

An Autonomous Institute
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Guest Lecture on “Futuristic Aero Engine Development-World Scenario and Certification Challenges”

The Department of Mechanical Engineering at MVJCE, in collaboration with ISTE, IIC, and IQAC, organized a dual-session technical program on 5th May 2026. The event featured **Shri L.N. Raghavendra, Scientist ‘H’ (OS) and Director of Propulsion at CEMILAC, DRDO Bengaluru**, as the distinguished Chief Guest and Speaker. The program was designed to bridge the gap between industrial certification standards and creative product innovation.

Objectives of the Event:

- To provide insights into the latest global advancements in aero engine technologies, including sustainable propulsion systems, hybrid/electric engines, and next-generation turbofans.
- To familiarize participants with the current international trends and research directions in aerospace propulsion.
- To highlight the complex certification processes and regulatory challenges associated with emerging aero engine technologies.
- To bridge the gap between academic learning and industrial practices in aero engine development and certification.

Event Overview

The guest lecture focused on the evolution and future direction of aero engine technologies across the world. The speaker discussed emerging concepts such as fuel-efficient ultra-high bypass ratio engines, hydrogen-powered propulsion, hybrid-electric systems, and sustainable aviation fuels (SAFs), which are shaping the future of aviation.

A detailed perspective on the global aerospace scenario was presented, including the role of major engine manufacturers (Rolls-Royce, GE, Pratt & Whitney) and ongoing international research initiatives aimed at reducing emissions and enhancing performance.

The lecture also emphasized the challenges in certification, particularly for futuristic engines that deviate from conventional designs. Key points included:

- Stringent regulations by agencies like FAA (Federal Aviation Administration) and EASA (European Union Aviation Safety Agency)
- Issues related to safety validation, reliability testing, and compliance with environmental standards
- The need for new certification frameworks to accommodate novel propulsion technologies

Overall, the session provided valuable exposure to real-world engineering challenges, regulatory requirements, and innovation trends, helping participants understand the multidisciplinary aspects of aero engine development.

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Forenoon Session: Guest Lecture on Aero Engine Development.

The morning session commenced at 10:45 am in the Smt. Rajalakshmi Seminar Hall with a guest lecture titled "Futuristic Aero Engine Development: World Scenario and Certification Challenges." During this session, **Shri L.N. Raghavendra** shared profound insights into the evolving landscape of global propulsion systems. He highlighted the rigorous certification protocols required in defense and aerospace, emphasizing the complexities of developing engines that meet international safety and performance standards. The lecture provided students with a rare glimpse into the high-stakes world of DRDO and CEMILAC, focusing on the technological hurdles of next-generation aero engines.

Photographs from the Event



Photograph 1: Chief guest addressing and the Empowering Participants Through Visionary Leadership.

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Schedule of the Event

Table 1 demonstrates the schedule of the event. The session began with the introduction of the resource person by the Head of the Department, followed by the overview of the guest lecture by Prof Srinivas Kumar, Assistant Professor, Department of Mechanical Engineering and Coordinator of the Guest Lecture.

Day	Time	Session Details
Tuesday, May 05, 2026,	10.30 am - 10.40 am	WelcomeAddress
	10.40 am - 10.50 am	Introduction of the Resource Person
Tuesday, May 05, 2026,	10.50 am - 12.50 pm	Session Delivery
	12.50 pm - 01.00 pm	Vote of Thanks

Table 1: Schedule of the Event

Outcomes and Impact

- Participants gained a clear understanding of emerging aero engine technologies, including hybrid-electric propulsion, hydrogen-based systems, and sustainable aviation fuels.
- Enhanced awareness of the global aerospace landscape, key industry players, and ongoing research trends.
- Improved knowledge of certification procedures and regulatory frameworks governed by agencies such as FAA and EASA.
- Developed insight into the challenges of safety validation, environmental compliance, and reliability testing for futuristic engines.
- Strengthened the ability to relate theoretical concepts with real-world engineering applications.

Conclusion

The session emphasized that while significant innovations such as hybrid-electric propulsion, hydrogen-based engines, and ultra-efficient turbofans are shaping the future, they also introduce complex certification and regulatory challenges. Ensuring safety, reliability, and compliance with international standards remains a critical hurdle for engineers and regulatory bodies.

Overall, the lecture successfully enhanced participants' understanding of the global trends, technological advancements, and multidisciplinary challenges involved in aero engine development. It also inspired students and faculty to explore research, innovation, and career opportunities in the aerospace sector, bridging the gap between academic knowledge and real-world industrial practices.

Prepared By: Dr Rajeshkumar P