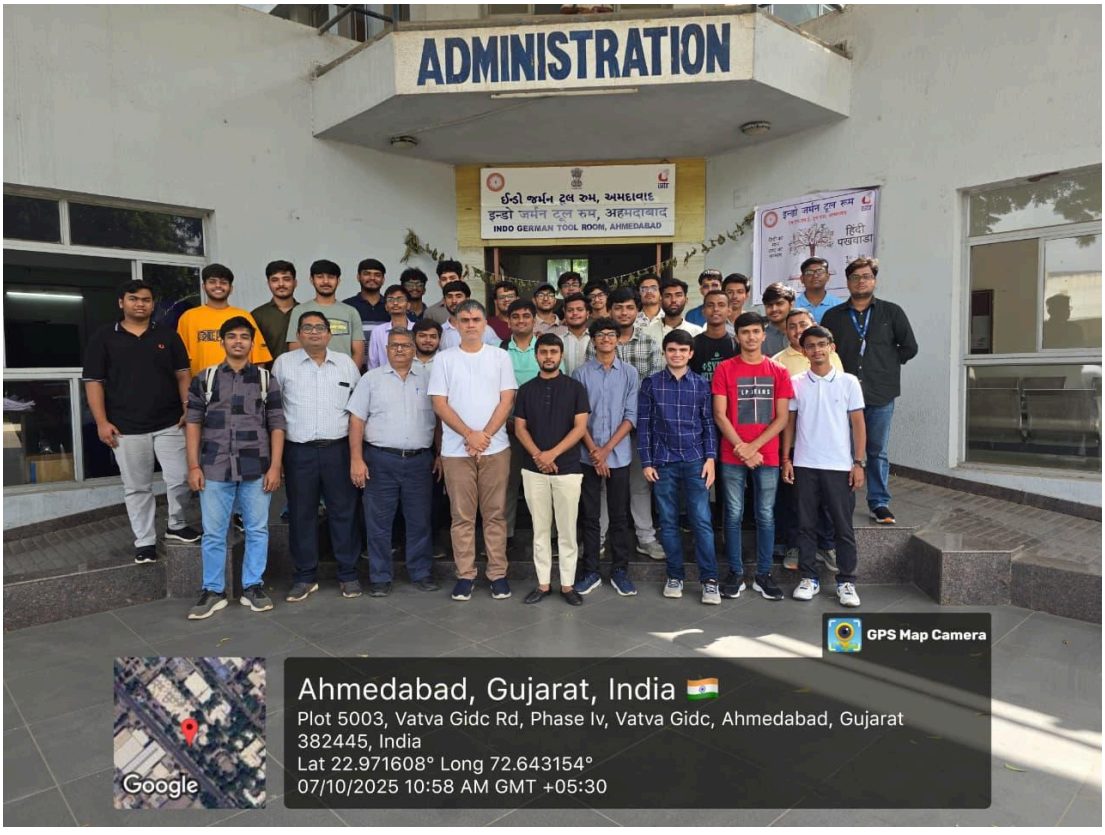
Mechatronics Department

Report on Industrial Visit to Indo-German Tool Room (IGTR)

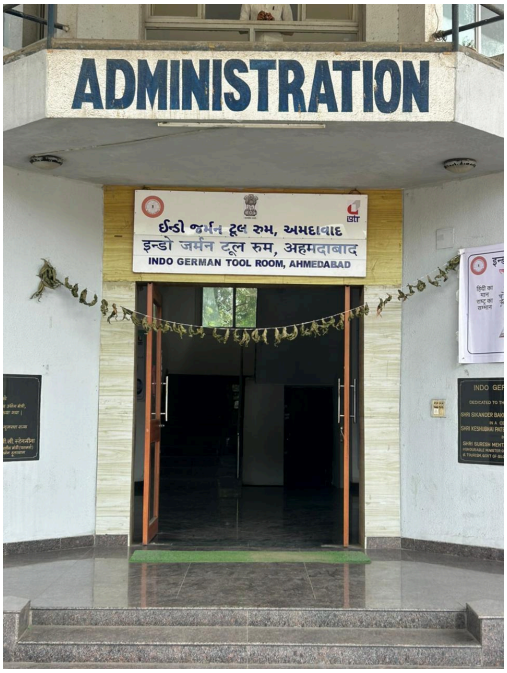
Practical Exposure to Advanced Manufacturing Technologies

Date of Visit: 7th October 2025
Participants: 3rd semester Mechatronics Students
Number of participants: 32 students
Accompanying Staff: Dr. Ketan Tamboli, Dr. Saurin Sheth & Mr. Tushar Machhi
Location: Indo-German Tool Room (IGTR), Vatva, Ahmedabad



Visit Observations and Outcomes

Introduction



On October 7, 2025, the 2nd-year Mechatronics students of G H Patel College of Engineering & Technology(GCET) under The Charutar Vidya Mandal (CVM) University successfully completed an industrial visit to the **Indo-German Tool Room (IGTR)** in Vatva, Ahmedabad.

IGTR is a premier training and technical service institution, primarily focused on tool engineering, CNC machining, and providing high-quality technical solutions to the manufacturing industry.

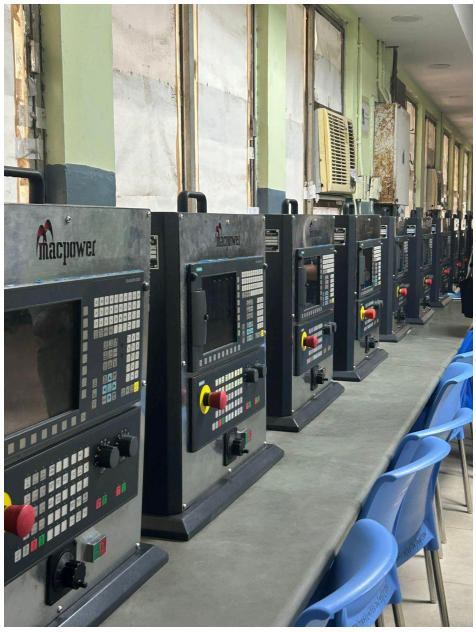
The visit was organized with the primary goal of providing practical exposure to core mechatronics concepts, including Computer Numerical Control (CNC) machinery, industrial robotics, and various modern manufacturing techniques.

Observations During the Visit

The visit provided a comprehensive tour of the facility, offering deep insights into the mechanical and electronic aspects of modern manufacturing.

The visit commenced with an introductory briefing session where IGTR's crucial role in the manufacturing ecosystem and the facility's safety protocols were explained to the students.

CNC and Simulation Labs

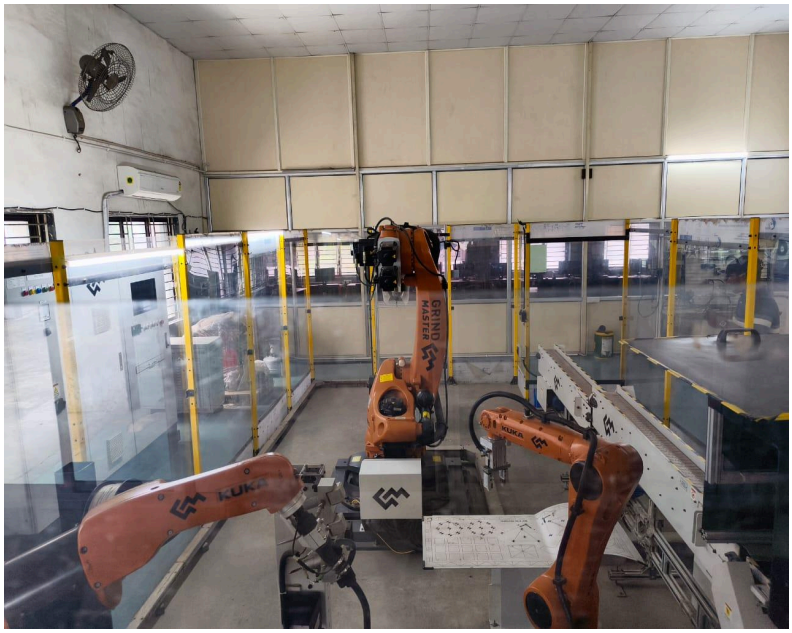


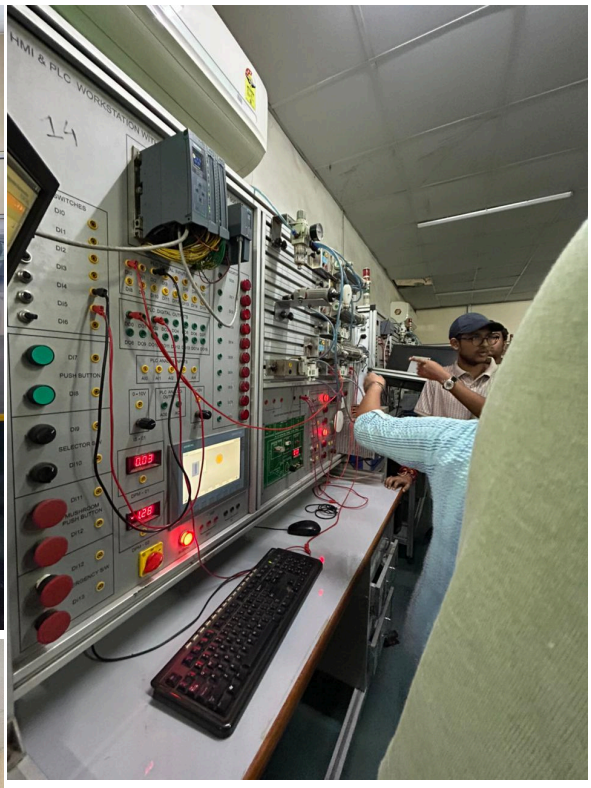
The tour began in the CNC Simulation Lab, where students were introduced to operational Siemens and Fanuc controller panels. A practical demonstration highlighted the programming methodology used to translate design specifications into machine instructions, underscoring the electronic control aspect of mechatronics. Moving to the CNC Lab, students observed the physical components and operational mechanics of both turning CNC and Vertical Machining Centers (VMC). The CNC room included the EDC (Electrical Discharge Control) and the Jyoti CNC DX 200, detailing their specific use cases in high-precision component manufacturing. The contrast was drawn by observing conventional lathe and different drill machines, where basic parts and manual use cases reinforced the evolution of modern tooling.

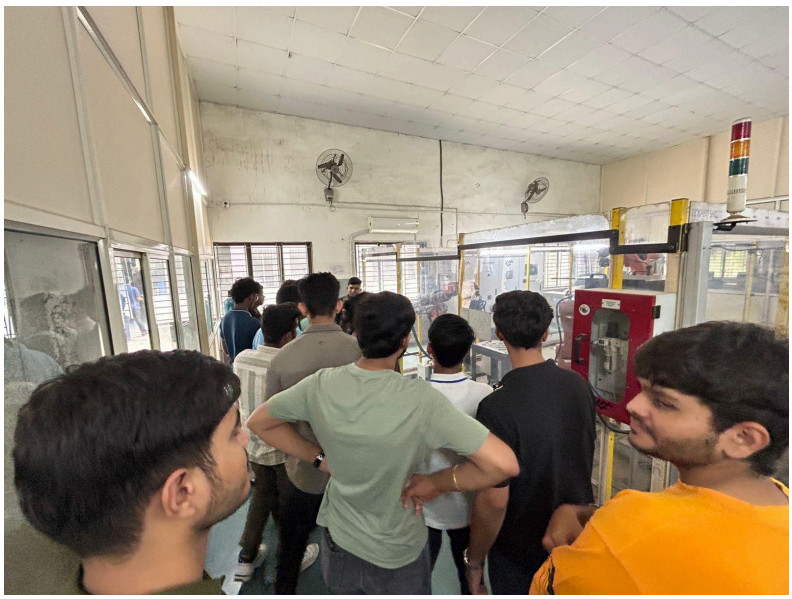
Robotics and Automation

The Robotics Lab was a key highlight, showcasing three KUKA robotic arms : a welder arm, a pick-and-drop arm, and a master robotic arm, all integrated with a conveyor belt system. Students were explained how this highly precise setup is utilized for small-scale production sampling and quality control, demonstrating the integration of mechanical movement, sensors, and electronic control for autonomous operation.

The principles of factory automation were further explored in the Mechatronics Lab, where a simple yet effective demonstration of the basic use of a PLC (Programmable Logic Controller) was conducted, showing its connectivity and control over air pistons to execute sequential tasks. This section perfectly illustrated the control system loop central to mechatronics engineering.

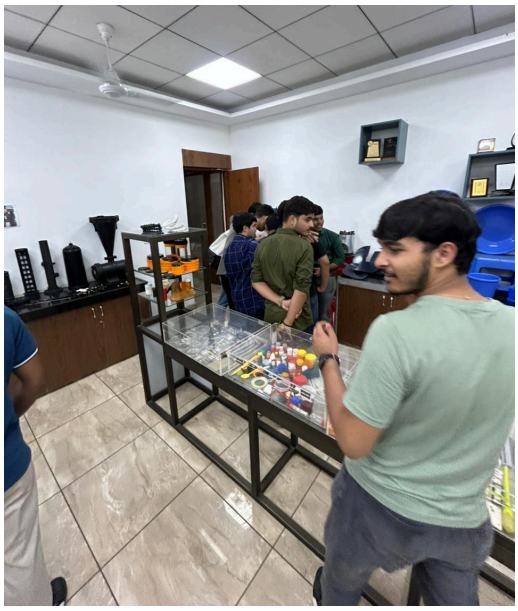






Fabrication

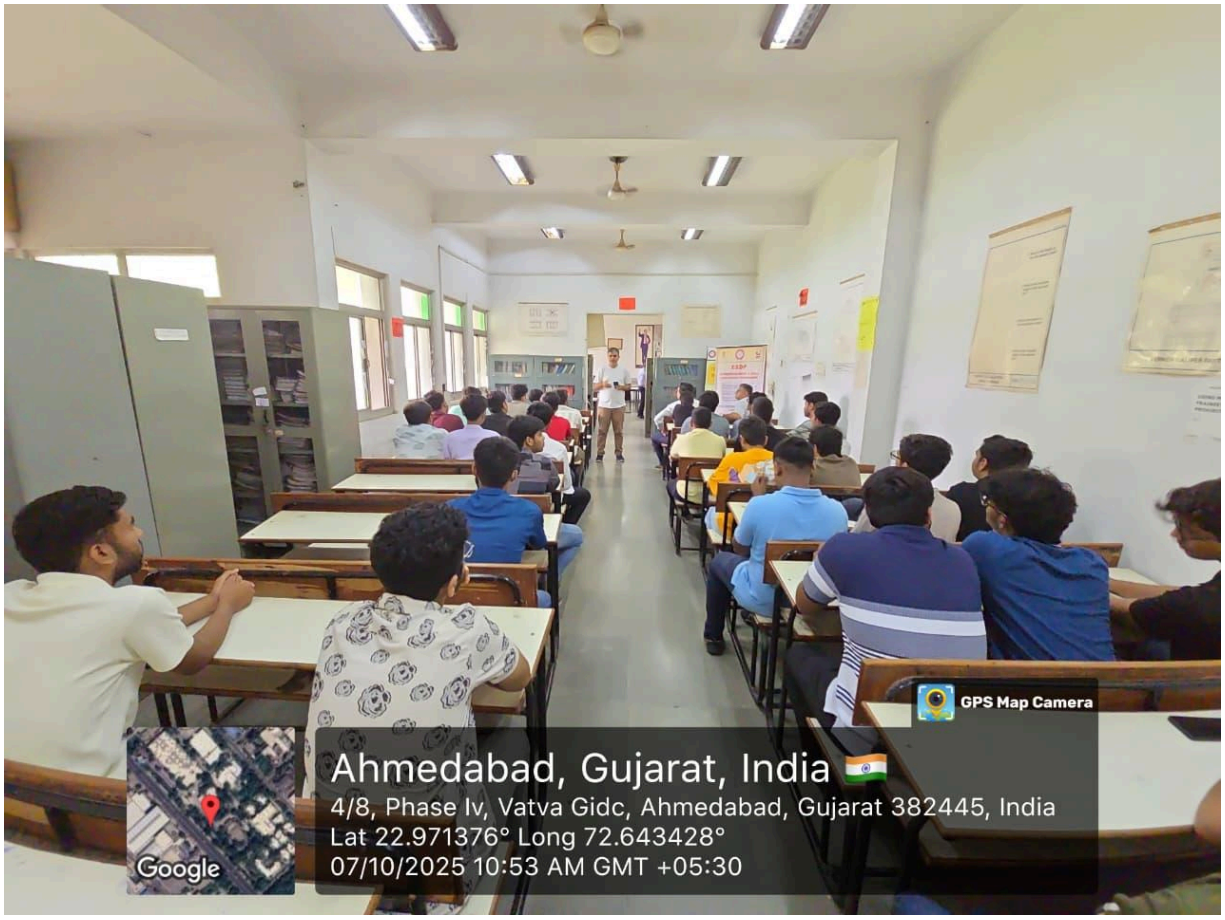
In the Welding Room, students gained practical knowledge of different fabrication tools, including the functioning of a gas welder and cutter, TIG welder, MIG welder, and Arc welder. This covered the joining techniques necessary for constructing mechanical frameworks in automated systems. The tour concluded with a visit to the Display Room, featuring a variety of complex, manufactured parts. These finished pieces served as tangible examples of the high precision and quality achievable through the integrated technologies observed throughout the facility.



Outcome of the Visit for Students

The industrial visit to IGTR Vatva was highly successful in fulfilling its educational objectives, providing several key takeaways for the 2nd-year Mechatronics students:

1. **Bridging Theory and Practice:** Students were able to visually connect theoretical concepts learned in subjects like Manufacturing Processes, Control Systems, and CNC Technology with real-world, industry-standard equipment.
2. **Appreciation for Precision and Automation:** Witnessing the KUKA robots and CNC machines in operation instilled a strong appreciation for the level of precision achievable through automation, a fundamental concept in mechatronics.
3. **Holistic System Understanding:** The demonstration of the PLC controlling air pistons highlighted the critical interdisciplinary nature of the field—how mechanical components (pistons), electronics (PLC), and computer control (programming) must work seamlessly together.
4. **Career Relevance:** Observing the diverse applications across simulation, machining, welding, and robotics reinforced the wide-ranging career opportunities available in the mechatronics domain, motivating students in their academic pursuits.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Attendance Sheet

G H Patel College of Engineering and Technology

(A Constituent Institute of CVM University)

Mechatronics Department

Industrial Visit to Indo German Tool Room (IGTR)

Date : 07/10/2025 Time : 09:00 AM to 04:00 PM

Sr. No.	Enrolment No.	Name	Signature
1	12402100501001	SPOLIA ASHISH	
2	12402100501002	GAJJAR AXAT DHARMESHKUMAR	
3	12402100501003	SHAH DAKSH NIKUNJ	
4	12402100501004	BHALALA DEEP ALPESHBHAI	ABSENT
5	12402100501005	SHAH DEVANSH KETANKUMAR	
6	12402100501006	EZHAVA DHIRAJ RAJIV	
7	12402100501007	PADHIYAR DHRUV ALPESHKUMAR	ABSENT
8	12402100501008	PATEL DHRUV ANILBHAI	
9	12402100501009	DHALIWAL GURKARAN SINGH BALJIT SINGH	
10	12402100501010	CHHATRALIYA HARIT MINESH	
11	12402100501011	DIGHE HARSHANG JITENDRA	
12	12402100501012	PATHAK HRIDAY RITESH	ABSENT
13	12402100501013	PANDYA JAINEEL YAGNESH	
14	12402100501014	CHAUHAN JAYNEEL SHAILESH	
15	12402100501015	PRAJAPATI KAMLESHBHAI DAHYABHAI	
16	12402100501016	KAHODARIYA KARTAVYA MAHESHBHAI	ABSENT
17	12402100501017	AGRAVAT KAUSHAL SAMIRBHAI	ABSENT
18	12402100501018	HIRIGU MANAV SANJAYKUMAR	
19	12402100501019	PATEL MANUJ RAKESHKUMAR	
20	12402100501020	SHAH MARMIK JAYESH	
21	12402100501021	GHORI NEYOS HITESHBHAI	ABSENT
22	12402100501022	PATHAN NIHALKHAN SAMIRKHAN	
23	12402100501023	LALVANI HARITH ASHOKBHAI	

24	12402100501024	PATEL PRATHAM RAJESHBHAI	
25	12402100501025	KALATHIYA PURV PARESHBHAI	
26	12402100501026	PATEL RAJAT TARUNKUMAR	
27	12402100501027	CHRISTI RISHIT ANANTKUMAR	ABSENT
28	12402100501028	TAILOR RISHIT DIVYESH	ABSENT
29	12402100501029	PATEL SLOK JIGNESH	
30	12402100501030	SUKHADIYA VAIDIK MANISH	
31	12402100501031	PATEL VIDIT	
32	12402100501032	PARTE KRUNAL RAJENDRA	ABSENT
33	12402100501033	PARTHIV SANJAYBHAI DHOLARIYA	ABSENT
34	25MCD001	MEHTA KUNJ JITENDRABHAI	
35	25MCD002	PARMAR VISHWA NITINBHAI	ABSENT
36	25MCD401	RAJESHIRKE DEVANG MANOJ	
37	25MCD402	MEHTA SHYMAL KULDIP	
38	25MCD403	MOHAN CHANDRAKANT PATEL	
39	25MCD405	PATEL AMAN JITENDRABHAI	
40	25MCD406	PATEL DHYEYKUMAR ASHOKBHAI	
41	25MCD408	PATEL PARASHAR MEHULKUMAR	
42	25MCD409	Saiyed Arkam Gulrejahemad	

Sr. No.	Faculty Name	Signature
1	Dr. Kefan Tamboli	
2	Dr. Saqib Sheth	
3	Mr. Tushar Machhi	