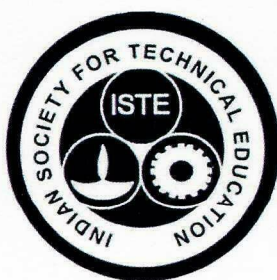




**A Report of
ISTE Supported
One Week Faculty Development Programme (FDP)
on
“Sustainable Manufacturing Techniques: Research
Paradigm and Future Prospects”
29.06.2026 to 04.07.2026**



**organized by the
Department of Mechanical Engineering
K. S. Institute of Technology**

(An Autonomous Institution under VTU, approved by AICTE, Accredited by NBA (CSE & ECE), NAAC with A+ Grade)
14, Raghuvanahalli, Kanakapura Main Road, Bengaluru – 560109



K. S. Institute of Technology

(An Autonomous Institution under V TU, approved by AICTE,

Accredited by NBA (CSE & ECE) NAAC with A+ Grade)

14, Raghuvanahalli, Kanakapura Main Road, Bengaluru – 560109

ISTE Supported One Week Offline Mode Faculty Development Programme

FDP Title: “Sustainable Manufacturing Techniques: Research Paradigm and Future Prospects” from 29.06.2026 to 04.07.2026

Resource Person Details

Sl. No.	Resource Person Name and Details	Photo
1	Dr. T. Ram Prabhu Scientist and Joint Director, DRDO, Bengaluru	
2	Dr. Anil Chandra, Senior Manager – Material Testing, TUV – Rheinland India Pvt. Ltd., Bengaluru	
3	Dr. Nithin H. S. Assoc. Prof. & Head, Department of Mechanical Engineering, B.G.S. College of Engineering, Bengaluru	
4	Mr. Harsha S., Scientist D, Centre for Sensors, Vision Technology and IT Central Manufacturing Technology Institute, Bengaluru	

5	Ashish Srivatsava, Assistant Professor - Senior Grade Department of Mechanical Engineering Presidency School of Engineering, Bengaluru	
6	Mr. Shrinidhi Bhat Assistant Manager – Application Engineering & R&D AMACE Solutions Pvt. Ltd., Bengaluru	
7	Dr. Jitendra Kumar Katiyar Associate Professor, Manipal Institute of Technology, Manipal	
8	Dr. Ramesh M. R. Professor, National Institute of Technology Karnataka, Mangaluru	
9	Dr./Prof. Gurumurthy Hegde, Professor & Director, Centre for Water to Wealth Technology, Dayanand Sagar University, Bengaluru	

Inauguration Session

The inaugural function of the **ISTE supported One Week FDP** on “*Sustainable Manufacturing Techniques: Research Paradigm and Future Prospects*” was held on **June 29, 2026**, at the **Conference Hall, K S Institute of Technology (KSIT), Bengaluru**. Organized by the **Department of Mechanical Engineering**, marked a significant initiative to enhance faculty expertise in sustainable manufacturing technologies towards inculcating research perspective and updating the contemporary knowledge in building sustainable practices.

The Inauguration was

- **Presided By:** Sri. R. Rajagopal Naidu, President, Kammavari Sangham
- **Chief Guest:** Dr. T. Ram Prabhu, Scientist & Joint Director, Defence Research & Development Organization (DRDO), Bengaluru
- **Graced the Occasion:** Sri. R. Leelashankar Rao, Hon. Secretary, Kammavari Sangham
- **With Presence of**
 - Dr. K. Channakeshavalu, Executive Director, KSGI
 - Dr. Dilip Kumar K, Principal & Director, KSIT
 - Dr. Anilkumar A, Associate Professor & Head, Department of Mechanical Engineering & Convener of FDP

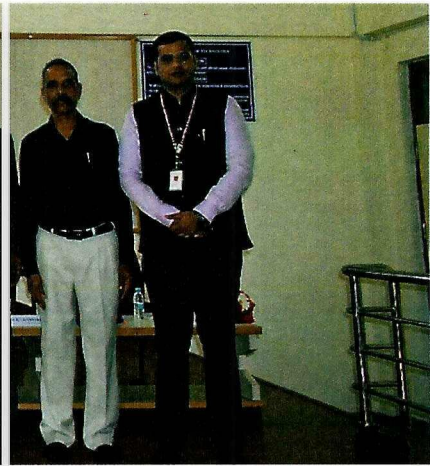
Mr. Saviraj A.S., welcomed the gathering and initiated the session. The session commenced with the invocation and lighting of the ceremonial lamp symbolizing the pursuit of knowledge.

Dr. Dilip Kumar K., welcomed the gathering, emphasizing the FDP's relevance in current scenario of scientific developments. **Dr. Anil Kumar A.**, briefed on the overall FDP and emphasize on the topics being covered in the various sessions of FDP. **Dr. T Ram Prabhu** delivered a keynote address highlighting the strategic role of higher educational institutions and faculty members in developing a sustainable nation through informative and educated youths. **Dr. K. Channakeshavalu**, underscored the FDP's focus on bridging academic research with industrial applications. Also, highlighted FDP area and its significance in present scenario.

The event was graced by members of the Kammavari Sangham Management Committee and Advisory Committee, reflecting institutional commitment to academic excellence and faculty development.

Sri. R. Rajagopal Naidu delivered the presidential remarks and conveyed about the commitment of KSIT towards upskilling of faculty and keep them update about the technology developments. **Sri. R. Leelashankar Rao**, highlighted the future of engineering education system and need for updating the contemporary issues and challenges for the faculty members.

Mr. Ajith G. Joshi, presented vote of thanks to formally conclude the inaugural session.

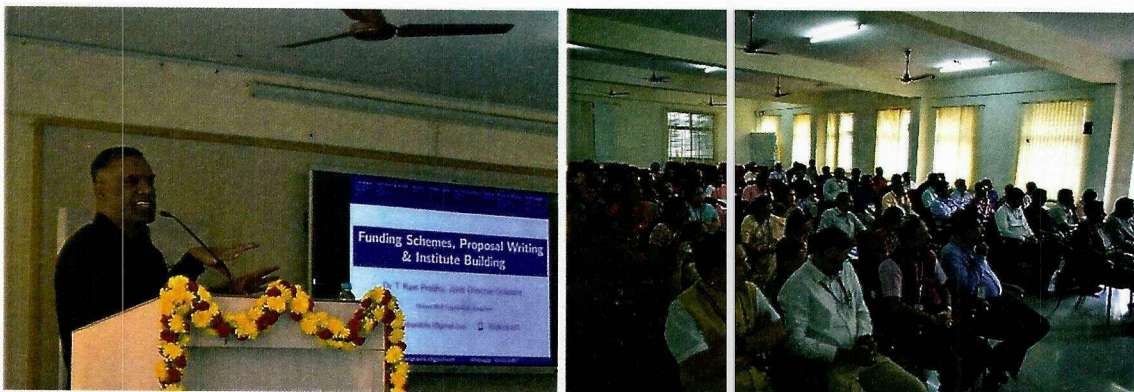


Day 1:

Session 1: Dr. T. Ram Prabhu, DRDO, Bengaluru

Topic: Funding Schemes Landscape in India, National R&D Priority and Writing Methods

The session focussed on how to get R&D funds in India, aligning innovative science with the country's strategic priorities like Atmanirbhar Bharat. Speaker highlight that, with the emergence of the ANRF and the new RDI fund worth ₹1 lakh crore, there is a need to focus on impactful areas like deep tech, green hydrogen, and bio manufacturing. Coming up with a successful application for such funding calls for much more than having a good hypothesis; one needs to clearly define and measure their objective, have a risk mitigation strategy and social-economic measures. Being ready institutionally, involving the industry, and having clear budget utilization would go a long way in overcoming bureaucracy and standing out to the review panel.



Session 2: Dr. Anil Chandra, TUV – Rheinland India Pvt. Ltd., Bengaluru

The session delivered about integrating reliability engineering into intelligent manufacturing is vital for achieving India's net-zero mandates. By deploying data-driven predictive maintenance and structural health monitoring, smart factories can shift from reactive repairs to proactive asset management. Advanced computational modeling—such as machine learning for fatigue crack growth prediction and micromechanical testing—prevents catastrophic failures while maximizing the safe operational lifespan of industrial components. This optimization directly reduces material waste, cuts energy consumption, and eliminates over-engineering. Ultimately, embedding robust reliability frameworks into automated production lines ensures high-efficiency operations, establishing a resilient, sustainable foundation for the future of Indian Industry 5.0.



Day 2:

Session 3: Dr. Nithin H. S., B.G.S. College of Engineering, Bengaluru

The session by Dr. Nithin H. S. showcased how the use of thermal spray coatings is a fundamental means through which sustainable and circular manufacturing processes are enabled. The comparative discussion between HVOF and atmospheric plasma spraying pointed out the effective process of depositing composite coatings, such as chromium carbide coatings, for saving degraded parts due to high temperature oxidation and erosion. An important emphasis was laid on post-deposition techniques, especially the use of microwave sintering to remove the pores present in coating in a much more energy-efficient way as compared to furnaces.



Session 4: Mr. Harsha S., CMTI, Bengaluru

The presentation by Mr. Harsha S. from Sensor Technology Development Centre, CMTI, Bengaluru and the session had an extensive coverage of the field of micro systems engineering. The session presented the details about manufacturing technologies including lithography, deposition of thin films and accurate singulation of silicon, glass and ceramic substrates. The

major focus was on packaging of semiconductors and MEMS sensors and important micro assembly methods included wedge bonding, ball bonding and flip chip bonding using gold, aluminum and silver alloy wires. The technical aspects of structural characterization and bond strength testing, including pull, push and shear tests were covered based on MIL-STD-883 requirements.



Day 3:

Session 5: Dr. Ashish Srivatsava, Presidency University, Bengaluru

The session presented by Dr. Ashish Srivastava, emphasized that Friction Stir Welding (FSW) is an integral part of any sustainable manufacturing process. It is a solid-state joining technique which works at temperatures well below the melting point of the material being used, thus making it unnecessary to use any kind of filler metals, fluxes, and shielding gases. No toxins are released through FSW process, and through this masterclass, participants learned about how mechanical friction and deformation of materials create high-strength aluminum and magnesium alloys without solidification problems.



Session 6: Mr. Shrinidhi Bhat, AMACE Solutions, Bengaluru

The session highlighted the realities of Metal 3D Printing industry in aerospace, automotive, and medical industry sectors. This presentation centered on PBF machines working on alloys such as Titanium and Inconel. The biggest focus was put on the "First Time Right" problem in engineering, where thermal distortion, internal stress, and warping of components had to be controlled through the development of an optimized automated support system. The participants got a good understanding of the entire industrial additive manufacturing life cycle from topology optimization to heat treatment and surface finishing.



Day 4:

Session 7: Dr. Jitendra Kumar Katiyar, MIT, Manipal

During session, it was highlighted that additive manufacturing (AM) technology as an important tool that helps to make production processes environmentally friendly and promote circular economy projects. In the talk, 3D printing was shown as the means by which near-net shape production is achieved. This approach significantly cuts down on the waste of materials and energy needed during production processes. Drawing from his background in surface engineering and tribology, Professor Katiyar pointed out that the optimization of AM processing parameters increases wear resistance and service life of metal matrix and polymer composites.



Session 9: Dr. Ramesh M. R., NITK, Mangaluru

This session focused on the importance of surface engineering in making greener industries. Surface Engineering is considered to be a key area that holds great promise for making the industry greener and more environmentally friendly. The resource person explained how modern methods of depositing coatings such as HVOF (High Velocity Oxy-Fuel) and Plasma Spraying acts as an environmentally friendly way to increase the service life of heavy machinery. Some key research areas were pointed out during this lecture, including the move towards making materials non-toxic and bio-compatible as well as using waste industrial products in composite coatings.



Day 5:

Session 8: Industrial Visit to AMACE Solutions, Bengaluru

This industry visit to AMACE Solutions, Bengaluru, gave educators and researchers a hands-on experience of production-level additive manufacturing technology involving metals. The visiting faculty members got an opportunity to see advanced Laser Powder Bed Fusion machines working on high-performance titanium and nickel alloys. The experts from AMACE showed that the near-net-shape printing reduces wastage of raw materials considerably and saves many resources than traditional subtractive manufacturing methods.

This visit brought out the important sustainable processes used in the industries such as the closed-loop metal powder recycling process, topology optimization process for weight reduction, and efficient post-processing energy conservation techniques. Apart from this, the visit dealt with the problem faced by manufacturers regarding the minimization of thermal residual stresses and optimization of support structures for high-yield printing. In this way, the visit was able to successfully bridge the gap between academic curriculum and sustainable industrial applications.



Day 6:

Session 10: Gurumurthy Hegde, Dayanand Sagar University, Bengaluru

This lecture delivered a revolutionary paradigm in green chemistry and the concept of the circular economy. Through the use of controlled pyrolysis and chemical activation techniques, Dr. Hegde shown how biomass of agricultural and industrial biowastes such as oil palm and coconut shell can be converted into structurally well-defined and porous carbon nanoparticles (CNPs). This masterclass explained how these bio-derived nanoparticles have versatile industrial applications in terms of their potential use as high-performance electrodes for energy storage systems, molecular sieves for water treatment and biosensors.



Valedictory Session:

The valedictory ceremony successfully concluded the one-week Faculty Development Program (FDP) on "**Sustainable Manufacturing Techniques: Research Paradigm and Future Prospects**," highlighting the critical shift toward sustainable engineering and research trends. The event was graced by distinguished members including **Dr. Chennakeshavalu** (Executive Director, KS Group of Institutions), **Dr. Umashankar** (Professor and COE), and **Dr. Anil Kumar A.** (Associate Professor & HOD, Dept. of ME), who served as the program convener. The dignitaries emphasized the urgency of aligning academic research with global sustainability goals and integrating these paradigms into modern engineering curricula. Marking the end of a rigorous week of collaborative learning, the ceremony concluded with a summary of the FDP's achievements, positive participant feedback, and the formal distribution of certificates to the attendees.



Number of Participants: 33

Key Outcomes of the FDP:

- Faculty identified critical gaps in eco-friendly engineering and sustainable manufacturing frameworks.
- Participants gained contemporary knowledge to integrate green paradigms into engineering coursework.
- The program fostered collaborative networks among peer researchers for future joint initiatives.
- Attendees mastered methods to optimize industrial energy consumption and minimize waste in production.


Coordinators

1. Dr. Nirmala L
2. Mr. Ajith Gopal Joshi


HOD, Dept. of ME
Head of the Department
Dept. of Mechanical Engg.
K.S. Institute of Technology
Bengaluru - 560 109.


Principal

Enclosures:

1. FDP Schedule
2. Registration Form
3. Attendance Sheet
4. Participants feedback
5. Quiz



K.S. Institute of Technology, Bengaluru

in association with ISTE organizing
One-Week Faculty Development Program (FDP) on

"Sustainable Manufacturing Techniques: Research Paradigm and Future Prospects" during 29th June 2026 to 04th July 2026



Registration List

Sl No	Full Name	Designation	Department	Organization	Email Id	Contact Number	Category of Participant	Transaction ID / Reference Number	Signature
1	Dr. Nagaraja C Reddy	Associate Professor	Mechanical Engineering	Bangalore Institute of Technology	cnraja@gmail.com	9449991551	External Faculty	T2606081650318930657300	
2	Dr. Ranjitha P	Assistant professor	Mechanical engineering	Dayananda Sagar College of Engineering Bangalore	ranjithap-me@dayanandasagar.edu	8722477729	External Faculty	T2606101000454847961122	
3	Dr. G. Padmavathi	Assistant Professor	Mechanical engineering	Dayananda Sagar College of Engineering Bangalore	padmajishnu@gmail.com	9880196172	External Faculty	652885823746	
4	Dr. P. Sudhakar	Assistant Professor	Mechanical Engineering	Dayananda Sagar College of Engineering Bangalore	sudhakar-me@dayanandasagar.edu	9445647406	External Faculty	616387767484	
5	Mr. Gourav Kumar	Assistant Professor	Mechanical Engineering	Dayananda Sagar College of Engineering Bangalore	gouravkumar-me@dayanandasagar.edu	7411359183	External Faculty	652942391025	
6	Mr. Harisha P	Assistant Professor	Mechanical Engineering	K. S. School of Engineering and Management, Bengaluru	harisha@kssem.edu.in	9731380542	External Faculty	653060255247	
7	Dr. Abhishek M R	Associate Professor	Mechanical Engineering	K. S. School of Engineering and Management, Bengaluru	abhishekmr@kssem.edu.in	9886045566	External Faculty	653060255247	

8	Mr. Arun Karthik S	Assistant Professor	Mechanical and Manufacturing Engineering	Ramaiah University of Applied Sciences	arunkarthik.me.et@msruas.ac.in	8722049380	External Faculty	616928842867	
9	Dr. Madhusudan M	Assistant professor	Mechanical engineering	Bangalore Institute of Technology	madhubit04@gmail.com	9964022693	External Faculty	T2606201400335904471385	
10	Mr. Ravi Kumar S R	Assistant Professor	Mechanical Engineering	Dayananda Sagar College of Engineering Bangalore	ravikumar.sr26@gmail.com	9448216344	External Faculty	336852462677	
11	Mr. Sanju H	Assistant professor	Mechanical Engineering	RNS Institute of technology	sanju.h@msit.ac.in	9743875105	External Faculty	T2606211336089454970631	
12	Mr. SURESH T	Research Scholar	School of Mechanical Engineering	VIT University, Chennai	sureshtme11@gmail.com	8122502931	Research Scholars	T26062209502112676748271785052376813	
13	Mr. Krishna Murthy N K	Assistant Professor	Mechanical Engineering	S.J.B. Institute of Technology, Bengaluru	krishnanhce@gmail.com	9740494006	External Faculty	T2606231615098545036403	
14	Mr. Nagaraja T K	Assistant Professor	Mechanical Engineering Department	JSS Academy of Technical Education, Bengaluru	nagarajatk@jssateb.ac.in	9019766429	External Faculty	654132985697	
15	Mr. Dechun D M	Lecturer	Mechanical	K S Polytechnic, Bengaluru	raghubm@kspolytechnic.edu.in	9738837870	Internal Faculty	237647	
16	Mr. Madhusudana HC	Assistant Professor	Mechanical Engineering	RNS Institute of Technology	madhusudana.hc@msit.ac.in	9448660333	External Faculty	617671748971	
17	Dr. Sujith kumar S G	Professor	Mechanical engineering	T John Institute of Technology, Bengaluru	tjitmehod@tjohngroup.com	9481932736	External Faculty	T2606251155507535377776	
18	Dr. Younus Pasha	Associate Professor	Mechanical Engineering	HKBK College of Engineering, Bengaluru	younuspashame@gmail.com	8722715742	External Faculty	T2606271136271824087734	

19	Dr. Aniruddha Ram Hiriyur Ravi	Assistant professor	Mechanical	Jyothy Institute of Technology, Bengaluru	aniruddharam007@gmail.com	8884901777	External Faculty	617859442265	
20	Mr. Sanjay S.J.	Assistant Professor	Mechanical Engineering	Basaveshwara Engineering College, Bagalkote	sanjuyadavbec1@gmail.com	9538466455	External Faculty	T2606271256533813676263	
21	Mr. Gurumurthy M	Assistant professor	Mechanical engineering	Jyothy Institute of Technology, Bengaluru	gurumurthy.m@jyothyit.ac.in	8867999556	External Faculty	T2606280940178528516101	
22	Dr. Joy Vargheese	Assistant Professor	Department of Humanities	Vemana Institute of Technology, Bengaluru	vargheesejoy@gmail.com	9986542939	External Faculty	125316000581	
23	Mr. Vedamohan V	Research Scholar	Mechanical Engineering	JSS Academy of Technical Education, Bengaluru	vedamohanv@gmail.com	97388656882	Research Scholars	Y2M1285472093571399680	
24	Dr. Umashankar M	Professor	Mechanical Engineering	K.S. Institute of Technology, Bengaluru	umashankaras@ksit.edu.in	9901933334	Internal Faculty		
25	Dr. Anil Kumar A.	Associate Professor	Mechanical Engineering	K.S. Institute of Technology, Bengaluru	anilkumara@ksit.edu.in	8197975168	Internal Faculty		
26	Dr. Nagaprasad K.S.	Associate Professor	Mechanical Engineering	K.S. Institute of Technology, Bengaluru	nagaprasadks@ksit.edu.in	9945343463	Internal Faculty		
27	Dr. Nirmala L.	Associate Professor	Mechanical Engineering	K.S. Institute of Technology, Bengaluru	nirmalal@ksit.edu.in	9845484930	Internal Faculty		
28	Mr. Nagabhushana M.	Associate Professor	Mechanical Engineering	K.S. Institute of Technology, Bengaluru	nagabhushanam@ksit.edu.in	984562052	Internal Faculty		
29	Mr. Saviraj A.S.	Assistant Professor	Mechanical Engineering	K.S. Institute of Technology, Bengaluru	savirajas@ksit.edu.in	8073657068	Internal Faculty		



in association with **ISTE** organizing

One-Week Faculty Development Program (FDP) on

"Sustainable Manufacturing Techniques: Research Paradigm and Future Prospects" during 29th June 2026 to 04th July 2026

Session Wise Attendance

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11	Mr. Sanju H	front	front	front-front	front-front	front-front	front-front	front-front
12	Mr. Suresh T	front	front	front-front	front-front	front-front	front-front	front-front
13	Mr. Krishna Murthy N K	front	front	front-front	front-front	front-front	front-front	front-front
14	Mr. Nagaraja T K	front	front	front-front	front-front	front-front	front-front	front-front
15	Mr. Raghu B M	front	front	front-front	front-front	front-front	front-front	front-front
16	Mr. Madhusudana H C	front	front	front-front	front-front	front-front	front-front	front-front
17	Dr. Sujith kumar S G	front	front	front-front	front-front	front-front	front-front	front-front
18	Dr. Younus Pasha	front	front	front-front	front-front	front-front	front-front	front-front
19	Dr. Aniruddha Ram Hiniyur Ravi	front	front	front-front	front-front	front-front	front-front	front-front
20	Mr. Sanjay S.J.	front	front	front-front	front-front	front-front	front-front	front-front
21	Mr. Gurumurthy M	front	front	front-front	front-front	front-front	front-front	front-front
22	Dr. Joy Vargheese . I	front	front	front-front	front-front	front-front	front-front	front-front
23	Mr. Vedamohan V	front	front	front-front	front-front	front-front	front-front	front-front
24	Dr. Umashankar M	front	front	front-front	front-front	front-front	front-front	front-front



K.S. Institute of Technology, Bengaluru

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Program Schedule

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
9:30 AM- 10:30 AM Inauguration of FDP	10:00 – 12:30 Session 3: Thermal Spray Coatings: A Pathway Toward Circular manufacturing by Dr. Nithin H. S. Assoc. Prof. & Head, Department of ME, B.G.S.C.E., Bengaluru	10:00 – 12:30 Session 5: Friction Stir Welding as Sustainable Joining Technology for Modern Industries by Ashish Srivatsava, Assistant Professor Presidency University, Bengaluru	10:00 – 12:30: Session 8: Role of Additive Manufacturing in Sustainable Development by Dr. Jitendra Kumar Katiyar Associate Professor, MTT, Manipal	Industrial visit AMACE Solutions, Bengaluru	10:00 – 12:30: Session 10 Keynote Talk on Sustainable Materials by Dr./Prof. Gurumurthy Hegde, Professor & Director, Centre for Water to Wealth Technology, Dayanand Sagar University, Bengaluru
10:30 AM to 11:00 AM Tea Break	11:15 AM to 11:30 AM Tea Break	11:15 AM to 11:30 AM Tea Break	11:15 AM to 11:30 AM Tea Break		11:15 AM to 11:30 AM Tea Break
11:00 AM – 12:30 PM Session 1: Keynote Session on Funding Schemes Landscape in India, National R&D Priority and Writing Methods by Dr. T. Ram Prabhu, Scientist and Joint Director, DRDO, Bengaluru	11:30 AM – 1:00: Session 3 Contd...	11:30 AM – 1:00 PM 11:30 AM – 1:00 Session 5 Contd...	11:30 AM – 1:00 Session 8 Contd...		11:30 AM – 1:00 Session 10 Contd...
12:30 PM to 01:30 PM Lunch Break	12:30 PM – 1:30 PM Lunch Break	12:30 PM to 01:30 PM Lunch Break	12:30 PM to 01:30 PM Lunch Break		
01:30 – 3:30 Session 2: Reliability Engineering towards Sustainable Intelligent Manufacturing by Dr. Anil Chandra Senior Manager – Material Testing, TUV – Rheinland India Pvt. Ltd., Bengaluru	1:30 PM to 3:30 PM Session 4: Advanced Manufacturing Processes, Characterization and Packaging of Sensors by Mr. Harsha S., Scientist D, Centre for Sensors, Vision Technology and IT CMTI, Bengaluru	2:00 – 4:00: Session 6: Metal Additive Manufacturing Process: An Industrial Perspective and Challenges by Mr. Shrinidhi Bhat AMACE Designers Ltd., Bengaluru	1:30 PM to 4:00 PM: Session 9: Sustainable Coating Technology: Research Opportunities by Dr. Ramesh M. R. Professor, National Institute of Technology Karnataka, Mangaluru		1:30 PM – 2:30 PM: Test & Feedback
					2:45 PM to 3:30 PM Valedictory Function

New
(Dr. Nirmla) *(Ajith Aggarwal)*
Co-ordinators

Head of the Department
Dept. of Mechanical Engg
K.S. Institute of Technology
Bengaluru - 560 109

One Week FDP on Sustainable Manufacturing Techniques 2026: Feedback

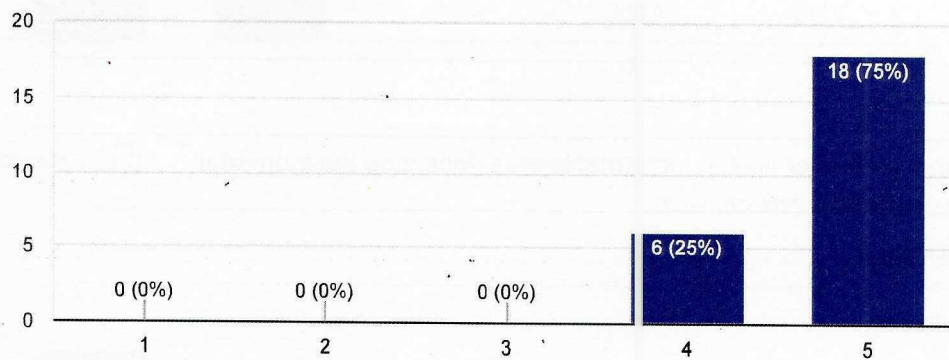
24 responses

[Publish analytics](#)

How would you rate the overall structure and design of the 5-day FDP curriculum?

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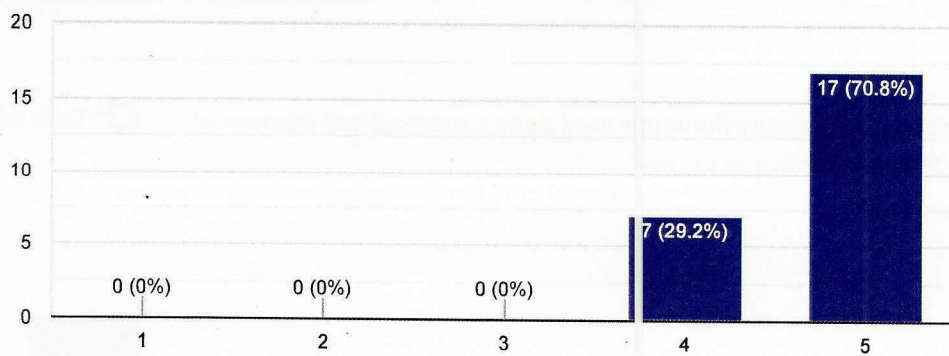
24 responses



To what extent did the FDP successfully bridge conventional manufacturing techniques with sustainable engineering advancements?

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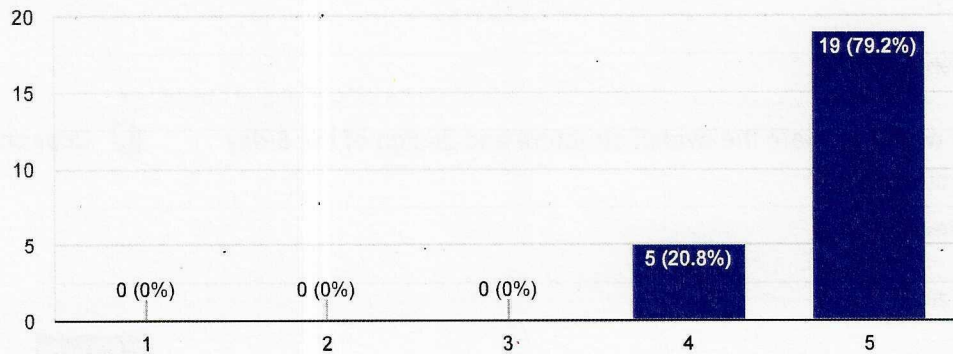
24 responses



How relevant were the topics covered (Friction Stir Welding, Additive Manufacturing, etc.) to the theme of FDP?

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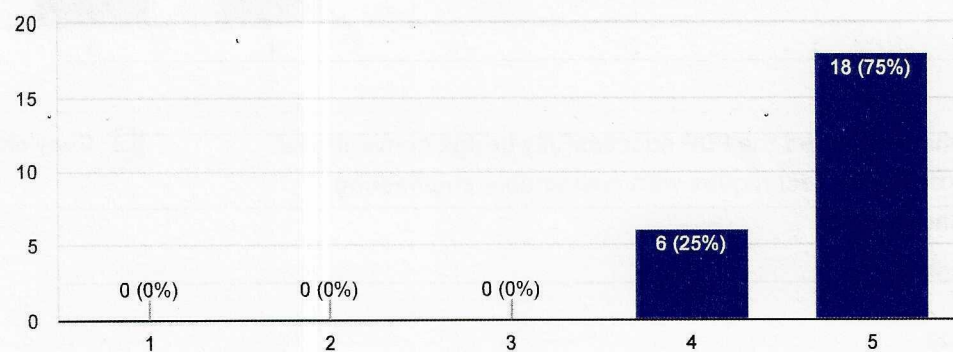
24 responses



The mix of academic and industrial lenses (including the industrial visit) provided a holistic view.

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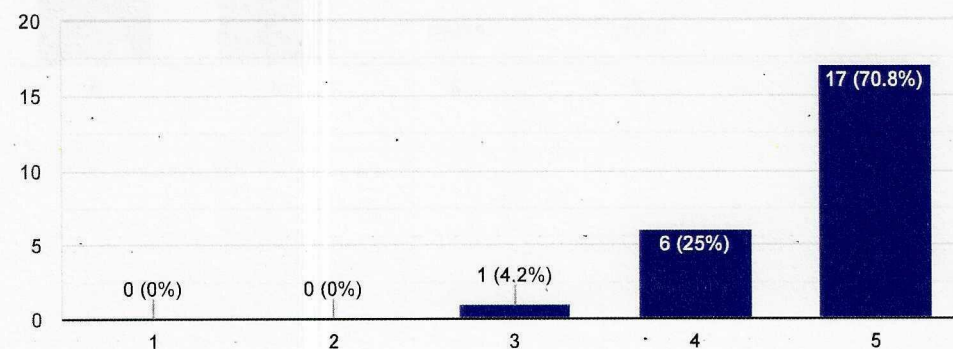
24 responses



The resource persons demonstrated deep expertise and command over their respective sessions.

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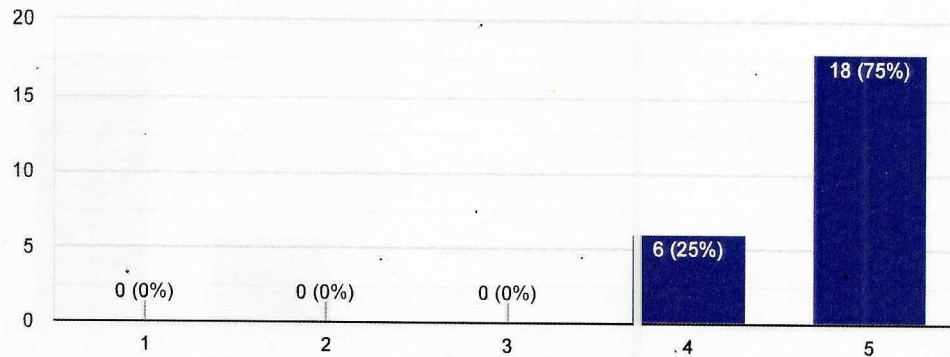
24 responses



The presentations and keynote lectures were clear, engaging, and well-paced.

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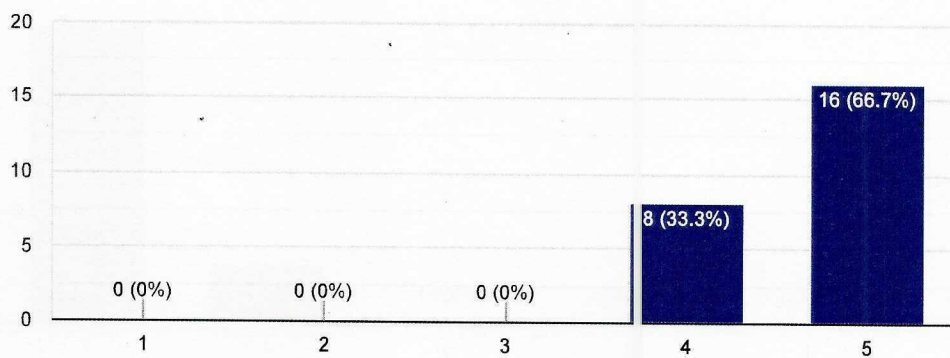
24 responses



Time was adequately managed and sufficient opportunity was provided for Q&A / interaction.

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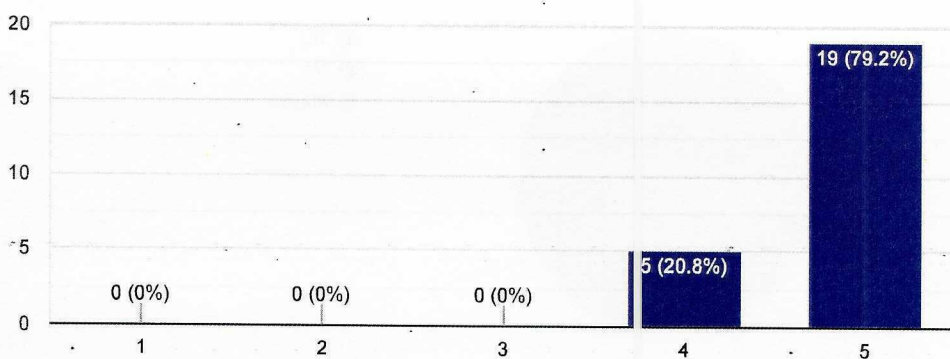
24 responses



How would you rate the coordination and timely communication from the organizing team?

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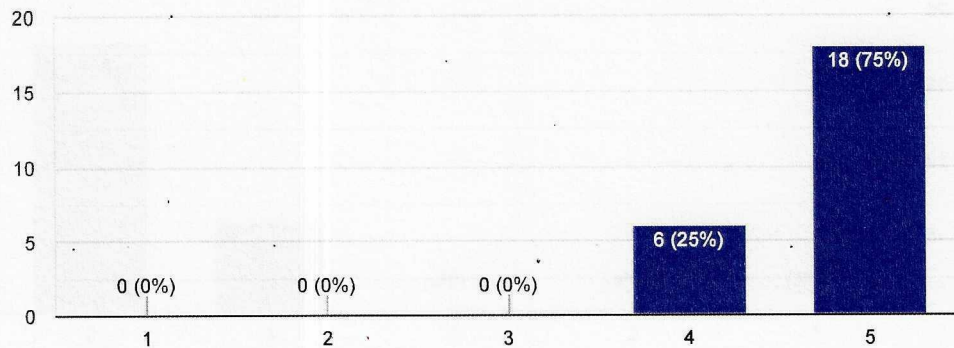
24 responses



Quality of the platform, audio-visual setup, and technical execution of the sessions.

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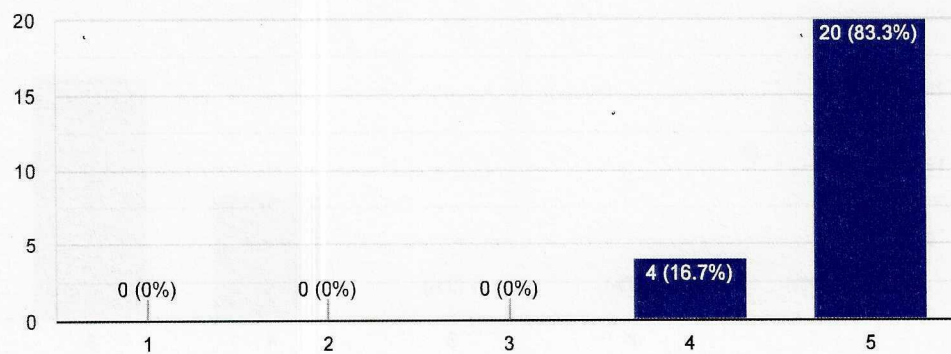
24 responses



Overall hospitality, arrangements, and accommodation facilities (if applicable).

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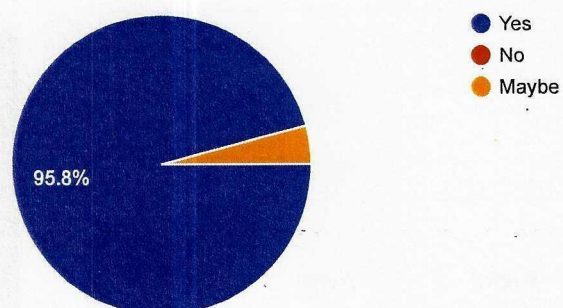
24 responses



Would you like to participate in future FDPs or collaborative research initiatives organized by KSIT?

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24 responses



Any other suggestions

15 responses

Good

Hands on sessions can be included

Good

Nil

Overall the FDP was very well organised also gained more knowledge in our intrested topics.

--

Extend theme of thermal engineering in future FDPs

It was informative program.

No

Excellent and benifitted.

NIL

NO

Very well organised. Thanks to Dr.Anil and their entire team for all their efforts. Looking forward to your next program

Well organized

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Co-ordinator

HOD, ME

Dr. Nirmala L - *Neli*
Ajith G Joshi *A. G. Joshi*



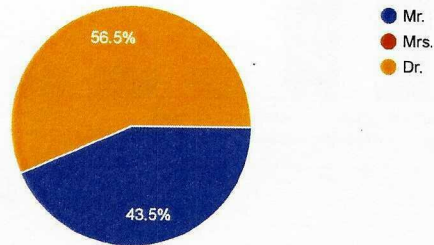
One Week FDP on Sustainable Manufacturing Techniques 2026: Quiz

23 responses

Salutation

23 responses

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Full Name

23 responses

Nagaraja C.Reddy

Sujith kumar S G

Krishna Murthy N K

Joy Vargheese T

M Nagabhushana

Abhishek M R

Aniruddha Ram

Dr Nagaprasad K S

NAGARAJA T K

Sanjay S J

G PADMAVATHI

Madhusudan M

Manjunatha.B.R

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RANJITHA P

Raghu B M

Harisha P

Younus Pasha

Gurumurthy M

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Nirmala L

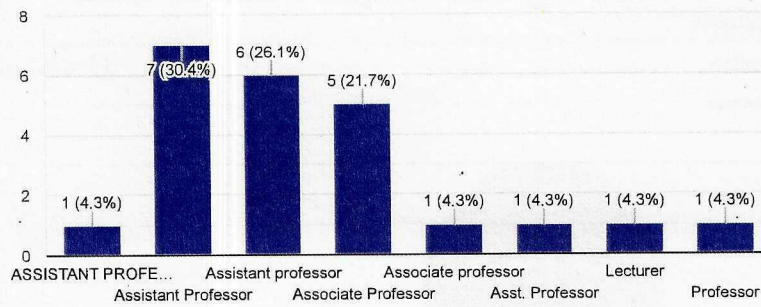
Ravi kumar S R

P Sudhakar

Designation

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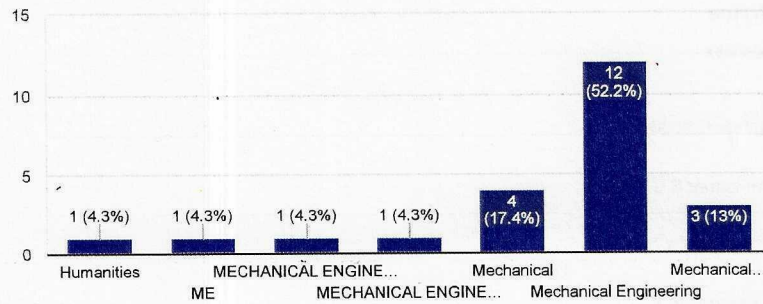
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Department

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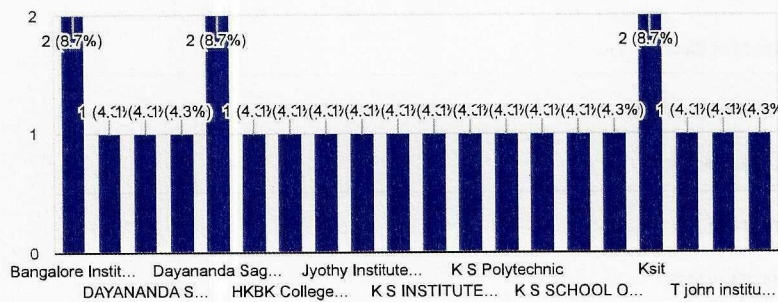
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Organization

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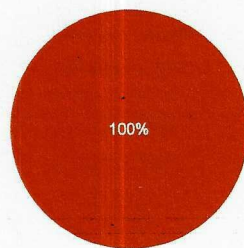
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In the context of 'Sustainable Intelligent Manufacturing,' how does Reliability Engineering primarily contribute to sustainability?

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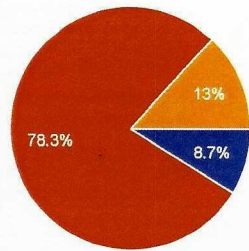


- By increasing the speed of production lines regardless of material waste.
- By predicting and preventing equipment failures, thereby minimizing material waste, en...
- By completely eliminating the need for human operators thr...
- By substituting all mechanical parts with digital software sim...

Which reliability metric is most critical for optimizing maintenance schedules and ensuring continuous uptime in an intelligent manufacturing system?

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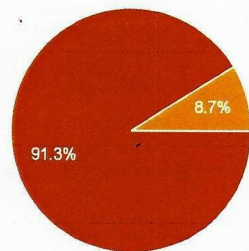


- Mean Time to Repair (MTTR) only
- Mean Time Between Failures (MTBF)
- Overall Equipment Effectiveness (OEE) alone
- First Time Yield (FTY)

How does 'Intelligent' manufacturing enhance traditional Reliability Engineering practices?

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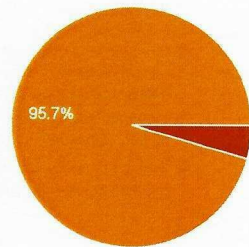


- It relies purely on manual physical inspections at scheduled intervals.
- It shifts maintenance from a reactive or time-based approach to data-driven Prediction
- It increases the safety margins of components without analyzing
- It removes the need to track historical component failure rates

When applying Reliability Engineering to automated smart factories, what is a primary goal of a Failure Modes and Effects Analysis (FMEA)?

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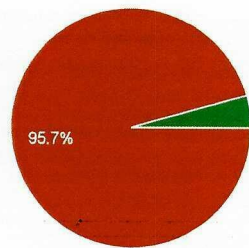


- To track the daily financial market stocks of the company.
- To evaluate the speed of the delivery logistics network.
- To systematically identify potential failure points in the manufacturing process and prevent them
- To calculate the exact carbon footprint of the administrative offices

Why is the integration of 'Reliability' and 'Intelligence' considered a key driver for the Circular Economy in modern manufacturing?

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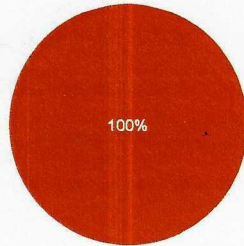


- It encourages shorter product lifecycles so consumers upgrade more frequently.
- It optimizes machine performance to extend the active operational lifespan of machines
- It focuses exclusively on the final packaging stage of the product
- It automates the generation of regulatory compliance paperwork

How do Thermal Spray Coatings primarily align with the core principles of 'Circular Manufacturing'?

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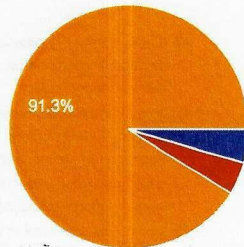


- By making components single-use so they can be completely melted down and recast after...
- By restoring worn-out industrial components to their original dimensions and adding wear...
- By completely replacing chemical surface cleaning ste...
- By speeding up the natural structural decomposition and...

In thermal spray processing, what is the primary mechanism by which the coating material is deposited onto the substrate?

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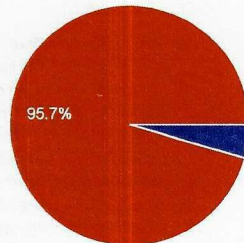


- The coating material is dissolved in a liquid chemical bath and electroplated over s...
- Sub-micron gaseous elements are slowly diffused into the substrate at extreme vacuum...
- Finely divided metallic or ceramic materials are heated...
- A solid block of raw material is friction-rubbed against the co...

Which of the following is a significant environmental benefit of utilizing thermal spray reclamation over manufacturing a brand-new replacement part?

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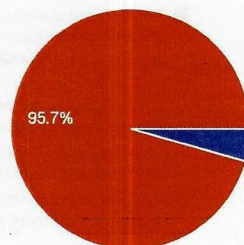


- It eliminates the need for any quality testing or industrial surface inspections.
- It reduces the manufacturing carbon footprint and industrial energy consumption by bypas...
- It permanently removes all friction factors from mechanic...
- It allows parts to work without needing any structural structu...

What type of degradation can specialized thermal spray coatings protect against to extend the service life of engineering infrastructure?

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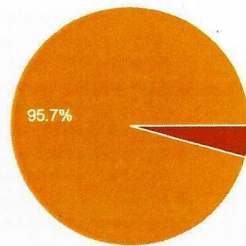
- Software data corruption and logic loop delays.
- High-temperature oxidation, cavitation erosion, and aggressive chemical corrosion.
- Ambient magnetic interference and wireless signal blockages.
- Routine administrative operational delays.



From a circular economy perspective, a component that has been coated, worn down through years of operation, and then stripped and re-coated is an example of which loop?

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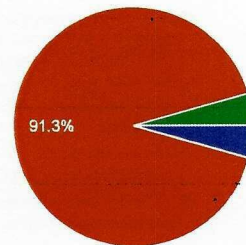


- The linear take-make-dispose waste loop.
- The rapid digital software deployment loop.
- The component lifetime extension and remanufacturing loop.
- The structural downcycling and landfill disposal loop.

What is the fundamental mechanism of Additive Manufacturing (AM) that inherently promotes resource sustainability compared to subtractive manufacturing?

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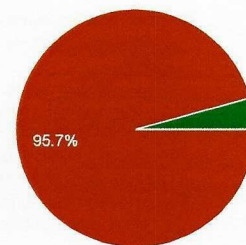


- It chips away material from a large solid block until the final shape is reached.
- It fabricates components layer-by-layer, placing material only where it is functionally required.
- It relies entirely on casting liquid metal into single-use sand molds.
- It requires massive structural forgings that compress material.

How does Additive Manufacturing contribute to reducing the carbon footprint of the product life cycle during the distribution/logistics phase?

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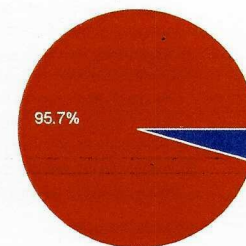


- By requiring specialized heavy-duty cargo ships for transport.
- By enabling on-demand, localized production (distributed manufacturing), which shortens the supply chain.
- By completely eliminating the need to package the finished products.
- By increasing the total weight of the components so they remain in the region.

Which design approach, heavily enabled by Additive Manufacturing, allows engineers to optimize a part for maximum strength while minimizing weight and material usage?

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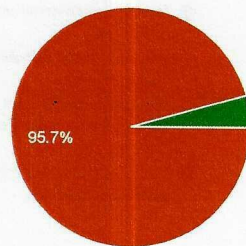


- Linear Extrusion Design
- Generative Design and Topology Optimization
- High Allowance Cast Modeling
- Subtractive Block Layout

From a sustainable development standpoint, what is a major advantage of using Additive Manufacturing for repairing expensive, high-value industrial components?

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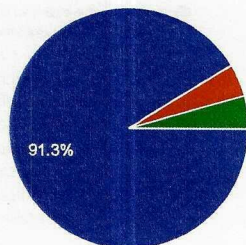


- It allows components to be completely melted down and remanufactured from scratch...
- It can deposit material locally onto a worn or damaged area (e.g., via Directed Energy De...)
- It guarantees that the component will never experie...
- It replaces complex engineering assessments with automated...

While Additive Manufacturing supports sustainability, what remains an ongoing environmental challenge in the industrial metal AM process?

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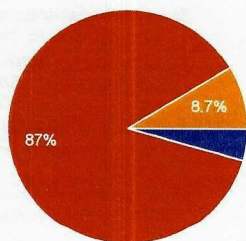


- High energy consumption during the printing phase and the carbon footprint associate...
- The total absence of any digital software controls during production.
- The inability to print components larger than a few...
- A complete lack of interest from modern industrial sectors.

What is the fundamental operational characteristic of Friction Stir Welding (FSW) that distinguishes it from traditional fusion welding methods?

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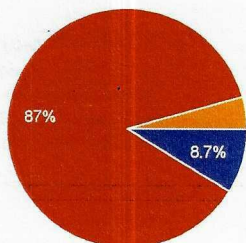


- It melts both parent metals completely using an electric arc plasma.
- It is a solid-state joining process, meaning the material does not melt; instead, a rotat...
- It relies on a high-temperature chemical combustion reaction...
- It utilizes an adhesive polymer chemical agent that cures un...

From an environmental and safety standpoint, why is Friction Stir Welding considered a highly sustainable joining technology?

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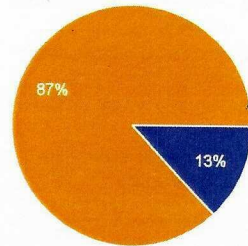


- It consumes a significant amount of single-use filler wire metals that absorb carbon.
- It produces zero toxic shielding gases, zero harmful fumes, zero arc glare, and requires no fille...
- It operates entirely without the use of electricity or mechanic...
- It relies on disposable protective plastic shields that decompos...

Which family of lightweight engineering alloys, traditionally difficult to weld cleanly using fusion methods due to cracking and porosity, is an ideal candidate for Friction Stir Welding?

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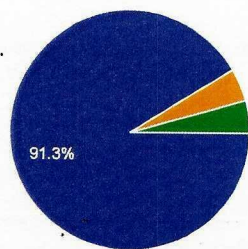


- High-carbon structural steels
- Cast iron alloys
- Aluminum alloys (such as the 2xxx and 7xxx aerospace series)
- Heavy lead and zinc structural metals

What is the primary role of the specialized, non-consumable rotating tool pin and shoulder in Friction Stir Welding?

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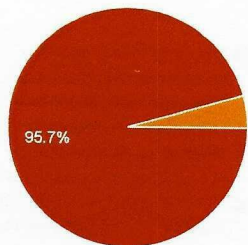


- To generate frictional heat to soften the material and mechanically stir the joint interface
- To remove excess metal and smooth out the edges before applying adhesive
- To deposit a continuous stream of molten electrode wire into the joint
- To pass a high-voltage electrical current that sparks an intense heat

In modern transport industries (like aerospace, automotive, and rail), how does the implementation of Friction Stir Welding indirectly contribute to long-term sustainability?

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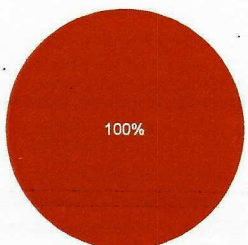


- By making the vehicles significantly heavier to resist wind resistance
- By enabling high-strength, lightweight joint designs that reduce overall vehicle weight
- By requiring parts to be replaced at much shorter intervals
- By completely eliminating the need for any digital or computational tools

From an industrial perspective, what is one of the primary post-processing challenges associated with Powder Bed Fusion (PBF) metal additive manufacturing?

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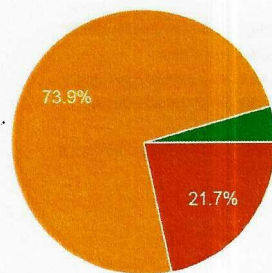


- The complete inability to machine or drill the printed parts afterward
- Managing high residual stresses that require thermal stress relief (heat treatment)
- Converting the metal parts back into liquid state for immediate reuse
- Coating the metal parts in a layer of protective plastic to prevent oxidation

Which defect is a major quality control concern in industrial Metal Additive Manufacturing, often caused by un-melted powder or trapped gas?

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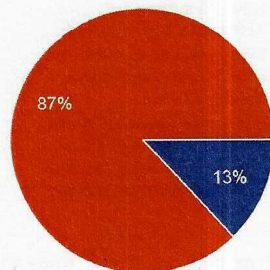


- Discoloration of the external print bed.
- Intergranular scaling and macroscopic elongation.
- Porosity and lack-of-fusion voids.
- Rapid evaporation of the substrate plate.

Why is the cost of raw materials considered a significant challenge in the widespread industrial adoption of metal AM?

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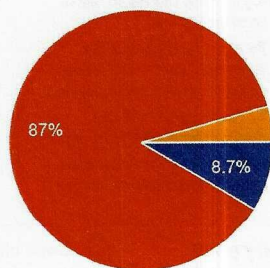


- Metal AM uses standard scrap metal sheets that are difficult to find.
- It requires highly specialized, spherical metal powders with strict particle size distributions...
- The raw metal wire must be coated in gold or silver to ens...
- The materials can only be safely sourced from a single g...

What is a key industrial advantage of using Direct Energy Deposition (DED) over Powder Bed Fusion (PBF) systems?

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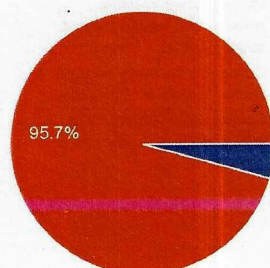


- DED prints features with a significantly higher surface finish and resolution than PBF.
- DED is highly effective for repairing large, worn-out industrial components or clad...
- DED completely eliminates the need for any high-powered la...
- DED operates entirely without generating any heat or therm...

To ensure part reliability in regulated industries like aerospace or medical devices, what must metal AM parts undergo to verify internal structural integrity?

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- Simple visual color matching checks against a digital image.
- Non-destructive testing (NDT) such as X-ray Computed Tomography (CT scanning) or...
- Manual weight measurements on a basic scale.
- Extended exposure to outdoor weathering elements for several months.

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