Dr. Sudhir Chandra Sur Institute of Technology and Sports Complex

Report on Two-Day Workshop on IC Engine and Environment Pollution

Topic: Two-Day Workshop on "IC Engine and Environment Pollution"

Organized by: Department of Automobile Engineering, Dr. Sudhir Chandra Sur Institute of Technology and Sports Complex (DSCSITSC)

Organized for: 3rd Year Diploma Students, Mechanical Engineering Department, Memari Government Polytechnic College, Memari.

Speaker: Mr. Kalyan Mukherjee, Assistant Professor, Dept. of Automobile Engineering, Mr. Pritam Bhattacharjee, Assistant Professor, Dept. of Automobile Engineering, Mr. Sandip Bhadra, Senior Technical Assistant, Dept. of Automobile Engineering and Mr. Supriya Dhara, Technical Assistant, Dept. of Automobile Engineering, DSCSITSC

Date: 24th November to 25th November 2025

Time: From 11:00 AM to 04:00 PM

Venue: Satish Dhawan Automobile Workshop Shed

No. of Participation: 35

Introduction:

The Department of Automobile Engineering, Dr. Sudhir Chandra Sur Institute of Technology and Sports Complex (DSCSITSC) organized a two-day hands-on workshop on "IC Engine and Environment Pollution" for 3rd year diploma students of Memari Government Polytechnic College, Memari on 24th and 25th November 2025. The workshop, held at the Satish Dhawan Automobile Workshop Shed, was led by technical experts Mr. Sandip Bhadra and Mr. Supriya Dhara. The workshop focused on strengthening students' understanding of internal combustion engines, emission sources, pollution control strategies, and sustainable automotive practices. The sessions combined theory with live demonstrations to help students connect academic concepts with real-world challenges in vehicle technology and environmental protection. This workshop was coordinated by Mr. Kalyan Mukherjee, TIC, Department of Automobile Engineering, DSCSITSC.

Background:

The automobile industry is shifting toward cleaner technologies, strict emission regulations, and sustainable mobility. Despite the growth of electric vehicles, internal combustion engines continue to play a major role in transportation, especially in developing countries. At the same time, vehicular emissions remain a major contributor to air pollution. To prepare diploma students for industry demands, it is important to provide structured knowledge on engine operation, emission formation, and pollution control. This workshop was designed to give students hands-on exposure to IC engine components, combustion analysis, emission testing, and pollution mitigation strategies. Experienced faculty members and trainers guided students through detailed discussions, demonstrations, and interactive sessions.

Objective:

The main objectives of the workshop were as follows:

- To develop a clear understanding of the working principles of SI and CI engines.

- To study combustion processes, fuel systems, ignition systems, and engine performance factors.
- To explain the formation of major pollutants such as CO, HC, NO_x, and particulate matter.
- To familiarize students with emission testing equipment and pollution control devices.
- To build awareness about environmental regulations, green mobility, and sustainable automotive practices.
- To enhance practical knowledge that will support students in future training and employment.

Overview of the Workshop:

During the workshop, the following key areas were covered:

- Day 1 – 24th November 2025
  - Introduction to types of IC engines, their classification, and applications.
  - Explained the working cycles of four-stroke and two-stroke engines, differences between SI and CI engines, and key components such as the piston, crankshaft, carburetor, fuel injector, and cooling and lubrication systems.
  - Live demonstration of a cut-section engine model helped students visualize the motion of components and understand valve timing, compression, and the role of fuel-air mixture preparation.
  - Discussed the performance parameters such as brake power, thermal efficiency, fuel consumption, and compression ratio.
  - Observed basic servicing operations including spark plug inspection, fuel filter cleaning, and lubrication checks.
- Day 2 – 25th November 2025
  - Explained on vehicular pollution, starting with the causes and effects of harmful emissions.
  - Discussed CO, HC, NO_x, SO_x, and particulate matter, and their impact on human health and the environment.
  - Introduced to emission standards, including BS-IV, BS-VI norms, and the technological changes required to meet these regulations.
  - The working of catalytic converters, EGR systems, oxygen sensors, PCV systems, and diesel particulate filters was demonstrated.
  - A practical demonstration was conducted using an exhaust gas analyzer, where students observed real-time readings of CO, HC, and lambda values.

Learning Outcomes:

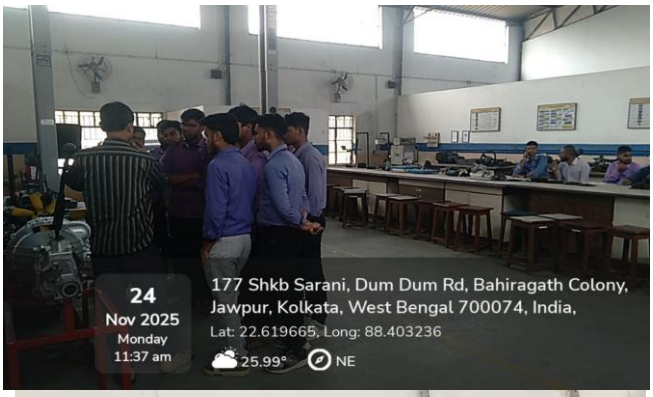
By the end of the workshop, the participating students were able to:

- Understand the working principles and components of IC engines.
- Identify major pollutants and explain how they are formed during combustion.
- Operate and interpret readings from basic emission testing equipment.
- Recognize the importance of pollution control devices and regulatory standards.
- Apply maintenance practices that improve engine performance and reduce emissions.

Conclusion:

The Two-Day Workshop on IC Engine and Environment Pollution was highly beneficial for the third-year Diploma students of Memari Government Polytechnic College, Memari. It strengthened their

technical understanding of engine systems while also giving them a broader view of environmental concerns and sustainable mobility. The blend of theory, practical demonstrations, and interactive sessions helped students gain confidence and clarity in core concepts. The department expressed gratitude to the trainers and faculty members for conducting the workshop successfully, and the students shared positive feedback on their enriched learning experience.



Two-Day Workshop on IC Engine and Environment Pollution conducted by the Department of Automobile Engineering for 3rd-Year Diploma Students (ME) of Memari Government Polytechnic College from 24/11/2025 to 25/11/ 2025