VISIT TO Adani Solar Power Plant

Name of Place: Adani Solar Manufacturing & Power Ecosystem (Mundra)

Date: 9th October ,2025

Venue: Mundra, Kutch

No. of Students Participated: 107 (2nd and 3rd Year EC and ICT students)

Faculty Coordinators: Dr. Hitesh Shah

Mr. Rohit Parmar

Mr. Pradeep Shah

Mr. Jay Pandya

Mr. Ramesh Sargara

1. Introduction

An industrial visit to the **Adani Solar Manufacturing & Power Ecosystem**, Mundra, was organized by Electronics and Communication Engineering department on **9th October 2025** for the students of **Electronics & Communication (EC)** and **Information & Communication Technology (ICT)** branches of G H Patel College of Engineering Vallabh Vidyanagar. The visit aimed to provide students with practical exposure to large-scale renewable energy generation, solar module manufacturing, and advanced industrial automation systems.

With the rapid global shift towards sustainable and renewable energy sources, solar power has emerged as a key pillar of modern power systems. This visit was planned to help students understand the role of solar technology in energy generation, manufacturing processes, power electronics, grid integration, and industrial-scale project execution.

A total of **107 students from 2nd and 3rd year**, accompanied by **05 faculty coordinators**, participated in the visit. The industrial ecosystem at Mundra represents one of the largest integrated renewable energy hubs in India, making it an ideal learning destination for engineering students.

2. Overview of Adani Solar Manufacturing & Power Ecosystem

The **Adani Solar Manufacturing & Power Ecosystem** at Mundra is a fully integrated facility covering the entire solar value chain, from **solar cell and module manufacturing**

to **large-scale solar power generation and grid connectivity**. The ecosystem supports India's vision of energy self-reliance and clean energy adoption.
The facility includes:

- Solar photovoltaic (PV) cell manufacturing units
- Solar module assembly lines
- Utility-scale solar power plants
- Power evacuation and grid integration infrastructure
- Quality testing, reliability labs, and control centres

Students were introduced to the concept of **end-to-end solar manufacturing**, where raw materials are processed into finished solar modules under strict quality and safety standards.

3. Solar Manufacturing Process

During the visit, students were guided through the **solar module manufacturing process**, which was explained in a step-by-step manner by technical experts.

3.1 Solar Cell and Module Manufacturing

The manufacturing process includes:

- Inspection and handling of solar cells
- Interconnection of cells using busbars and ribbons
- Lamination with protective layers such as glass, EVA sheets, and back sheets
- Framing and junction box installation
- Final inspection and packaging

Students observed **automated assembly lines**, robotic handling systems, and precision-controlled machines that ensure uniformity and high efficiency. Emphasis was given to the importance of **process control, material quality, and defect detection** in solar manufacturing.

3.2 Quality Control and Testing

The visit highlighted the critical role of quality assurance. Various tests such as:

- Electroluminescence testing
- Flash testing
- Mechanical strength and environmental reliability testing

were demonstrated conceptually. Students learned how solar modules are tested for durability, temperature tolerance, and long-term performance before deployment.

4. Solar Power Generation and Grid Integration

Apart from manufacturing, students were introduced to the **solar power generation infrastructure** within the ecosystem.

4.1 Utility-Scale Solar Power Plants

The solar power plant consists of thousands of solar panels installed over a vast area. Engineers explained:

- Panel orientation and tilt angle optimization
- Maximum Power Point Tracking (MPPT)
- Inverters used for DC to AC conversion

- Power monitoring systems

Students gained insight into how environmental factors such as sunlight intensity, temperature, and dust affect power output.

4.2 Power Electronics and Grid Connectivity

Special emphasis was laid on **power electronics**, a key area of interest for EC and ICT students. Topics discussed included:

- Role of inverters and transformers
- Synchronization with the power grid
- Voltage regulation and protection systems
- SCADA-based monitoring and control

This section helped students relate classroom concepts such as power electronics, control systems, and communication networks to real-world applications.

5. Automation, Communication, and ICT Applications

The visit was particularly beneficial for **EC and ICT students**, as it showcased extensive use of:

- Industrial automation
- Sensors and data acquisition systems
- Real-time monitoring using communication networks
- Centralized control rooms

Students learned how **IoT, data analytics, and communication protocols** are used to monitor plant performance, detect faults, and optimize energy generation. The integration of ICT technologies ensures efficient plant operation and predictive maintenance.

6. Safety, Sustainability, and Environmental Practices

Adani Solar places strong emphasis on **industrial safety and sustainability**. Before entering sensitive areas, students were briefed about safety rules and protective measures.

Key points highlighted:

- Electrical and mechanical safety protocols
- Fire protection and emergency response systems
- Waste management and recycling practices
- Reduction of carbon footprint through renewable energy

The visit reinforced the importance of sustainable engineering practices and environmental responsibility in modern industries.

7. Learning Outcomes

The industrial visit provided students with the following key learning outcomes:

- Practical understanding of solar manufacturing and power generation
- Exposure to large-scale renewable energy infrastructure
- Insight into automation, power electronics, and communication systems
- Awareness of safety standards and sustainability practices
- Motivation towards careers in renewable energy and green technologies

Students were able to connect theoretical subjects such as **renewable energy systems, power electronics, control systems, and industrial communication** with real industrial applications.

8. Conclusion

The industrial visit to the **Adani Solar Manufacturing & Power Ecosystem, Mundra**, was a highly informative and enriching experience for EC and ICT students. It successfully bridged the gap between academic learning and industrial practice. The visit enhanced students' technical knowledge broadened their perspective on renewable energy technologies and inspired them to contribute towards sustainable development.

Such industrial visits play a crucial role in preparing students for future engineering challenges and are strongly recommended as part of technical education.

This Visit was organised in association of IEEE Student Chapter (GCET IEEE SB).

PHOTOGRAPHS:

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(The Charutar Vidya Mandal (CVM) University)


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Sr. No	ENROLLMENT NO.	NAME OF STUDENT	LEVEL	SIGNATURE OF STUDENT
1	12302060501002	Aman Rambabu Singh	3rd Year	
2	12302060501003	Anushka Heman Shah	3rd Year	
3	12302060501004	Bhavya DHARMESHKUMAR Patel	3rd Year	
4	12302060501005	Darsh Ashok Upadhyay	3rd Year	
5	12302060501009	Divya Jayeshkumar Patel	3rd Year	
6	12302060501010	Drashti Arvindbhai Savaliya	3rd Year	
7	12302060501012	Shingala Himesh Prabhudasbhai	3rd Year	
8	12302060501013	Huzefa Imran Parekh	3rd Year	
9	12302060501017	Mantra Janardan Rajyaguru	3rd Year	
10	12302060501018	Meet Kiran Parekh	3rd Year	
11	12302060501019	Niraj Ravindra Keste	3rd Year	
12	12302060501020	Nirja Amar Fijiwala	3rd Year	
13	12302060501022	Parshwa Pankeshkumar Patel	3rd Year	
14	12302060501024	Rudresh Mehul Dave	3rd Year	
15	12302060501027	Siddhi JatinKumar Suthar	3rd Year	
16	12302060501032	Vishaal K Sugumar	3rd Year	
17	12302060501033	Vishu Shaileshbhai Porwal	3rd Year	
18	12302060501034	Zeel Paresh Kumar Agrawal	3rd Year	
19	12302060501035	Kritikaba Rajkumarsinh Zala	3rd Year	
20	12302060501038	Aadhya Vijaykumar Dave	3rd Year	
21	12302060501040	Neel Viralbhai Patel	3rd Year	
22	12302060501042	Sneh Manojkumar Mistry	3rd Year	
23	12302060501043	Vedant Nilesh Bhatt	3rd Year	
24	12302060501044	Dalwadi Hirangi Umeshbhai	3rd Year	
25	12302060601001	Darshan Dheerajbhai Jadav	3rd Year	
26	12302060601002	Dhyey Pragneshbhai Patel	3rd Year	
27	12302060601003	Jaimin Ashokbhai Makwana	3rd Year	
28	12302060601004	Ujjawal Vachaspati Sharma	3rd Year	
29	12302060601005	Het Hiteshbhai Mehra	3rd Year	
30	12402050601004	Ananya thakar Samir thakar	2nd Year	
31	12402060501005	Patel Ansh Vishnubhai	2nd Year	

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33	12402060501007	Daksh Rajeshbhai Karia	2nd Year	
34	12402060501008	Dev Bhaveshkumar Patel	2nd Year	
35	12402060501009	Dev Bhavikbhai Patel	2nd Year	Dev
36	12402060501010	Dhruv Hiteshkumar Patel	2nd Year	
37	12402060501011	Dhruv Jigneshkumar Rana	2nd Year	
38	12402060501012	Dhruvi Hiteshkumar Bhatt	2nd Year	
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40	12402060501014	Dhruvkumar Nileshkumar Patel	2nd Year	
41	12402060501015	Dhyan Priteshkumar Patel	2nd Year	
42	12402060501017	Hem Prafulchandra Patel	2nd Year	
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44	12402060501019	Hirva Pravinbhai Narigara	2nd Year	
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46	12402060501025	Krina Jagdipsinh Mahida	2nd Year	
47	12402060501026	Krish Chimanbhai Vadukiya	2nd Year	
48	12402060501027	Krutil Niravkumar Patel	2nd Year	
49	12402060501029	Malay Jagdishbhai Kansagara	2nd Year	.M.J.K
50	12402060501030	Misty Yogesh Patel	2nd Year	
51	12402060501032	MUSTANSIR MURTUJABHAI JADLIWALA	2nd Year	
52	12402060501033	Neel Dharmeshkumar Vyas	2nd Year	
53	12402060501034	Neel Jigarkumar Prajapati	2nd Year	
54	12402060501035	Neeti Hitendrabhai Shah	2nd Year	Neeti Shah
55	12402060501037	Piyush Kuldeep Sharma	2nd Year	
56	12402060501038	PRERAK SANDIPKUMAR KA.PATEL	2nd Year	
57	12402060501040	Priyadarshini Ashokbhai Jankat	2nd Year	
58	12402060501042	Pruthvikumar Sanjaybhai Jasani	2nd Year	P.H.J.
59	12402060501043	Raj Amitbhai Patel	2nd Year	
60	12402060501044	ROHAN CHANDRAKANTBHAI PATEL	2nd Year	
61	12402060501045	Rudra Dipakbhai Machhi	2nd Year	
62	12402060501046	Rutvi R Shah	2nd Year	
63	12402060501048	Shiv Pankajkumar Chauhan	2nd Year	
64	12402060501049	Shreya Neel Patel	2nd Year	

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68	12402060501055	Taksh Jaykumar Patel	2nd Year	
69	12402060501056	Taksha Hetal Patel	2nd Year	
70	12402060501057	PATEL Tirth ALPESHKUMAR	2nd Year	
71	12402060501058	PARMAR UTSAVRAJ NARESHKUMAR	2nd Year	
72	12402060501059	Ved Kalpeshkumar Contractor	2nd Year	
73	12402060501060	Ved Pareshkumar Prajapati	2nd Year	
74	12402060501061	VEDANSH DARSHANKUMAR SUTHAR	2nd Year	
75	12402060501062	Vedantkumar Pankajbhai Prajapati	2nd Year	
76	12402060501063	Vedika Haresh Kanani	2nd Year	
77	12402060501064	Venisha Raiyani Dilipbhai	2nd Year	
78	12402060501067	Viva Nirav Shah	2nd Year	
79	12402060501068	Vrajesh Pareshkumar Rana	2nd Year	
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81	12402060501070	Yash Hiteshkumar Panchal	2nd Year	
82	12402060501071	Bhavya Mineshkumar Brahmbhatt	2nd Year	
83	12402060501072	Dhruv Tushar Kumar Doshi	2nd Year	
84	12402060501077	samrat Jasvant Kiri	2nd Year	
85	12402060501078	Ved Kalpeshkumar Divawala	2nd Year	
86	12402060501079	Vidhi Jethva Jigneshbhai	2nd Year	
87	12402060503001	Kishan Narendra Patel	3rd Year	
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102	25ECD402	Preya Ashwinkumar Patel	2nd Year	
103	25ECD403	Priyanshi Nileshbhai Patel	2nd Year	
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105	25ICTD003	Hansaliya Shyam Jitendrabhai	2nd Year	
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