



REPORT

AICTE TRAINING AND LEARNING FACULTY DEVELOPMENT PROGRAMME ON
“OPPORTUNITIES IN HYBRID MANUFACTURING TECHNOLOGIES”

Date: 4th -9th DECEMBER2023
GOVERNMENT COLLEGE OF ENGINEERING
SENGIPATTI, THANJAVUR – 613 402 TAMILNADU

AICTETRAININGANDLEARNINGACADEMY,PUNE

Opportunities in Hybrid Manufacturing Technologies

AICTE Training and Learning sponsored Faculty Development Programme was conducted from 04th to 9th December 2023 in this program 50 participants took part. Out of these 50, 35 number of external participants from different parts of the state participated.

The inauguration was held on 4th December 2023 at 10:00 am. **Dr.S.Jayabal** the coordinator of the programme cum the Principal of GCE Thanjavur headed this function. Chief Guest of the program was **Dr. Balamurugan Kulendran**, who is currently working as Associate Professor in the Department of Mechanical Engineering, Government College of Engineering (Formerly known as IRTT), Erode. The faculty members and heads of various the department attended the meeting.

Dr.S.Sivasankar Co Coordinator of this ATAL/FDP organize this programme and detailing the schedule of the Six days events. **Dr.T.Radhika**, Associate Prof/ Mechanical welcome the gathering. **Dr.V.Sukumar** , Assistant Prof/Mechanical delivered a vote of thanks. The photocopy of the inaugural function is as below.



ATAL FDP on Opportunities in Hybrid Manufacturing Technologies

The speakers for the 6-day workshop on “Opportunities in Hybrid Manufacturing Technologies” were:

Dr.K.Balamurugan, Associate Professor, Government College of Engineering,



Dr. Balamurugan Kulendran is currently working as Associate Professor in the Department of Mechanical Engineering of Government College of Engineering (Formerly known as IRTT), Erode. He obtained his Bachelor's & Master's degree from IRTT and GCT in the years 1998 and 2001 respectively. He obtained his PhD from Anna University, Chennai for his research work on **Manufacturing System Design and Optimization** in the year 2006. He has 21 years of Teaching Experience and 2 years of Industry experience.



Dr.B.Pazhanivel, Senior Technical officer, CSIR-CECRI, Karikudi

Education

- Ph.D in Knowledge Management Systems from JUIT, Solan (2013)
- M.Tech. in CSE from IIT Allahabad (2005)
- B.E. in Computer Technology from RGPV Bhopal (2003)

Experience

- 2018 to till-date – Assistant Professor, IIT Nagpur
- 2015-2018 – Assistant Professor, IIT Kota
- 2009 -2015 – Assistant Professor, JUIT Solan
- 2007-2009 – Software Engineer, CSC India Pvt Ltd.
- 2005-2007 – Software Engineer, IBM India Pvt Ltd.





**Dr. M. Duraiselvam Professor,
Department of Production Engineering,
National Institute of Technology,
Tiruchirappalli**

Dr. M. Duraiselvam is presently working as a Professor in the Department of Production Engineering, National Institute of Technology, Tiruchirappalli. He is instrumental in developing the Siemens Centre of Excellence in Manufacturing, a 200 Crore Project partly supported by Siemens and established the Centre for Advanced Manufacturing and Automation at a cost of 8 Crores. He completed B.E. in Mechanical Engineering from Coimbatore Institute of Technology in 1996 and M.E. in Manufacturing Technology from National Institute of Technology, Tiruchirappalli in 1998. He did his M.B.A. in Operations Management from Madurai Kamaraj University in 2002. He received Ph.D. in Materials Science and Engineering from Technical University of Clausthal, Germany in 2006. His research interests include laser surface engineering, laser micromachining, tribology and digital manufacturing. He received many awards and honors that include German Academic Exchange Service (DAAD) Fellowship from Germany, 3rd Best Paper for a presentation made in an International Conference held in Miami, Florida, USA and Young Scientist from DST.





**Dr. V. Balasubramanian, Professor,
Department of Manufacturing Engineering,
Annamalai University**

Dr. V. Balasubramanian is working currently as Professor of Manufacturing Engineering and Director, Centre for Materials Joining & Research (CEMAJOR), Faculty of Engineering & Technology, Annamalai University, Chidambaram, Tamilnadu. He graduated (Mechanical Engineering) from Government College of Engineering, Salem, University of Madras in 1989 and obtained his post graduation (Production Engineering) from College of Engineering Guindy, Anna University, Chennai in 1992. He obtained his Ph.D (Welding Engineering) from Indian Institute of Technology Madras (IITM), Chennai in 2000. He has 31 years of Teaching experience and 26 years of research experience. He has published more than 500 papers in SCOPUS indexed Journals and his current ‘h’ index is: 62. He has supervised 65 Ph.D scholars in total (30 scholars under direct guidance and 35 scholars under Co-guidance) and guiding 10 more Ph.D scholars. He has completed 30 R&D projects worth of Rs. 15 crores from various funding agencies like DST, DRDO, ISRO, DAE, AICTE, UGC, CSIR, MHRD and MoEF and implementing another 5 R&D projects worth of Rs. 5.0 crores. He established CEMAJOR in 2008 under the AICTE-NAFETIC scheme and it houses many state of the art facilities in the field of Materials Joining & Surface Engineering. His areas of research interest are: Materials Joining, Surface Engineering and Advanced materials. He has ranked in the “Top 2% Scientists in the World” and “9th Ranked in the Materials” field in India (Ranked by Stanford University, USA) in 2020, 2021, 2022 and 2023 (four consecutive years).





Dr. V. ANANDAKRISHNAN., M.E., Ph.D. Professor, Production Engineering Department & Associate Head, Center of Excellence in Manufacturing, National Institute of Technology, Tiruchirappalli –620015

QUALIFICATION

B.E., Mechanical Engineering, *First Class*, 1999, Bharathidasan University, Tiruchirappalli

M.E., Production Engineering, *First Class with Distinction*, 2001, Annamalai University

Ph.D., Production Engineering, 2010, National Institute of Technology, Tiruchirappalli

EXPERIENCE DETAILS

Lecturer, Department of Mechanical Engineering, Anjalai Ammal Mahalingam Engineering College, Kovilvenni, May 2002 – Dec 2003

Full-Time Ph.D. Scholar, Department of Production Engineering, National Institute of Technology, Tiruchirappalli, Jan 2004 – May 2005

Lecturer, School of Mechanical Engineering, SASTRA University, Thanjavur, June 2005 – Oct 2008

Assistant Professor, Department of Production Engineering, National Institute of Technology, Tiruchirappalli, 7th Nov 2008 – 11th March 2018

Associate Professor, Department of Production Engineering, National Institute of Technology, Tiruchirappalli, 12th March 2018 – 20th September 2022

Professor, Department of Production Engineering, National Institute of Technology, Tiruchirappalli, 21st September 2022 – Till Date





Dr T SEKAR
Associate Professor & Head
P.G-Manufacturing Engineering
Department of Mechanical Engineering, Government College of

EDUCATIONAL QUALIFICATIONS:

1. **Ph.D.** in Mechanical Engineering, **Anna University, Chennai**- July, 2009.
2. **M.E.** in Production Engineering (*Gold Medalist*), **Annamalai University, Chidambaram** - November, 1999.
3. **B.E.** in Mechanical Engineering, **PSG College of Technology, Coimbatore** - April, 1997.
4. **Chartered Engineer** – Institution of **Mechanical Engineer (IMEchE)** -United Kingdom- Recognized by **British Royal Council**.
5. **NEBOSH** (Industrial Safety- Certificate Level)
6. **M.B.A.** in Human Resources, **Periyar University, Salem** - July, 2014.
7. **3D Printing and Design**- Trained by **Indian Institute of Technology, Hyderabad**.

PROFESSIONAL EXPERIENCE:

1. Experience at Industry and Self-financing Engineering Colleges: 2¾ Years
2. Abroad Service at Ministry of Manpower in Sultanate of Oman through Govt. of Tamil Nadu: 2¾ Years
3. Govt. Engineering Colleges under Tamil Nadu Educational Services (TES) : 19½Years





Dr.P.SATHIYA,
Professor,
Department of Production Engineering,
National Institute of Technology, Tiruchirappall-620015,
Tamil Nadu, India,

Achievements:

1. Young Technology Award'2009 conferred by Indian Welding Society, Mumbai Chapter.
2. Best Teacher Award'2009 Conferred by National Institute of Technology, Tiruchirappalli, Tamilnadu.
3. Raiser INNOVATION AWARD FOR FRICTION WELDING 2011, Conferred by Klaus Raiser GmbH (Gesellschaft mitbeschränkterHaftung), Zeppelining, Eberdingen-Hochdorf, Germany.
4. Best Cited paper Award 2012 for Journal of Optics and Laser Technology (ELSEVIER)
Paper Title: "Optimization of laser butt welding parameters with multiple performance characteristics"
Authors: **P.SATHIYA**, M.Y.ABDUL JALEEL, D.KATHERASAN, B.SHANMUGARAJAN
5. Best Paper award in National conference on corrosion, surface Engineering & Tribology, held at NITT, 2013, paper entitled on Corrosion study on flux cored arc welding of AISI 316 (L) austenitic stainless steel, authored by Dr.D.Katherasan and Dr.P.Sathiya.
6. Certificate of Reviewer Contribution, awarded on December 2015, International Journal of Precision Engineering and Manufacturing (Springer).
7. Achiever Award 2022, awarded on 26th November In honor of outstanding Performance & Dedication in the welding Segment, Conferred by WELDFAB TECH, PUNE, MUMBAI.





Dr. Janardhanan Gangathulasi
Professor & Head
Civil and Environmental Engineering
National Institute of Technical Teachers Training and
Research Chennai

Dr. Janardhanan Gangathulasi is administrative head for training programme, PG and doctoral research programme at NITTTR Chennai. He is also serving as Controller of Examination. Dr. Janardhanan has over 24 years of research, teaching and consulting experience within the broad fields of civil, environmental engineering, engineering education, curriculum development and academic leadership. His research and training programme is funded by the ITEC, DST, World Bank, MEA, MoE, PWD and several prominent state governments and industries. His research includes laboratory studies, field experiments, and computer modelling, ultimately leading to fundamental advances and practical solutions to the real-world problems. Dr. Jana published around 50 research articles in international and national journals and conferences. He has been granted patent by GoI towards manufacturing artificial aggregate from waste. He serves as a technical assessor in national accreditation board. He is a Member of American Society of Engineering Education, American Society of Civil Engineers, International Water Association (IWA), Indian Society of Technical Education, Indian Society for Training and Development; Indian Geotechnical Society, National Solid Waste Association of India, Institution of Engineers (India). His doctoral research is from University of Illinois, USA and Bachelor's and Master's degree from College of Engineering, Guindy, Anna University, India.



Baskaran T
MD/CEO, NBPPL
GM/Corp HSE, BHEL

Qualification

B.E - Production Engg from REC, Trichy (Dec 1984)

M.E - Safety Engg from NIT, Trichy (Dec 1997)

Experience

NIT-Trichy 1 Year as Research / Teaching Faculty

BHEL/BHPV 14 Years in Operations- Production and Planning

15 Years in Unit Safety Mgt & HSE and Corporate HSE

5 Years in Commercial and Project Management

NBPPL, Tirupati 2 Years as Managing Director/CEO



Dr.L.N.Parathasarathi
Scientific officer
IGCAR, Kalapakkam

- B.E. Mechanical Engineering Madras University 1997-2001
- M.Tech. Production Technology M S University 2001-2002
- M.Sc. Total Quality Management 2002-2004 Sikkim Manipal University
- Ph.D. Manufacturing Technology 2005-2010 N.I.T Trichy
- From 2002 to 2005 Worked as a Lecturer in Mookambigai College of Engineering, Pudukkottai District.
- From 2005 to 2007 Project Associate in Tata Steels consultancy Project in NIT Trichy
- From 2007 to 2010 Young scientist for DST Fast track SERC funded Project in NIT Trichy
- During my research period DST sanctioned Rs 14 Lakh rupees for carrying out the fast track young scientist project entitled, “Hole expandability and crash worthiness of Aluminium alloy tailor welded blanks”.
- From May 2010 onwards working as Scientific Officer in High-temperature Materials Technology

ATAL FDP on Opportunities in Hybrid Manufacturing Technologies

Section, HMTD, MMG, IGCAR Kalpakkam



The schedule of the work shop was as below,

ATAL FDP on Opportunities in Hybrid Manufacturing Technologies

Day1	Day2	Day3	Day4	Day5	Day6
9:00– 9:30 Inauguration					
9:30–12:00 Session 1 Challenges in smart material processing using Hybrid manufacturing strategy (Dr.K.Balamurugan)	9:30–12:00 Session 3 Advances on additive manufacturing (Dr.M.Duraiselvam)	9:30–12:00 Session 5 3D Metal printing technology for Biomedical Implantation-A research perspective (Dr.V.Anandakrishnan)	9:30–12:00 Session 6 Strategic Essentials: Navigating 3D Printing Technology in the Manufacturing Landscape (Dr.T.Sekar)	9:30– 1:00 Session 8 National Education Policy (NEP) 2020 (Dr.G.Janardhanan)	9:30–12:00 Session 10 Additive Manufacturing : A Research Perspective (Dr.L.N.Parathasarathi)
12:00–1:00 Article Discussion	12:00–1:00 Article Discussion	12:00–1:00 Article Discussion	12:00–1:00 Article Discussion		12:00–1:00 Reflection Journal
1:00–2:00 Lunch	1:00–2:00 Lunch	1:00–2:00 Lunch	1:00–2:00 Lunch	1:00–2:00 Lunch	1:00–2:00 Lunch
2:00–4:30 Session 2 Transformation Hybrid Manufacturing for mass production (B.Palanivel)	2:00–4:30 Session 4 Role of Welding in Additive Manufacturing (Dr.V.Balasubramaniya)	2:00–4:30 Industrial visit (Centre of Excellence in Manufacturing Lab - NIT-Trichy)	2:00–4:30 Session 7 Wire Arc Additive Manufacturing Process of Inconel 825 by Cold Metal Transfer Process (Dr.P.Sathiya)	2:00–4:30 Session 9 Challenges of SHE and it's management for Hybrid Manufacturing (T.Baskaran)	2:00–4:00 MCQ, Feedback & Interactions
4:30– 5:30 Additive Manufacturing Lab(3D Printing)- Practical session	4:30– 5:30 Additive Manufacturing Lab (Welding)-Practical session	4:30– 5:30 Advanced Subtractive Manufacturing Lab – Practical session	4:30– 5:30 Composite fabrication lab-Practical session	4:30– 5:30 Advanced Measurement Practice Lab- Practical Session	4:00– 5:00 Valedictory Session

The list of participants was

Sl. NO	NAME	DESIGNATION	ORGINATION
1	Mr. GOWTHAMAN	Associate Professor	SBM College of Engineering & Technology
2	Mr. R.RAJADURAI	Assistant Professor	Kings college of engineering
3	Mr. NELSON RAJA	Assistant Professor	Kings College of Engineering
4	Mr. P.VIVEK	Assistant Professor	Mookambigai college of engineering
5	Mr. ARUNKUMAR	Assistant Professor	Mookambigai college of engineering
6	Mr. BASKAR G	Assistant Professor	Mookambigai college of engineering
7	Mr. BALA SUBRAMANIAN D	Assistant Professor	Mookambigai college of engineering
8	Mr. HARIHARAN C	Assistant Professor	Karpaga Vinayaga College of Engineering and Technology
9	Mr. RAMESH BABU.R	Assistant Professor	Indra Ganesan College of Engineering
10	Dr. SUKUMAR V	Assistant Professor	Government college of engineering Thanjavur
11	Dr. V.SUBRAVEL	Assistant Professor	Government College of Engineering
12	Dr. S VENKATESAN	Associate Professor	Government college of engineering, sengipatti, Thanjavur
13	Mr. RAMJI	Associate Professor	Gce thanjavur
14	Dr. THIRUGNANASAMBANTHAM R	Assistant Professor	Dhanalakshmi srinivasan engineering college
15	Dr. NATARAJAN U	Professor	Government college of engineering srirangam
16	Dr. C SENTHAMARAIKANNAN	Assistant Professor	Sri venkateswara college of engineering

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17	Dr. SELVARAJAN L	Professor	Mahendra Institute of Technology
18	Mr. VINOTH KANNAN V	Assistant Professor	Indra Ganesan College of Engineering
19	Dr. RADHIKA T	Associate Professor	Government College of Engineering
20	Dr. SANTHI M	Professor	Indra Ganesan College of Engineering
21	Mr. SURESH AK	Research Scholar	Sir Issac Newton College of Engineering and Technology Nagapattinam
22	Mr. E PRAKASH	Assistant Professor	Rajalakshmi engineering college
23	Mr. SEBASTIN JOYAL J	Assistant Professor	Indra ganesan college of engineering
24	Mr. S.NAVEEN	Assistant Professor	Star lion college of engineering and technology
25	Mr. SUNDARASELVAN S	Assistant Professor	Arasu engineering college
26	Mr. PRAKASH K	Assistant Professor	Arasu engineering college, kumbakonam
27	Mr. SATHISHKUMAR G B	Assistant Professor	Arasu engineering college, kumbakonam
28	Mr. SABANAYAGAM SUNDARAM	Assistant Professor	Kings College of Engineering, Punalkulam
29	Mr. AGILAN.H	Assistant Professor	Kings College of Engineering
30	Dr. GOBALAKRISHNAN B	Assistant Professor	CARE College of Engineering, Trichy
31	Mr. EZHILARASAN C	Assistant Professor	Arasu engineering college, kumbakonam
32	Mr. GURUKARTHIKEYAN V	Assistant Professor	Government college of engineering thanjavur
33	Mrs. SWARNA LAKSHMI R	Assistant Professor	Government College of Engineering Thanjavur
34	Mr. VIVEKANANDAN R	Assistant Professor	Government college of engineering
35	Mr. V BHARATHARAJAN	Assistant Professor	Parisutham institute of technology and science
36	Mr. HARISH KIRTHI S	Assistant Professor	E.g.s. pillay engineering college (autonomous)
37	Mr. PRADEEP M	Assistant Professor	St.Joseph's College of Engineering and Technology
38	Mrs. SHARON MARISHKA I	Assistant Professor	St. Joseph's College of engineering and technology
39	Mr. C.N.MURUGANANDAM	Associate Professor	Parisutham institute of technology and science thanjavur tamil nadu
40	Mr. GOWTHAMAN K S	Assistant Professor	Government college of engineering sengipatti thanjavur
41	Mr. M.VIVEKANANTHAN	Assistant Professor	Kings College of Engineering
42	Mrs. M.SRILASRI	Assistant Professor	Vandayar engineering college
43	Mr. V.V.RAMANAN	Assistant Professor	Parisutham institute of technology and science
44	Dr. SELVAM P	Associate Professor	Government College of engineering Thanjavur
45	Dr. P.SARITHA	Assistant Professor	Government college of engineering, Sengipatti, Thanjavur
46	Dr. RM NACHIAPPAN	Associate Professor	Government college of engineering, thanjavur
47	Dr. KALAIMATHI K	Assistant Professor	Government college of Engineering
48	Mr. SENTHILSIVAM N	Research Scholar	Government college of engineering
49	Dr. RAJAMUNESWARAN	Associate Professor	Pandian saraswathi yadav engineering college, sivaganai
50	Dr. B.ASAITHAMBI	Assistant Professor	Government college of engineering, sengipatti, Thanjavur



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The program was concluded on 9.12.2023. In the AN session the test was conducted through online mode. Then the feedback session is followed. The invitation for valedictory function is shown below,

GOVERNMENT COLLEGE OF ENGINEERING THANJAVUR - 613402
அரசினர் பொறியியற் கல்லூரி தஞ்சாவூர் - 613402
Approved by AICTE and Affiliated to Anna University

**AICTE TRAINING AND LEARNING (ATAL)
FACULTY DEVELOPMENT PROGRAMME
ON
OPPORTUNITIES IN HYBRID MANUFACTURING
TECHNOLOGIES**

Valedictory Invitation

CHIEF GUEST

Dr.G.JANARDHANAN
Professor
NITTR, Chennai
Coordinator

Dr.S.Jayabal
Principal

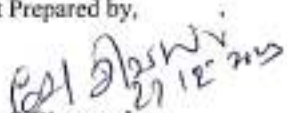
Co-Coordinator
Dr.S.Sivasankar
Associate Professor - Mech

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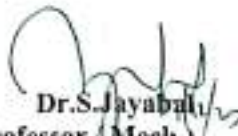
All Are Cordially Invited

Date : 09-12-2023
Time : 4pm
Venue : Mechanical Smart Class Room

The Report Prepared by,


Dr.S.Sivasankar
(Associate Prof./Mech.)
Co-Coordinator

Dr.S.SIVASANKAR,M.Tech.,Ph.D.,
Associate Professor
Department of Mechanical Engineering
Government College of Engineering
Sengipatti, Thanjavur - 613 402


Dr.S.Jayabal
(Professor /Mech.)
Coordinator

Dr.S.JAYABAL,M.E.,Ph.D.,
Professor & Head
Department of Mechanical Engineering,
Government College of Engineering,
Sengipatti, Thanjavur - 613 402.