

A Report on **Two Day Hands-on Workshop** “Recent Trends in Industrial Automation”
Organized by **Department of Mechanical Engineering**
in association with
ISTE Student Chapter & Department of Electrical and Electronics Engineering
from **10.02.2025 to 11.02.2025**



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

Two-Day Hands-on Workshop
on
Recent Trends in Industrial Automation
sponsored by MITS ISTE Student Chapter
Organized by
Department of EEE
&
Department of ME
in association with ISTE Student chapter

Date: 10.02.2025 - 11.02.2025
Time: FN (10:00 AM) AN (2:00 PM)
Venue: Seminar Hall

Audience: Students, faculty, and ISTE members
Convenor (s): 1. Dr. A.V. Pavan Kumar, Professor & Head /EEE
2. Dr. S. Baskaran, Assoc. Professor & Head/ME
Coordinator (s): 1. Dr. Vineet Kumar, Assistant Professor, EEE Department
2. Dr. Ved Prakash, Assistant Professor, ME Department

Workshop Objectives:

- To provide fundamental knowledge of industrial automation by covering key concepts of PLC, SCADA, and HMI systems used in modern industries.
- To enhance hands-on skills in automation and robotics through practical sessions on PLC programming, robotic control, and motion planning.
- To familiarize participants with industrial communication protocols such as Modbus, Profibus, and IoT-based smart automation systems.
- To explore emerging trends in industrial automation including Industry 4.0, AI-driven automation, and predictive maintenance for smart manufacturing.

Topics Covered:

- Introduction to Industrial Automation Fundamentals, importance, and applications in modern industries.
- PLC, SCADA, and HMI Systems - Basics of PLC programming, SCADA integration, and real-time industrial monitoring.
- Industrial Robotics and Motion Control - Basics of industrial robots, robotic arm control, and trajectory planning.
- Sensors, Actuators, and Industrial Communication - Role of sensors, actuators, and communication protocols (Modbus, Profibus, Ethernet/IP).
- Recent Trends in Industrial Automation - Industry 4.0, IoT-enabled automation, AI, and smart manufacturing.

About the Department:

The Department of Electrical & Electronics Engineering was established in the year 1998 and has been playing a vital role in producing value-based professionals ever since. The department offers an undergraduate program in Electrical & Electronics Engineering with an intake of 60 to cater to the ever-challenging needs of technical excellence in all areas such as Power systems, Control Systems, Power Electronics, Digital Signal Processing, Robotics & Drones, and also in the emerging areas of electrical engineering such as Renewable Power Generation, Smart Grids, Electric & Hybrid Vehicles. The B.Tech. program under the department has been continuously accredited and re-accredited by the National Board of Accreditation (NBA) since 2013 and Under Tier-I in 2019. The most recent NBA accreditation, in 2022, was under TIER I.

The Department of Mechanical Engineering was started at the inception of the institution in the year 1998. The department is currently offering one UG program (B.Tech in Mechanical Engineering) with an intake of 60. The B.Tech. programme has been continuously accredited by the National Board of Accreditation (NBA) since 2013 and, under Tier I in 2019 with a score of 715 out of 1000. The recent NBA accreditation in 2022 was under Tier I. The College Academic Council and the Department Board of Studies strive hard to provide quality education with the most advanced curriculum to make the students industry ready and excel in today's technologically intensive careers. The alumni of the department have been successfully building the remarkable careers in Mechanical engineering and allied disciplines.

Report Submitted by: Dr. Ved Prakash, Assistant Professor, Department of Mechanical Engineering; Dr. Vineet Kumar, Assistant Professor, Department of EEE.

Resource Person Details: Dr. Dinanath Prasad, Assistant Professor, Dept. of Electrical Engineering, AKGEC, Ghaziabad, and System Engineer, AKGEC Skills Foundation; Dr. Krishna Kant Pandey, Department of Mechatronics Engineering, Manipal University Jaipur.

Venue: Lecture – Seminar Hall C, Hands-on Practice – SIEMENS Lab

Attendance: 98

Mode of Conduct: Online

Report Received on 17.02.2025.

The Department of Mechanical Engineering, in association with the ISTE Student Chapter, successfully organized a two-day hands-on workshop on "Recent Trends in Industrial Automation" on 10 – 11th February 2025 at Madanapalle Institute of Technology & Science. The workshop aimed to provide participants with practical insights into industrial automation, robotics, PLC, SCADA, Tinkercad and Arduino.

Day 1: Inauguration and Workshop Session (10th February 2025)

The workshop commenced with an inaugural ceremony held in Seminar Hall-C, South Block at 10.00 AM. Distinguished guests, including the vice-principal, Head of Department (Mechanical Engineering), Head of Department (Electrical & Electronics Engineering), resource persons, faculty members and students graced the occasion. Dr. Vineet Kumar (Coordinator) began with a welcoming address, followed by Dr. S Baskaran (HOD, ME) and Dr. AV Pavan Kumar (HOD, EEE) who provided a warm welcome to all participants and guests. Dr. P. Ramanathan (Vice-Principal, Academics), delivered the presidential address, setting a positive tone for the workshop. Dr. Ved Prakash (Coordinator) concluded the ceremony with an insightful speech, highlighting the workshop's objectives and introducing the resource person.

Day1: Industrial Automation based on PLC Session (10:00 AM)

The workshop on "Recent Trends in Industrial Automation" began with Session 1, delivered by Dr. Dinanath Prasad, who discussed the importance of automation in industries. He explained how Programmable Logic Controllers (PLC) play a crucial role in industrial automation, improving efficiency and productivity. The session was highly interactive, as the resource person actively engaged with participants by posing thought-provoking questions. Students enthusiastically participated, responding with their insights and demonstrating a keen interest in the subject. The discussion provided valuable knowledge on modern automation technologies and their applications in industries. The session concluded on a high note with Dr. Vineet Kumar thanking the resource person and audience.



Day1: Hands on Practice Session (2.00 PM)

Session 2 began with Dr. Dinanath Prasad greeting the audience and providing an overview of the practical implications of PLC programming on the SIEMENS platform. This was followed by a hands-on session where students implemented basic PLC programming concepts, including logic gates. The resource person then advanced the session by introducing more complex problems involving timers and counters. The session concluded on a high note with Dr. Vineet Kumar thanking the resource person and audience.



Day2: Industrial Automation based on Robotics Session (10.00 AM)

On Day 2, Session 1, Dr. Krishna Kant Pandey delivered an insightful presentation on the importance of automation in industries and the crucial role of robotics in industrial automation. He began with the basics of robotics and gradually explained the utilization of Tinkercad and Arduino software for automation applications. Video presentations showcased a variety of industrial robots and their applications, making the session interactive and engaging for participants. Overall, the session was informative and valuable, equipping participants with knowledge of robotics-driven industrial automation.

Day2: Hands on Practice Session (2.00 PM)

On Day 2, Session 2, Dr. Krishna Kant Pandey began the session by greeting the participants and providing an overview of the practical implementation of Tinkercad and Arduino programming for industrial automation in SIEMENS Lab, East Block. He demonstrated the automation of traffic signal operation using these software tools, showcasing their real-world applications. Additionally, he provided a hands-on demonstration of how these tools are utilized in robotics automation, enhancing participants' understanding. Under the guidance of the resource person, students enthusiastically performed hands-on tasks, enhanced their learning experience. The practical demonstrations helped participants grasp the fundamentals of automation and robotics more effectively.

Valedictory Ceremony (5:00 PM):

The valedictory session of the workshop was concluded by Dr. Ved Prakash, who addressed the participants and expressed gratitude to all contributors. A special note of appreciation was given to Dr. C. Yuvraj (Principal, MITS), Dr. P. Ramanathan (Vice-Principal, Academics), Dr. S. Baskaran (HOD, ME), Dr. A.V. Pavan Kumar (HOD, EEE) for their constant support in organizing this event. He also thanked Dr. Sree Divya (Institute ISTE Coordinator) and Dr. Vineet Kumar (Coordinator) for their efforts in coordinating and managing the workshop successfully. He also emphasized the role of the ISTE Student Chapter in organizing the workshop and its significant contribution to the students' learning and professional growth. The event concluded with a heartfelt vote of thanks by Dr. Ved Prakash, acknowledging the efforts of everyone who contributed to the successful organization of the workshop.