenance in the Industry 5.0 era.



Technical Session 2

Title: Comparative Analysis of 3D Printing Techniques for Engineering Applications 18.08.2025 8:00PM to 9:30PM

Dr. N. Siva Shanmugam delivered the second technical session on “*Comparative Analysis of 3D Printing and Additive Manufacturing*”. The session focused on the distinctions between 3D printing, additive manufacturing and conventional manufacturing methods, with emphasis on their applications, advantages and limitations.

He further provided an in-depth comparison of Wire Arc Additive Manufacturing (WAAM) and powder-based technologies, covering technical processes, material considerations, cost implications and industrial suitability with practical examples.

The session also addressed key technical concepts including the buy-to-fly ratio, residual stress management and process flow in additive manufacturing, offering practical insights and quantitative examples relevant to industry adoption.

*Dr. N. Siva Shanmugam, Department of Mechanical Engineering
AVIT, Chennai*

Comparative Analysis of 3D Printing Techniques for Engineering Applications

Dr. N. Siva Shanmugam
Professor
Department of Mechanical Engineering
National Institute of Technology
Tiruchirappalli – 15
Email: nsiva@nitt.edu
Mobile: 9443649278



National Institute of Technology, Trichy



Technical Session 3

Title: Characterization and Testing of Metal Additive Parts

19.08.2025 6:00PM to 7:30PM

Dr. Manogna Karthik provided an overview of the evolution of additive manufacturing terminology, explaining the transition from rapid prototyping to the current standard term and highlighted the importance of consistent terminology for research and industry communication. He detailed the various metal additive manufacturing processes, the forms of raw materials used and the significance of powder characteristics for successful part fabrication. He explained the unique microstructural features of additively manufactured metals, including melt pool formation, grain growth and anisotropy and described how these influence mechanical properties and testing protocols. He also described advanced techniques for characterizing and testing additively manufactured metals, including EBSD, EDS, interrupted testing, in situ diffraction and digital image correlation and explained their roles in understanding material behavior. He addressed participant questions on porosity effects, gaps between academic research and industry needs, supersaturation, powder characteristics and measurement techniques for internal structures and orientations.



AICTE-ATL Sponsored Faculty Development Program
Industry 5.0: Generative Design and Additive Manufacturing for Lightweight Structural Components
18-23 August 2025

Characterization and Testing of Metal Additive Parts

Rapid Prototyping – Rapid Manufacturing – Solid Freeform Fabrication –
Rapid Tooling – 3D Printing – Additive Manufacturing

Dr. G.M. Karthik
Assistant Professor
IIT (BHU) Varanasi

19.08.25





Technical Session 4

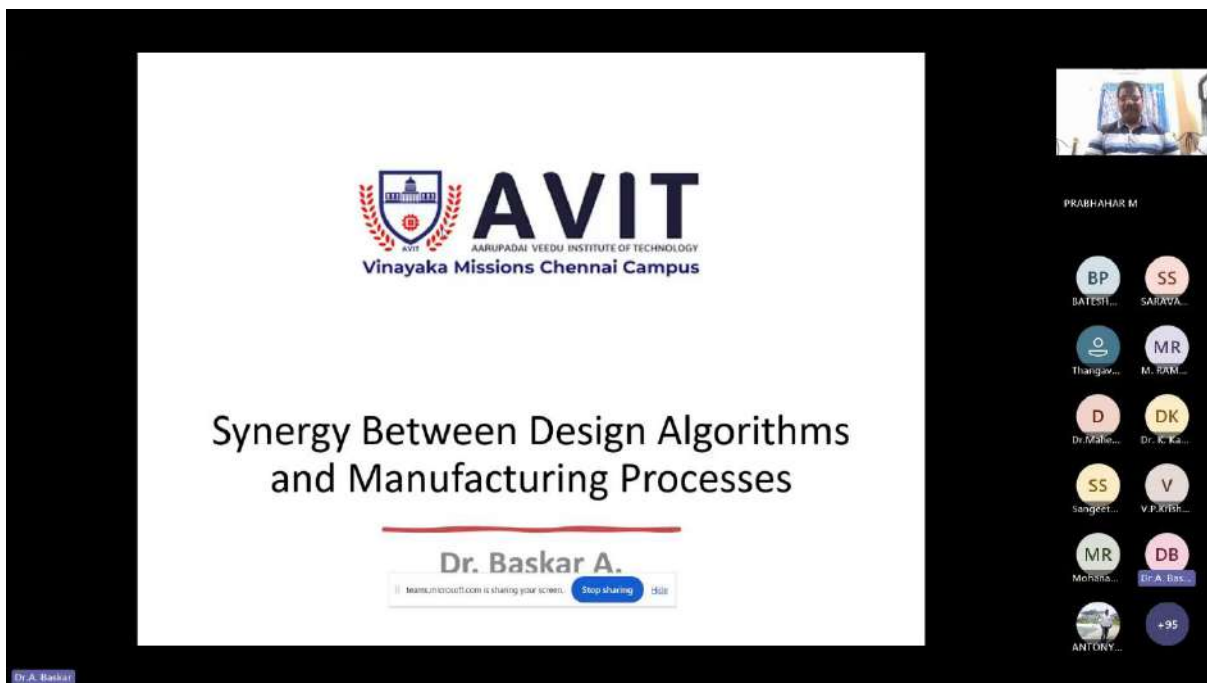
Title: Synergy Between Design Algorithms and Manufacturing Processes

19.08.2025 7:30PM to 9:00PM

Dr. Bhaskar delivered the third technical session on the “Synergy Between Design Algorithms and Manufacturing Processes.” The session discussed the definitions, impacts and importance of integrating design algorithms with manufacturing processes to enhance efficiency and productivity. He provided an in-depth overview of optimization techniques such as Design of Experiments (DOE), Response Surface Methodology (RSM), Taguchi methods and evolutionary algorithms, highlighting their applications in machining parameter optimization and improved manufacturing outcomes.

A case study on the optimization of machining parameters in CNC turning of Inconel 718 alloy, based on Sujan et al. (2023), was presented. The study demonstrated the use of multi-objective algorithms, detailing the experimental setup, objective functions and results.

The session further explored the integration of emerging technologies including artificial intelligence, machine learning, IoT and digital twins in manufacturing, emphasizing their roles in automation, optimization and future industrial trends.



Technical Session 5

Title: Principles of Design for Additive Manufacturing (DfAM)

20.08.2025 6:00PM to 7:30PM

Dr. Jinu Arakal Narayanan was formally introduced by Prabhar M, who highlighted his expertise in additive manufacturing and advanced materials, while Sangeetha welcomed the participants and set the stage for the technical session on design for additive manufacturing.

In his presentation, Dr. Jinu Arakal Narayanan explained the fundamentals of additive manufacturing, contrasting it with conventional methods and discussed its advantages such as design freedom, material efficiency and mass customisation, with active engagement from the participants. He then provided detailed guidelines and best practices for design for additive manufacturing (DfAM), covering tolerancing, part orientation, support structures, hole and wall thickness and material considerations.

The session also explored the integration of generative design and topology optimisation with additive manufacturing to produce lightweight and structurally sound components, demonstrating the use of advanced CAD tools and lattice structures. Several research case studies were presented, including the development of heat exchangers, functionally graded materials, surface quality

improvement and repair applications, which illustrated both the benefits and challenges of the technology.

The screenshot shows a Zoom meeting interface. At the top left is the Teesside University logo. In the center, the title "Principles of Design for Additive Manufacturing" is displayed in large yellow letters. Below the title, the presenter's details are listed: "Dr Jinoop Arackal Narayanan (PhD, FIMMM, CEng, FHEA)", "Senior Lecturer in Mechanical Engineering", "School of Computing, Engineering & Digital Technologies", "Teesside University, UK & Adjunct Professor at Sathyabama University". To the right of the title is a small logo for "LAMMP" (Laboratory for Advanced Materials Manufacturing Processes). On the far right, there is a vertical list of participants' names and profile pictures, including "PRABHAKAR M", "Arackal Narayanan, Jinoop", "3S", "SS", "3", "KM", "F", and "feb". At the top right, the text "AMBITION DELIVERED TODAY" is visible.

Technical Session 6

Title: Overview of Additive Manufacturing: Fundamentals and Evolution

20.08.2025 7:30PM to 9:00PM

Lakshminarayanan delivered a comprehensive session on additive manufacturing and 3D printing, beginning with an overview of their evolution, fundamental differences from traditional manufacturing and the wide range of processes and applications, while also referring to his own research and institutional facilities. He highlighted advanced research activities at his centre, including DRDO-funded projects, the development of functionally graded materials, work on multi-material and 4D printing and the use of advanced characterisation techniques alongside AI and machine learning for process monitoring and defect detection. The session also showcased the diverse applications of additive manufacturing across industries such as medical, dental, aerospace, automotive, construction, jewellery and consumer products, underlining the versatility and growing impact of the technology.

In the technical interaction, Lakshminarayanan addressed participant questions on multi-material and 4D printing, the role of AI/ML in additive manufacturing.

The screenshot shows a Zoom meeting interface. The main title is "3D printing -From Chocolate Delights to Concrete Heights". Below the title, there is a collage of images showing various 3D printed objects, including a chocolate mold, a concrete structure, and a 3D printed rose. To the right of the collage, the presenter's details are listed: "Dr. A.K.Lakshminarayanan, M.E, Ph.D", "ESAB Chair Faculty in Welding Technologies, Head, SSN-ESAB Centre of Excellence In Sustainable Welding and Innovative Fabrication Technologies (SWIFT), Department of Mechanical Engineering". At the bottom right, there is a logo for "SSN". On the far right, there is a vertical list of participants' names and profile pictures, including "PRABHAKAR M", "SENTHIL J", "L", "F", "AS", "SS", "SM", and "+110". At the top right, the text "AMBITION DELIVERED TODAY" is visible.

Technical Session 7

Title: Case Studies in Lightweight Engineering and Product Innovation

21.08.2025 6:00PM to 7:30PM

Dr. Rajesh Kannan delivered a technical session on “Lightweight Engineering and Additive Manufacturing”, introduced by Prabhakar M and Sangeetha. He began with an overview of lightweight engineering, emphasizing its importance in reducing weight for enhanced performance and efficiency and highlighted the transformative role of additive manufacturing in this domain.

The session included detailed case studies from aerospace, automotive, biomedical and marine sectors, showcasing significant weight reduction, performance improvements and innovative design solutions enabled through additive manufacturing.

He further discussed advanced design and simulation methodologies such as cognitive augmented design, simulation-driven design, reverse engineering and topology optimization, underlining their role in achieving high-performance lightweight components.

In addition, Dr. Rajesh Kannan elaborated on advanced materials, composite and multi-material structures and processes such as hydroforming, stamping dies and welding-based additive manufacturing, highlighting their application in producing lightweight and high-strength structures.



The screenshot shows a Zoom meeting interface. On the left, a presentation slide titled "Case Studies in Lightweight Engineering and Product Innovation" is displayed. The slide features the Incheon National University logo, the ATAL logo, and four images illustrating various manufacturing processes. Below the images, the text identifies Dr. A. Rajesh Kannan as a Post-doctoral Research Associate at the Advanced Metallic Materials & Characterisation Lab, Department of Mechanical Engineering, Incheon National University, Incheon, South Korea. His email is rajeshkannan@inu.ac.kr and his phone number is +91-9894948844. On the right side of the Zoom window, a vertical list of participants is visible, including Prabhakar M, Sangeetha S, and several other users represented by circular icons with initials.

Technical Session 8

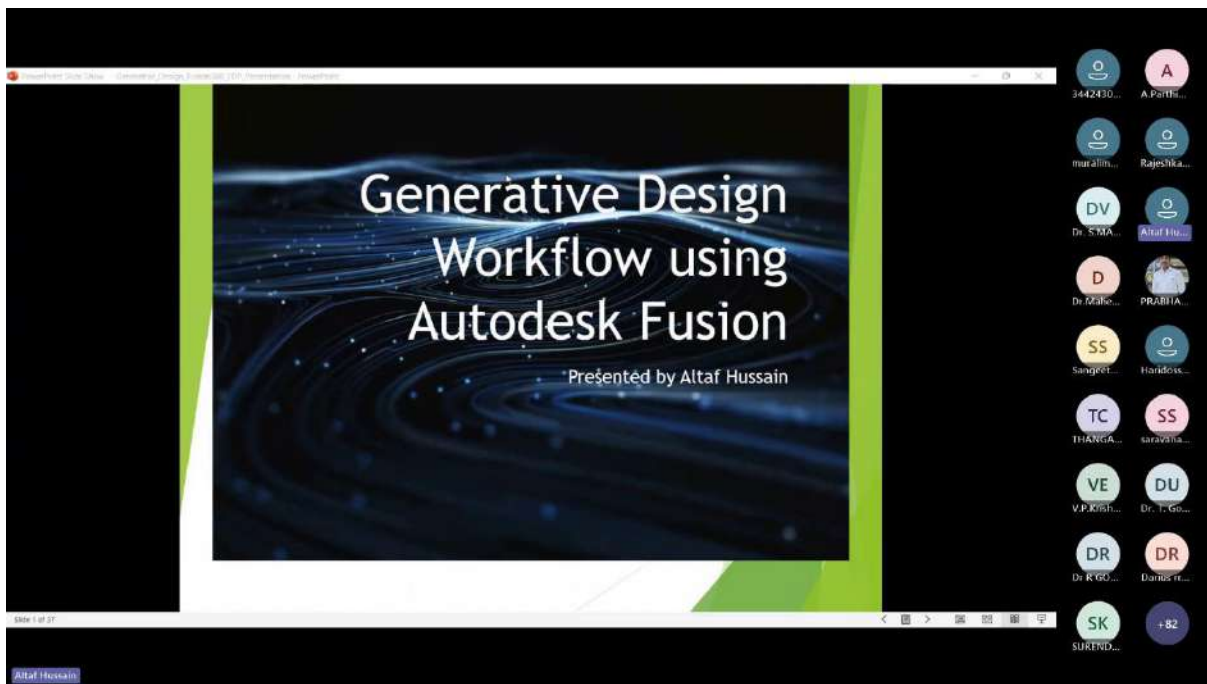
Title: Practical Session: Generative Workflow using Fusion 360

21.08.2025 7:30PM to 9:00PM

Mr. Altaf Hussain delivered a comprehensive session on “Generative Design Workflow in Fusion 360”. The session began with an overview of the evolution from traditional CAD to AI-driven design, highlighting the integration of design, manufacturing and simulation within Autodesk Fusion 360. Practical demonstrations were provided to illustrate the workflow.

He further conducted a step-by-step demonstration of shape optimization and generative design, guiding participants through defining constraints, applying loads, selecting materials and interpreting multiple optimized outcomes.

The session also included a comparison between generative design and topology optimization, where Altaf explained the differences in workflow, advantages and current levels of industry adoption. Both approaches were demonstrated within Fusion 360 to enhance participant understanding.

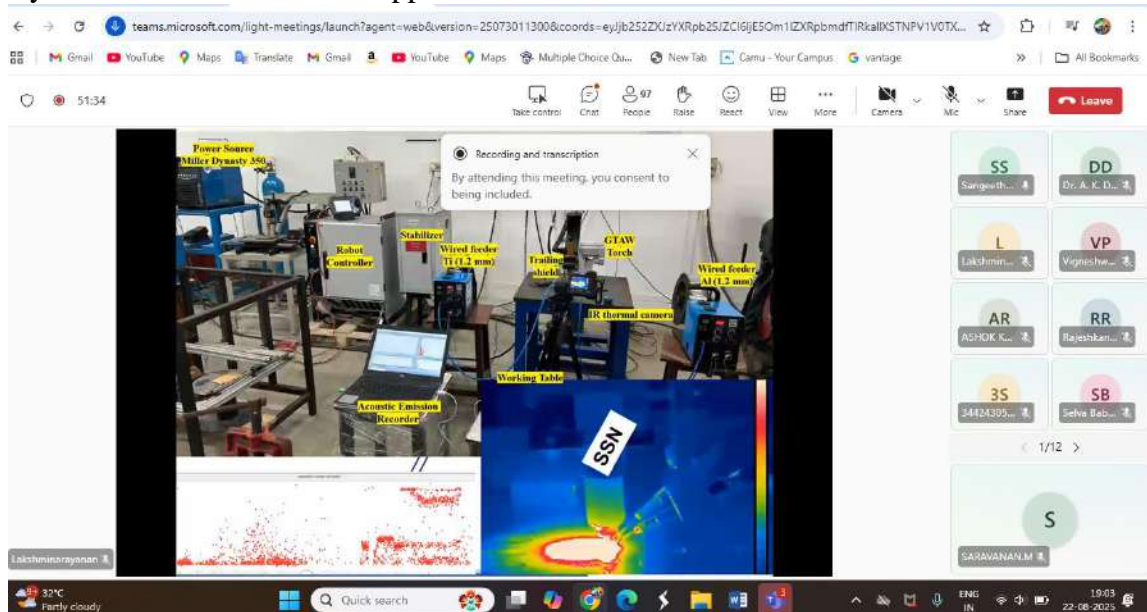


Technical Session 9

Title: Live Demo: 3D Printing Workflow and Post-Processing Insights

22.08.2025 6:00PM to 7:30PM

Dr. Lakshminarayanan delivered a detailed session on “Metal Additive Manufacturing Methods”. He began with a comprehensive overview of powder bed fusion, direct energy deposition and wire arc additive manufacturing (WAAM), explaining their process principles, advantages, material compatibility and application scenarios. He then provided an in-depth discussion on WAAM, covering hardware setups, process parameters, deposition rates and highlighted the integration of robotics and CNC systems for improved control and productivity. The session also introduced solid-state additive manufacturing techniques such as friction stir additive manufacturing and sheet lamination, with emphasis on their ability to reduce metallurgical defects and enhance mechanical properties. In response to audience queries, Dr. Lakshminarayanan elaborated on the production of composite materials using additive manufacturing, including hybrid layer-by-layer deposition and in situ alloy formation, along with approaches for reusing waste materials. He concluded the session by outlining the available mechanical testing facilities, collaboration opportunities and the procedures for accessing advanced testing equipment, while addressing participant questions on property evaluation and research support.



Technical Session 10

Title: Parametric Design and Topology Optimization Methods

22.08.2025 7:30PM to 9:00PM

Dr. S. Prakash conducted a comprehensive session on “Parametric Design and Topology Optimization” for the Atal FDP participants. He introduced the fundamentals of parametric design and topology optimization, emphasizing real-world applications and recent research in both mechanical engineering and biomedical fields.

He demonstrated the use of Design Expert software for implementing Response Surface Methodology (RSM), guiding participants through experiment setup, data analysis and result interpretation, using a journal paper on lightweight materials as a practical case study.

The session also explored the application of topology optimization in biomedical implants, particularly for bone and dental applications. Dr. Prakash discussed challenges in material selection, design complexities and the integration of topology optimization with additive manufacturing technologies to improve performance and functionality.

Dr S Prakash, B.E., M.E., MISTE., Ph.D.
Associate Professor
Department of Mechanical Engineering
Aarupadai Veedu Institute of Technology (AVIT),
Vinayaka Mission's Research Foundation
(Deemed to be University)

Parametric Design and Topology Optimization Methods

AVIT VINAYAKA MISSION'S RESEARCH FOUNDATION AACSB AMBA ISO 9001

Technical Session 11

Title: Materials Selection for Additive Manufacturing of Lightweight Structures

23.08.2025 2:00PM to 3:30PM

Dr. Poovazhagan delivered an in-depth session on “Lightweight Structural Materials and Additive Manufacturing” with active contributions from all participants. He began with an overview of lightweight structural materials, emphasizing their key properties, applications and the significance of density in engineering design.

He explained various material selection methods for lightweight applications, including the Ashby chart, the Weighted Property Index (WPI) method and modern approaches leveraging software tools and machine learning. The session was interactive, with participants engaging in discussions on practical applications.

Dr. Poovazhagan further highlighted the integration of additive manufacturing with lightweight structural materials, discussing compatible materials, selection processes and the benefits of additive manufacturing in terms of design freedom and material efficiency.

AICTE-ATAL SPONSORED FACULTY DEVELOPMENT PROGRAMME

INDUSTRY 5.0: GENERATIVE DESIGN AND ADDITIVE MANUFACTURING FOR LIGHTWEIGHT STRUCTURAL COMPONENTS

ORGANIZED BY: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY (AVIT), TAMILNADU.

Topic: Materials Selection for Additive Manufacturing of Lightweight Structures.

Dr.L.POOVAZHAGAN, M.E, Ph.D
Associate Professor
Department of Mechanical Engineering
Sri Sivasubramaniya Nadar (SSN) College of Engineering
Thiruporur, Chennai - 603 110

Participants visible on the right: Poovalhagan L, Sangotha S, SENTHIL J, PRABHA...

Technical Session 12

Title: Environmental and Economic Considerations in Lightweight Design

23.08.2025 3:30PM to 5:00PM

Mr. Balasubramanyam Kavili emphasized that the environment exists not only for humans but for all living organisms, with ecosystems classified as natural (deserts, oceans, forests, lakes, rivers, etc.) and artificial (aquariums, crop fields, gardens, parks, zoos) and further divided into biotic (living organisms such as humans, animals, birds, insects, algae, bacteria, fungi, viruses) and abiotic (air, water, soil, dust, temperature, humidity, sand) components. Lightweight structures were described as having high strength with low weight, improving performance, reducing raw material usage and enhancing sustainability while being widely applied in aerospace, architecture and general engineering. In aerospace, weight reduction is critical for fuel efficiency and performance, while in architecture, modular and alternative lightweight materials are replacing conventional building materials. These structures are characterized by high strength-to-weight ratio, innovative forms such as membranes, domes, shells and frames and examples include foldable membrane and textile structures made from PVC-coated polyester and PTFE-coated glass, commonly used for long-span roofs and canopies.

AVIT
AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
Vinayaka Missions Chennai Campus

AICTE
All India Council of Technical Education

ATAL
Atal Innovation Mission

Cordially invites you to the
AICTE-ATAL Sponsored
One-Week Faculty Development Programme (FDP)
on
"Industry 5.0: Generative Design & Additive Manufacturing
for Lightweight Structural Components"

Topic
Environmental and
Economic Considerations in Lightweight Design

Resource Person:
Mr. Balasubramanyam Kavili
General Manager
Premier Cutting tools

23 August 2025 1 of 44

Participants visible on the right: PCT Saini, LN, PS, SL, SK, SUREND..., SURESH D..., PRABHU L, BATEST..., MR, Mohana..., SJ, SENTHIL J, Aravindh..., PRABHA...

Technical Session 13

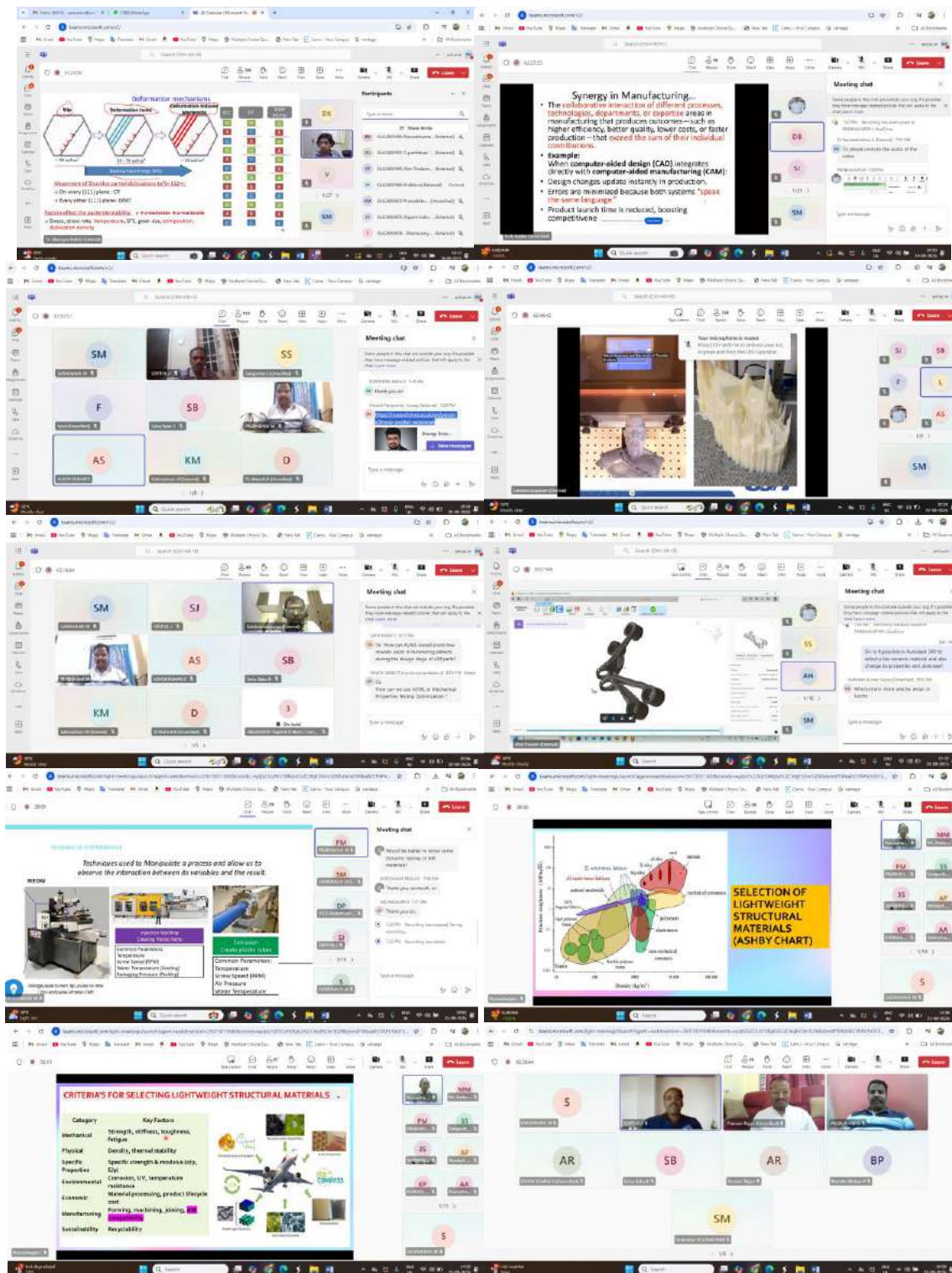
Title: Project-Based Presentations and Industry Expert Feedback Panel

23.08.2025 5:00PM to 7:30PM

Praveen delivered a comprehensive session covering Industry 4.0 and 5.0, explaining the evolution from automation and IoT to a human-centric, collaborative approach. He highlighted the principles and benefits of generative design and additive manufacturing for lightweight structural components, citing examples from Nike and General Motors to illustrate material optimization and innovation. He emphasized bridging academic–industry gaps through real-world problem identification, empathy and industry mentorship, while also explaining how generative design contributes to sustainability by reducing material waste, energy consumption and logistics through component consolidation. He discussed the skills and tools relevant to Industry 4.0 and 5.0 such as AI/ML, AR/VR, cloud computing and software like Autodesk Fusion 360, Creo, NTOP, Siemens NX and ANSYS. He further elaborated on the reliability of additive manufacturing using metals and composites, noting how design optimization reduces stress concentrations and enhances durability. Praveen also stressed the importance of staying updated on emerging technologies through industrial visits, workshops, internships and innovation challenges, while underlining the impact of human–machine collaboration on future job roles and the need for continuous skill development. He concluded with an overview of the support offered by Bangalore Bioinnovation Centre for startups, including funding opportunities and mentorship for innovation and entrepreneurship.

The screenshot shows a Zoom meeting interface. The main part of the screen displays a presentation slide with a dark blue background on the left and a white background on the right. The left side of the slide reads: **AICTE – ATAL Sponsored One-week Faculty Development Programme (FDP)**. The right side of the slide has the title **Industry 5.0: Generative Design & Additive Manufacturing for Lightweight structural Components** and the presenter's details: **Praveen Rajan**, Manager – Incubation & Operations, Bangalore Bioinnovation Centre (Govt. of Karnataka Undertaking). On the right side of the Zoom window, there is a vertical list of participants. At the top is a small video feed of Praveen Rajan. Below it are several circular icons representing other participants, including 'muralimohan nithyanandam', 'Praveen Rajan', 'PRABHA...', 'Sushil...', '3442330...', 'MR', 'Mohana...', 'SK', and '+111'. The bottom of the Zoom window shows a small video feed of Praveen Rajan.

Glimpse of the event:



Valedictory Function

The valedictory session of the Six-Day Faculty Development Program (FDP) on *Industry 5.0: Generative Design and Additive Manufacturing for Lightweight Structural Components* included a comprehensive summary of the program, participant feedback, acknowledgments and closing formalities. A detailed overview of the six-day sessions highlighted the sequence of expert-led lectures, key topics and the integration of academic and industry perspectives. Participants shared positive feedback on the FDP's content, organization and delivery, while also suggesting constructive improvements for future programs. The vote of thanks recognized the contributions of institutional leaders, coordinators, technical staff and speakers, emphasizing the collective effort

behind the success of the FDP. Concerns regarding assessment-related technical issues were addressed with an assurance that they would be reported to the AICTE Academy Zonal Coordinator and resolved in line with the guidelines. The event concluded with a virtual group photo session, followed by closing remarks, marking the official end of the FDP.



List of Participants

Sl.No	Name	Email	Phone	Institute Name
1	Dr. P.VASANTHKUMAR	vasanthp1@srmist.edu.in	9677695005	SRMIST, RAMAPURAM
2	Dr. A HAITERLENIN	haiterlenina@saveetha.ac.in	9443173450	SAVEETHA ENGINEERING COLLEGE
3	Dr. A K Darwins	darwins@niuniv.com	9487657885	Noorul Islam Centre for Higher Education
4	Dr. A Venkatakrishna	venkataa@srmist.edu.in	9840641357	SRM Institute of Science and Technology, Ramapuram campus
5	Dr. A.Parthiban	draparthiban.se@velsuniv.ac.in	9578961066	vels Institute of Science, Technology & Advanced Studies
6	Dr. Abhilash Purohit	mr.abhilash.purohit@gmail.com	7978640062	Galgotias University
7	Dr. ALEX RAJESH	alexjack112@gmail.com	8526665000	K. S. R. College of Engineering
8	Dr. ARUNKUMAR S	arunkumar@vmkvec.edu.in	9952722454	Vinayaka Mission's Kirupananda Variyar Engineering College
9	Dr. ASHOK KUMAR R	ashok.kumar19872003@gmail.com	9790739133	R.M.D. ENGINEERING COLLEGE
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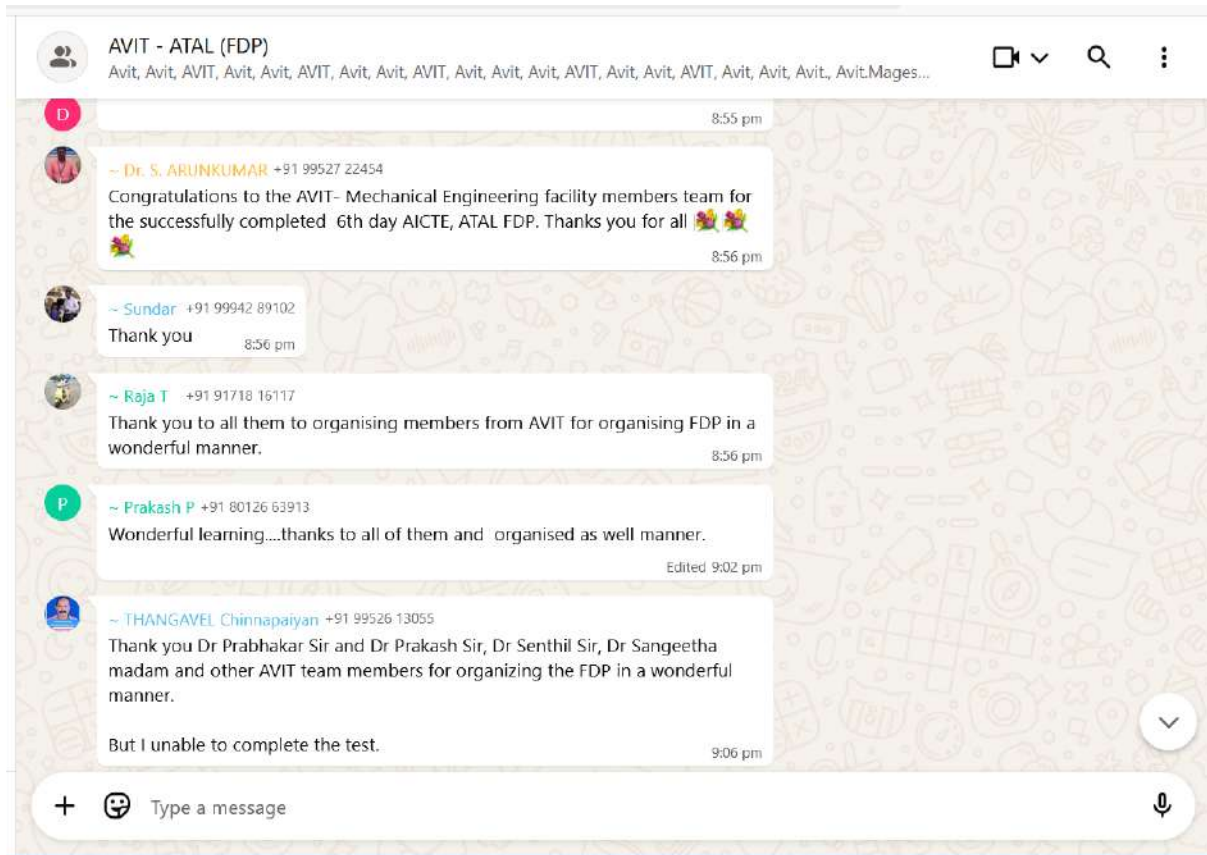
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