

**A Report on Online Guest lecture on
"Reliability of Electronic Components"
Organized by Department of Electronics & Communication Engineering
on 25.06.2024**



MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE
(UGC-AUTONOMOUS INSTITUTION)
Madanapalle-517325, Annamaya Dist., Andhra Pradesh

Department of Electronics & Communication Engineering

Guest Lecture
"Reliability of Electronic Component"
Dr Darpan Krishna Kumar Shukla
Assistant Professor
St. Andrews Institute of Technology and Management, Gurugram, Haryana

Date: 25/06/2024 Timings: 11:00 AM to 12:00 AM Venue: Scale-up Room

Chief Patron Dr. N. Vijaya Bhaskar Choudary Secretary & Correspondent	Patron Mrs. Keerthi Nadella Executive Director	Program Chair Dr. C. Yuvaraj Principal	Co-Chair Dr. S. Rajasekaran HoD - ECE	Convener Dr Suman Saurav Assistant Professor
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Submitted by: Dr Suman Saurav, Assistant Professor, ECE Department

Resource Person Details: Dr. Darpan Krishnakumar Shukla, Assistant Professor, Department of Computer Science and Engineering, St. Andrews Institute of Technology and Management, Gurugram, Haryana

Number of participants: 26 Students, 2 Faculty

Time: 11:00 AM to 12:00 PM

Report Received on 26.06.2024

Introduction:

On the 25th of June 2024, an insightful online guest lecture was delivered by Dr. Darpan Krishnakumar Shukla on the topic of "Reliability of Electronic Components." Dr. Shukla, a renowned expert in electronics and reliability engineering, shared his extensive knowledge and research findings with an audience comprising students and faculty members.

Key Points Discussed:

Dr. Darpan Krishnakumar Shukla began the lecture by emphasizing the critical role that reliability plays in the performance and longevity of electronic components, highlighting its importance in ensuring the success and safety of systems in aerospace, medical devices, and automotive industries. He outlined various factors affecting reliability, such as material quality, design robustness, manufacturing processes, and environmental conditions. Dr. Shukla discussed common failure mechanisms, including thermal stress, mechanical stress, electrical overstress, and corrosion, and elaborated on testing and evaluation methods like Accelerated Life Testing (ALT), Environmental Stress Screening (ESS), and failure analysis. He also covered best practices in reliability engineering, including Design for Reliability (DfR), redundancy, and predictive maintenance, providing a comprehensive overview of strategies to enhance the reliability of electronic components.



Interactive Q&A Session:

The lecture concluded with an interactive Q&A session where attendees had the opportunity to engage with Dr. Shukla. Participants asked insightful questions about specific reliability challenges they faced in their work, and Dr. Shukla provided detailed and practical advice. Key discussions included:

- Strategies for improving the reliability of components in harsh environments.
- The role of advanced materials and nanotechnology in enhancing component reliability.
- Future trends in reliability engineering and emerging technologies.

Conclusion:

Dr. Darpan Krishnakumar Shukla's lecture on the reliability of electronic components was both informative and engaging, providing valuable insights into the critical aspects of ensuring the durability and performance of electronic systems. Attendees left with a deeper understanding of the importance of reliability and practical strategies to enhance it in their own work.

The event was well received, with positive feedback from participants appreciating the depth of knowledge and the applicability of the information shared by Dr. Shukla. The lecture underscored the importance of continuous learning and adaptation in the ever-evolving field of electronics.



Key Outcomes from the Guest lecture:

1. **Enhanced Understanding of Reliability:** Participants understood the importance of reliability in electronic components and its impact on critical applications.
2. **Identification of Key Factors:** Attendees learned about reliability, probability, and factors affecting reliability, design robustness, manufacturing processes, and environmental conditions.
3. **Awareness of Failure Mechanisms:** The lecture provided insights into common failure mechanisms such as thermal stress, mechanical stress, electrical overstress, and corrosion.
4. **Knowledge of Testing Methods:** Participants were introduced to testing methods like Accelerated Life Testing (ALT), Environmental Stress Screening (ESS), and failure analysis.
5. **Implementation of Best Practices:** The lecture highlighted best practices in reliability engineering, such as Design for Reliability (DfR), redundancy, and predictive maintenance, offering practical strategies to enhance component reliability.