



DEPARTMENT OF MECHNAICAL ENGINEERING

One Week Faculty Development Programme on

“Modelling and Optimization Techniques for Materials and Manufacturing Processes”
18th to 22nd May 2020 time 10.00am to 11.00 am.

The online Faculty program is conducted through Microsoft Teams. The registrations for the online FDP is opened on 14-5-2020 at 5.00pm and closed on 15-5-2020 at 5.00pm. A total of 984 applications were received from faculty belonging to various institutions in India. Two foreign faculty's, one from Saudi Arabia and the other from Indonesian also registered. A total of 245 members were shortlisted based on first cum first serve.

Registration link: <https://tinyurl.com/lbrcemechfdp>


Registration Fee: Free





Registration Deadline: 16-05-2020

Registration Form

The screenshot shows a Microsoft Forms page titled "Modelling and Optimization Techniques For Materials and Manufacturing Processes - Saved". The page is displayed in a browser window. The top navigation bar includes "Preview", "Theme", and "Share" buttons. Below the navigation bar, there are two tabs: "Questions" and "Responses" (with a count of 984). The main content area displays the title of the FDP, the dates (18th to 22nd May 2020), and the location (Lakireddy Bali Reddy College of Engineering, Department of Mechanical Engineering). The first question is "1. Name of the Participant-First Name *", with a text input field below it containing the placeholder "Enter your answer". The browser's address bar shows the URL "https://forms.office.com/Pages/DesignPage.aspx?FormId=L67zB13Fvka:". The Windows taskbar at the bottom shows the date and time as 06:28 on 24-05-2020.

Details of Resource Persons:

	
<p>Prof. Adepu Kumar, NIT-Warangal Topic: Metal Additive Manufacturing Process.</p>	<p>Dr. A.Manmadha Chary, IFHE University, Hyderabad Topic: Additive Manufacturing in Medical Applications</p>
	
<p>Dr. D. Chakradhar, IIT Palakkad Topic: Machinability studies of Difficult to cut Materials under sustainable cooling environments</p>	<p>Prof. K.Venkata Rao, Vignan's University Topic: Modeling and Optimization of Dead Metal Zone to reduce cutting forces</p>
	
<p>Dr. T.Babu Rao, NIT Andhra Pradesh Topic: Bio inspired Optimization Techniques</p>	<p>Dr. A. Devaraju, KITS Warangal Topic: Advances in Friction Stir Processing and Welding</p>

	
<p>Dr.M. Krishna Kishore, Dong Eui University, Busan, South Korea Topic: Machine Learning in Resistance Spot Welding</p>	<p>Dr. P. Naresh, MITS Madanapalle Topic: Methods to produce surface Composites</p>
	
<p>Dr. Srinivasu Gangi Setti, NIT Raipur Topic: Industry 4.0 and Smart materials</p>	<p>Mr. MVNV Satyanarayana, NIT Warangal Topic: Achieving grain refinement in Al Alloys</p>

Inauguration Function: The inauguration function of the FDP started on 18-05-2020 at 10.00AM, with the welcome address by the Convener, Dr.S.Pichi Reddy, Professor & HoD, Department of Mechanical Engineering. Address by the Principal, Dr.K.Appa Rao and the Key note address by the distinguish guest and resource person, Dr. **Adepu Kumar, Professor**, Department of Mechanical Engineering, National Institute of Technology, Warangal. The inaugural function concluded at 10.30AM and the FDP sessions followed by Dr. **Adepu Kumar** and **Dr. A.Manmadha Chary** on Additive Manufacturing and its Application to Medical Field. Total 12 sessions conducted and the details are as given below.

Lakireddy Bali Reddy College of Engineering- Online FDP: 18-05-2020 to 22-05-2020

Table 1: Details of resource persons and topic delivered

Dates	Name of the resource person	Delivered topic
18.5.2020	Prof. Adepu Kumar, NIT-Warangal	Metal Additive Manufacturing Process.
	Dr. A.Manmadha Chary, IFHE University, Hyderabad	Additive Manufacturing in Medical Applications.
19.5.2020	Dr. D. Chakradhar, IIT Palakkad	Machinability studies of Difficult to cut Materials under sustainable cooling environments.
	Prof. K.Venkata Rao, Vignan's University-Guntur	Modeling and Optimization of Dead Metal Zone to reduce cutting forces
20.5.2020	Dr. T.Babu Rao, NIT Andhra Pradesh	Bio inspired Optimization Techniques
	Dr. A. Devaraju, KITS Warangal	Advances in Friction Stir Processing and Welding
	Dr. P. Naresh, MITS Madanapalle	Methods to Produce Surface Composites
21.5.2020	Dr.M. Krishna Kishore, Dong Eui University, Busan, South Korea	Machine Learning in Resistance Spot Welding
	Prof. K.Venkata Rao, Vignan's University-Guntur	Modeling of Kerf Width and Surface Roughness considering Wire Vibration in Wire cut EDM
22.5.2020	Dr.M.Krishna Kishore, Dong Eui University, Busan, South Korea	Advances in Joining by processes
	Dr. Srinivasu Gangi Setti, NIT Raipur	Industry 4.0 and Smart materials
	Mr. MVNV Satyanarayana, NIT Warangal	Achieving grain refinement in Al Alloys

Outline of the topics covered in FDP

Metal additive manufacturing processes and its applications including medical field.

Medical implants insert in human body and various case studies.

Cryogenic cooling applied in turning operations using Taguchi, RSM and GRA techniques.

Modeling and Optimization of Dead Metal Zone to reduce cutting forces using the various techniques like TLBO.

Bio inspired techniques NSGA-RSM- Partial Swam- GRA.

Surface composites and welding techniques like FSW/FSP

Modeling and Optimization Techniques of Materials and Manufacturing Processes

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Cryogenic welding, liquid graphine alloying composites, Space craft materials.

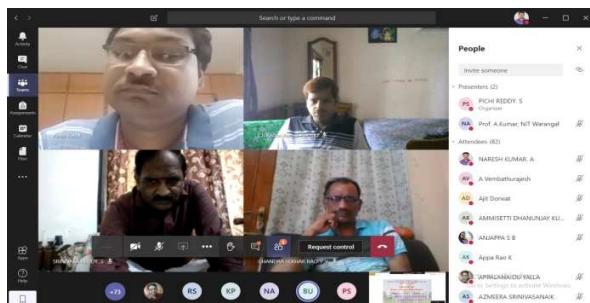
Fundamentals of Machine learning, neural network, Multi optimisation techniques using Graph theory with Utility concept.

Materials: Surface composites, smart materials, Titanium alloy, Ph-17-4 alloys.

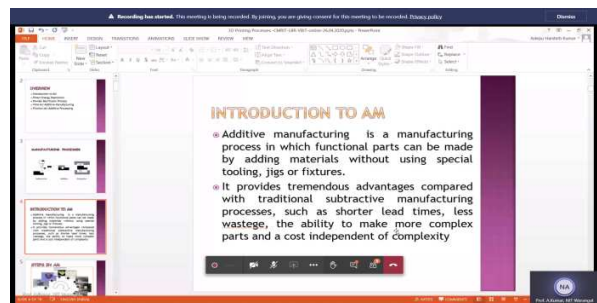
Manufacturing processes: Turning, Welding, EDM, WEDM.

Modeling and Optimization: One factor at time approach, Taguchi, RSM, GRA, Utility, Particle Swam, principle component analysis, Graph theory matrix, neural network and Machine learning.

Day-1: 18-05-2020



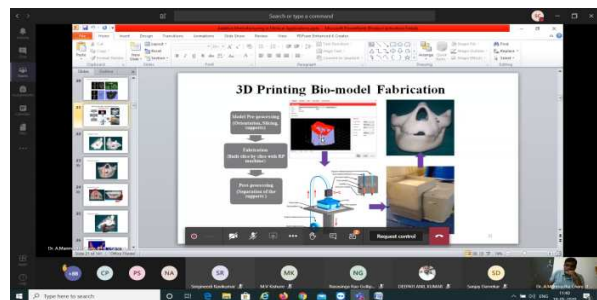
Participation of Principal Sir and other Participants



Additive Manufacturing



Additive Manufacturing in Medical Applications



3D Printing Bio-model Fabrication

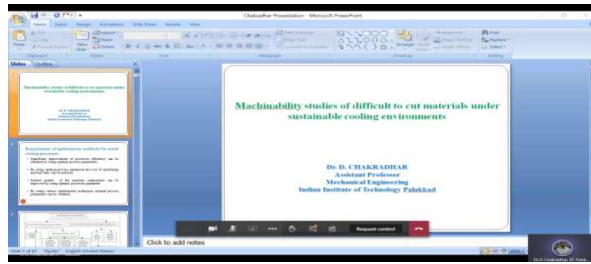
The principle of Additive manufacturing processes (AMP), types of AMPs, processes variables in AMP, manufacturing of composites with AMP are explained.

The application of AMP in the medical field with different case studies are discussed.

Modeling and Optimization Techniques of Materials and Manufacturing Processes

Lakireddy Bali Reddy College of Engineering- Online FDP: 18-05-2020 to 22-05-2020

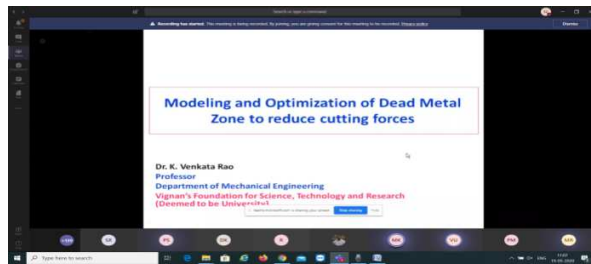
Day-2: 19-05-2020



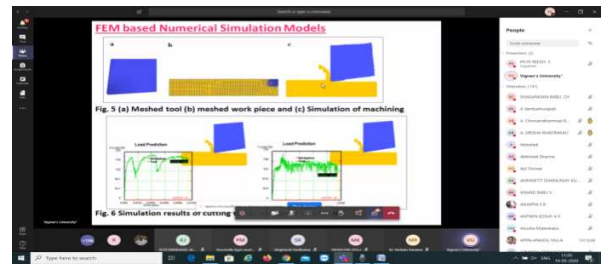
Machinability Studies of Difficult to Cut Materials under Sustainable Cooling Environments



Characteristics of Sustainable Machining

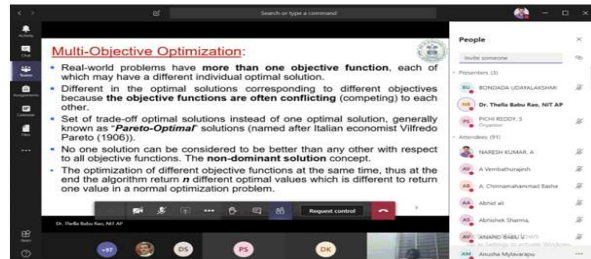


Modelling and Optimization of Dead Metal Zone to reduce Cutting Forces



FEM based Numerical Simulation Models

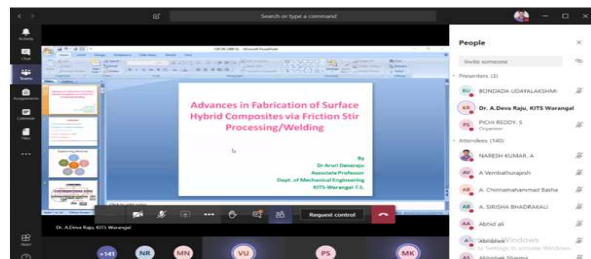
Day-3: 20-05-2020



Hybrid Bio-Inspired Optimization Approaches for Manufacturing Applications



Evolutionary based optimization :NSGA



Advances in Fabrication of Surface Hybrid Composites via Friction Stir Processing/Welding

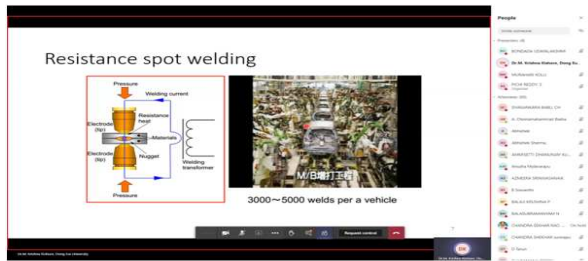


Microstructural Studies on Surface Hybrid Composites via Friction Stir Processing/Welding

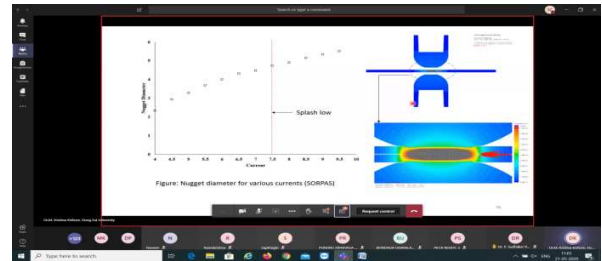
Modeling and Optimization Techniques of Materials and Manufacturing Processes

Lakireddy Bali Reddy College of Engineering- Online FDP: 18-05-2020 to 22-05-2020

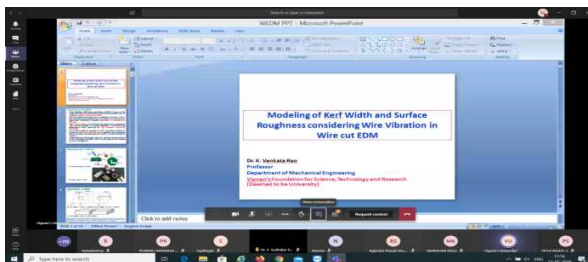
Day-4: 21-05-2020



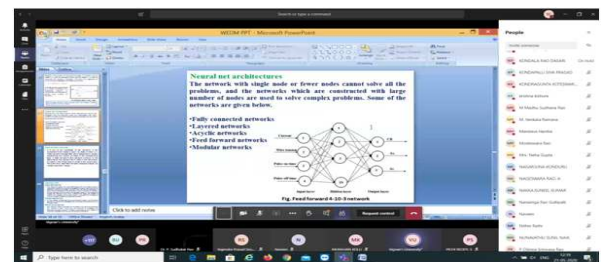
Machine Learning in Welding



Nugget diameter for various currents (SORPAS)

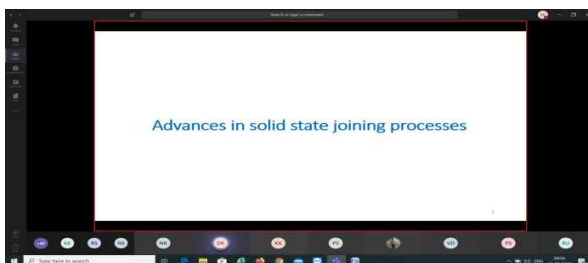


Modelling of Kerf Width and Surface Roughness considering Wire Vibration in Wire Cut EDM

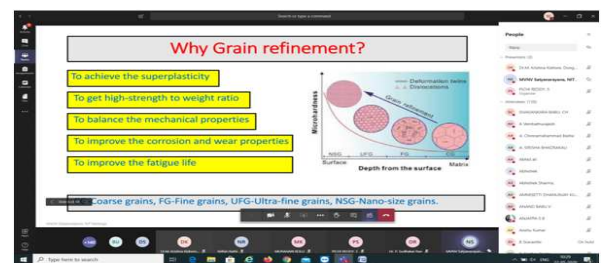


Network Architecture

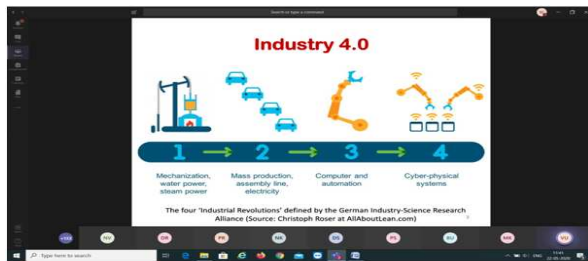
Day-5: 22-05-2020



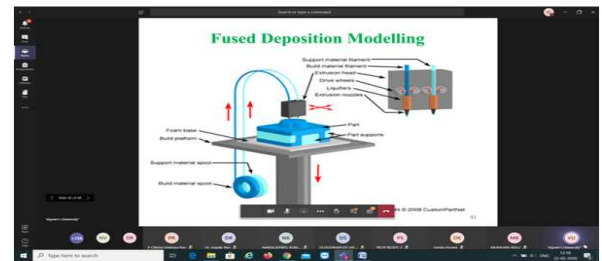
Advanced Joining Techniques



Achieving grain refinement in Al Alloys



Industry 4.0 and Smart Materials



Fused Deposition Modelling

Modeling and Optimization Techniques of Materials and Manufacturing Processes



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18th to 22nd May 2020 time 10.00am to 11.00 am.

Program Objective: To impart the knowledge of optimization techniques and its applications to the field of materials and manufacturing processes.

Program Out Comes:

1. Understand the additive manufacturing processes and its applications to medical field.
2. Design the experiments for various set of composite materials and manufacturing processes.
3. Apply the various optimization techniques for composite materials and manufacturing processes.
4. Understand the concepts of machine learning and artificial intelligence.
5. Prepare the composite materials using the friction stir processes and additive manufacturing processes.

CONVENERS

Dr. S.Pichi Reddy
H.O.D - Mech. Dept

COORDINATORS

Dr. K. Murahari
Mr. J. Subba Reddy