

MUNDRA ADANI INDUSTRIAL VISIT REPORT

Institution: L.D. College of Engineering, Department of Mechanical Engineering

PLACE: Under Project UDAAN by Adani Group

Date of Visit: 8th April 2025 And 9th April 2025

Location: Mundra, Kutchh, Gujarat

Faculty Coordinator: Prof(Dr.). A.G Momin, Prof. G.N Sutaria

1. Introduction

The Adani Group is one of India's leading business houses with revenue of over \$11 billion. Founded in 1988, Adani has grown to become a global integrated infrastructure player with businesses in key industry verticals - resources, logistics, energy and agro. The integrated model is well adapted to the infrastructure challenges of the emerging economies.

As part of Project UDAAN initiated by the Adani Group, students of the Mechanical Engineering Department were given a unique opportunity to visit multiple industrial units under the Adani conglomerate. The visit aimed to bridge the gap between academic learning and real-world industrial practices. The companies we visited include:

- Adani Wilmar
- Adani Port and SEZ Ltd,
- Adani Enterprises Ltd.
- Adani Power Ltd
- Mundra Solar Technopark Ltd.

This report highlights our learnings, technical observations, and overall insights from the industrial visit.



2. Adani Wilmar (Fortune Products Unit)

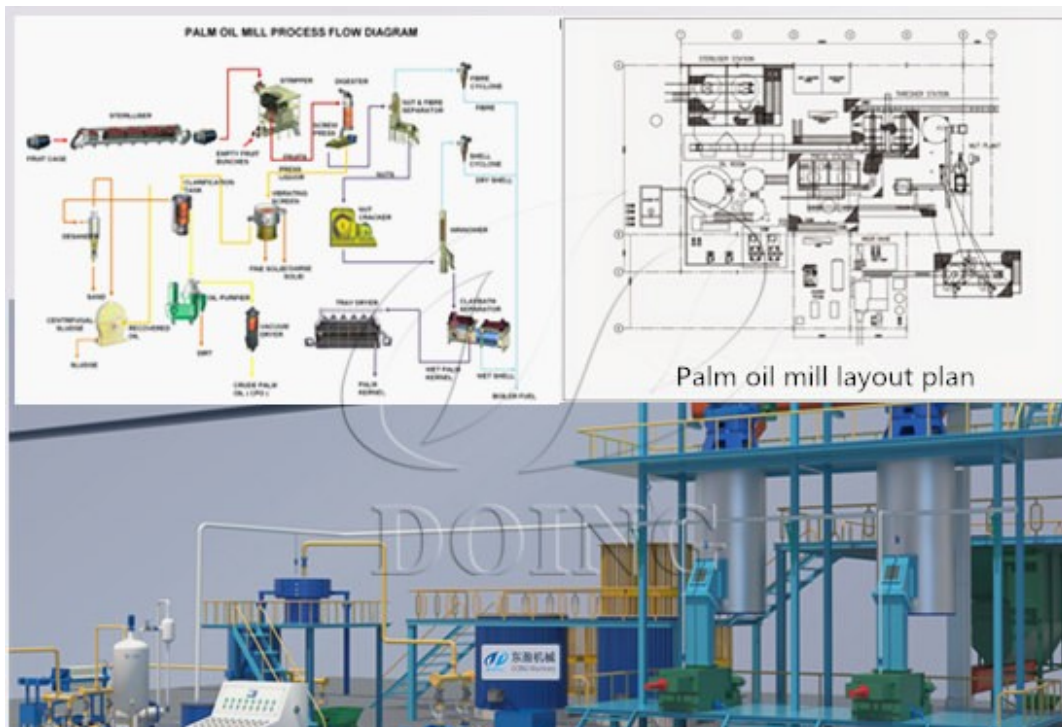
Overview:

Adani Wilmar Limited is a joint venture between Adani Group and Wilmar International. It is a major player in edible oils, food products, and industrial essentials.



Key Technical Highlights:

- **Refinery Capacity:** ~5,000 TPD (Tons Per Day) for edible oil
- **Automation:** SCADA-based refinery operations for oil refining and packaging
- **Processes Observed:** Neutralization, bleaching, deodorization, and packaging
- **Quality Control:** In-house lab for testing FFA (Free Fatty Acid), moisture content, and contamination
- **Packaging Technology:** Fully automated conveyor-based pouch and tin filling machines



Student Takeaway:

Understanding the food-grade refining process gave us insights into industrial hygiene, quality standards, and high-speed automation. It was fascinating to see a consumable product go through industrial processes while maintaining global food safety standards.



3. Adani Port and SEZ Ltd (Special Economic Zone)

Overview:

Adani Port, part of Adani Ports and Logistics (APSEZ), is India's largest commercial port by volume. The Mundra SEZ is a multi-product SEZ spread over 8,481 hectares.

Key Technical Highlights:

- **Cargo Handling Capacity:** 248.6 MMT (Million Metric Tons) annually
- **Berths:** 30+ multi-purpose berths
- **Draft Depth:** 17.5 meters, suitable for large Panamax and Capesize vessels
- **Cranes and Equipment:** Rubber Tyred Gantry Cranes (RTG), Rail Mounted Gantry (RMG), and Ship to Shore (STS) cranes
- **Automation:** Usage of Port Community System (PCS) for logistics integration and RFID technology for container tracking
- **Green Initiatives:** Use of electric cranes and solar-powered operations in parts of the port



Student Takeaway:

We witnessed how real-time logistics are managed at a global scale. The automation and large-scale infrastructure left a strong impression on us, showcasing how engineering and management coalesce to run the largest private port in India.



4. Adani Enterprises Ltd. - Coal Import and Handling

Overview:

Adani Enterprises Limited (AEL) is a major player in India's coal trading and handling sector. It manages the import, processing, and internal transfer of coal to power generation facilities such as Adani Power Mundra. The coal import terminal and associated infrastructure at Mundra are among the most sophisticated in India.



Key Technical Highlights:

- **Annual Coal Handling Capacity:** Over 60 million tons
- **Import Sources:** Indonesia, Australia, South Africa
- **Unloading Equipment:** High-capacity Ship Unloaders with grab-type cranes
- **Conveyance:** Enclosed conveyor belt systems with dust suppression measures
- **Railway Logistics:** Dedicated railway sidings and rapid wagon loading systems (RWLS)

- **Blending and Storage:** Stockyard with stacking-reclaiming systems and coal blending facilities
- **Dust and Emission Control:** Water sprinkling systems and dust extraction units at transfer points



Student Takeaway:

We observed how Adani Enterprises integrates logistics and engineering to maintain a continuous coal supply chain to Adani Power. The real-time operations management, material handling systems, and pollution control mechanisms highlighted the complexity and efficiency of bulk material handling systems.



5. Adani Power Ltd.

Overview:

Adani Power Mundra is India's first supercritical thermal power plant and one of the largest private thermal plants in India.

Key Technical Highlights:

- **Total Capacity:** 4620 MW
- **Technology Used:** Supercritical boilers from Doosan and turbines from Toshiba
- **Coal Source:** Imported coal from Indonesia and Australia

- **Cooling Technology:** Sea water-based once-through cooling system
- **Environmental Measures:** Flue Gas Desulphurization (FGD), Electrostatic Precipitators (ESP), and online stack emission monitoring

Student Takeaway:

The tour helped us understand the complete cycle of thermal power generation, from coal handling to steam generation and electricity distribution. We also observed control room operations and safety protocols in a high-risk environment.



6. Mundra solar Technopark Ltd.

Overview:

Adani Solar is India's largest solar cell and module manufacturer and part of Adani New Industries Limited (ANIL).

Key Technical Highlights:

- **Manufacturing Capacity:** 4 GW of solar cells and modules
- **Technology:** Mono PERC and HJT (Heterojunction Technology) solar cells
- **Automation:** Robotic arms for soldering, lamination, and inspection
- **Testing:** Electroluminescence (EL) and Flash Testing for efficiency and defect detection
- **Sustainability:** Net-zero emissions target for operations, solar-powered assembly lines

Student Takeaway:

We were amazed by the precision of clean-room operations and robotic handling of delicate wafers. The commitment to sustainability and the use of cutting-edge photovoltaic technology inspired us.



Conclusion:

This industrial visit was an enriching experience, allowing us to witness the practical application of engineering principles across different industries—logistics, energy, food processing, and renewable energy. Project UDAAN by the Adani Group is a commendable initiative that fosters industry-academia interaction and prepares students for future challenges in engineering and management.

We are very much thankful to our faculty, department, and the Adani Group for this eye-opening experience.

We are very much Thankful to **Dr.V.B.PATEL** (Head of the department, mechanical Engineering) for a kind of permission as well as thanks to principal LDCE, Ahmedabad.

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