D.A DIPLOMA ENGINEERING & TECHNOLOGY
MAHEMDABAD (682)

Department Of Mechanical Engineering (019)

A Report on

Industrial visit
At
Adani Port, Power Plant & Refinery – Mundra

Under program of UDAAN


Shanti Vihar

Details of visit:

Date: 05/04 / 2019 and 06/ 04 /2019
Place: Adani Port, Power Plant & Refinery – Mundra.
Time: 2 days
Faculty Coordinators: Mr. Dixit Damor, Mr. Dinesh Borkar, Mr. Riyaj Malek, Mr. Nishit Patel
Visitors: Students of, 6th Semester OF Mechanical Branch

Company Profile:

Company Name: Mundra Port & Special Economic Zone Ltd.
Address: Adani House, Nr: Mithakhali Circle Navrangpura, Ahmedabad, Gujarat.
PIN Code: 380009.
Phone: Tel +91 79 2656 5555 Fax +91 79 2656 550
Homepage: www.info@adani.com
Work profile: Natural gateway for the cargo hubs functioning in the Northern and Western states of India as well as the NCR

Detailed Schedule:

- All students of 6'thSemester MECHANICAL branch gathered at Vedant International school , Isanpur- Ahmedabad at 5:00 AM
- Transportation facility was provided by Adani.
- Students along with faculty coordinators left for the industry at 5:15 AM
- After reaching the place at 12:30 PM,short meet was held with our faculty.
- Students were taken to the workplace in two batches of 40 students each.
- Senior technical persons explained the complete manufacturing and process of Mundra port as well as the system of arranging all the ships on its 12 births in south port and 17 berths in West port.
- Different sections like exporting and importing section, refinery section, power generating station etc. were visited by the students
- After having interactive session with Adani's engineers and technical persons, the visit ended in the afternoon with vote of thanks.
- Feedback regarding the visit was given by each student to our coordinator

Detail Report on Industrial Visit

This was our first visit with Adani group of companies like Adani Willmar, Adani fortune oil, Adani power, Adani exports. We reached the company at 12:30 PM. After the faculty members met the resource person, we were taken to the workplace in two batches of 40 students each. We saw different sections where actual power and other things were made and transferred. Further we had a chance to see **world's largest coal trading center**, **power generating station** which produce **4620 MW power** also a **West-port** where there was **6 km dockyard** created along with plan of **constructing 17 berths** that were under maintenance over there. Senior technical persons explained us how actually all this worked. We saw various sections and manufacturing places of Adani. There were main four sections namely

1. South Port.

2. Oil Refinery section.

3. West Port.

4. Power station.

Complete process of all these with final testing stages was beautifully explained by senior technical persons. We had interactive session that gave us plenty of knowledge. We got a chance to see the power transformer that was under final stages of manufacturing process. Also we could see the maintenance of various medium size distribution transformers and power that was supplied to states like Harayana, etc.

After this visit we realized the importance of studying the subjects and could correlate and visualize the applications of theoretical concepts in actual field utility. This visit has served the purpose of enriching us with abundant technical knowledge and also the work environment that exists in the industry.

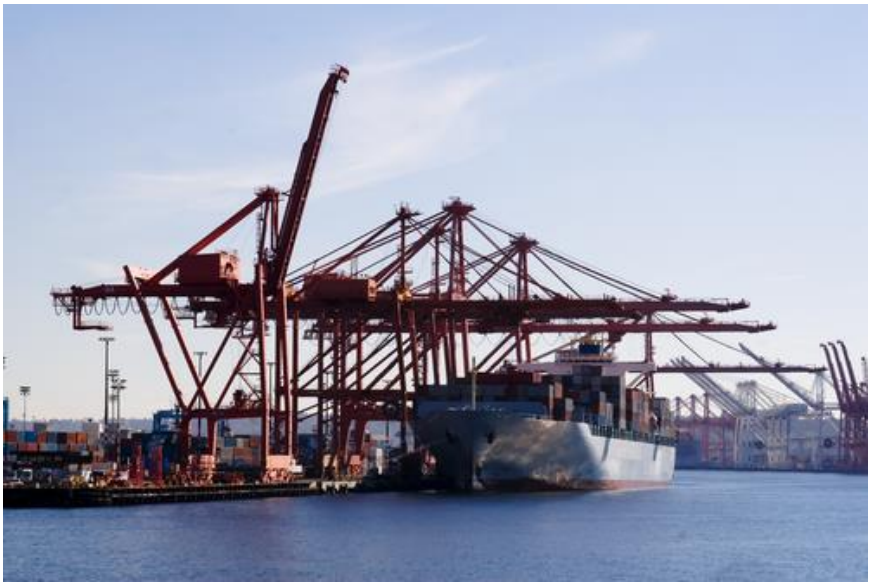
We are thankful to faculty coordinators and Head of the Department **Prof. DIXIT DAMOR** for facilitating such useful visit for us. We are also obliged to **Mr. DIXIT DAMOR, Mr. RIYAJ MALEK, ,Mr. DINESH BORKAR** AND **Mr. NISHIT PATEL**, D.A DIPLOMA ENGINEERING & TECHNOLOGY MAHEMDABAD for providing us with such a great opportunity.

Here are some significant snap shots that we could have at the time of visiting the company

INTRODUCTION :-

Adani Ports and Special Economic Zone Limited (APSEZ) is India's largest private multi-port operator. APSEZ is a part of the Adani Group, a global integrated infrastructure player. The company (earlier known as Mundra Port & Special Economic Zone Ltd) changed its name to "Adani Ports and Special Economic Zone Limited" effective 6 January 2012 While earlier, the company had only one operational port at Mundra, today it also operates ports at Dahej and Hazira in India and at Abbot Point in Australia. The company is also developing port infrastructure at Mormugao, Visakhapatnam and Kandla in India, Dudgeon Point in Australia and Bunyu in Indonesia.

APSEZ is India's first multi-product port-based special economic zone (SEZ). The port is located in the Northern Gulf of Kutch, en route major maritime routes and conneced through rail, road, air & pipelines. This makes it a preferred gateway for cargo bound westwards. The port has been designed to handle all types of cargo viz. containers, dry bulk, break bulk, liquid cargo and automobiles.



(DAY VIEW OF CRANES)

PORT INFORMATION :-

The development of Adani Port & Special Economic Zone Limited was conceptualised by the entrepreneur Mr. Gautam Adani. The port commenced its operations with one berth in October 1998. APSEZ today consists of 22 berths with a total quay length of 6.5 km in addition to 2 single point moorings (SPM) and stands on the threshold of being the largest commercial port in India.

APSEZ has a capacity to handle 185 million tonnes of cargo per annum – the largest amongst all operational ports in India. APSEZ handled 64 million tonnes of cargo in the financial year 2011–12. APSEZ was ranked fourth amongst all commercial ports in India in terms of the total volume of cargo handled in a financial year.

APSEZ has not only pioneered the concept of deep draft integrated port model, but also of port based SEZ. The multi-product SEZ consisting Mundra Port and its surrounding areas is planned to be spread over 135 square kilometres (13,500 hectares). Currently, notified Multi-product SEZ is spread over an area of 6473 Hectare, with an additional 168 Hectares notified as a Free Trade Warehousing Zone.

SOUTH PORT

(Loading and Unloading Ships)

ADANI WILMAR

Wilmar International Limited founded in 1991, is Asia's leading agribusiness group. It ranks amongst the largest listed companies by market capitalisation on the Singapore Exchange, being the second largest as of September 2010. It is a Singaporean investment holding company that provides management services to its 400+ subsidiary companies. It is also ranked 252nd in the Fortune Global 500 list in 2015.

Wilmar's merchandising and processing segment encompasses merchandising of palm oil and laurics-related products, operations of palm oil processing and refinery plants and crushing, further processing and refining of a range of edible oils, oilseeds, grains and soybean.

Wilmar International business activities include oil palm cultivation, edible oils refining, oilseeds crushing, consumer pack edible oils processing and merchandising, specialty fats, oleo chemicals, and biodiesel manufacturing, and grains processing and merchandising. It has over 450 manufacturing plants and an extensive distribution network covering China, India, Indonesia and some 50 other countries. The Group is backed by a multinational workforce of over 92,000 people.

ADANI WEST PORT

West Port of Adani is known as Coal Port. The West Port is for storage of pulverized coal and by conveyor belt it provides to Adani Power plant. The conveyor belt is 22 km long. The coal arrives here is from 4 different countries Australia, South Africa, Indonesia & China.

Now a days it has capacity of parking for 2 ships at the same time. But Adani is planning to make the parking yard in sea of 'G' shape with having the capacity up to 17 Ships a time, which will be completed in 2020 It also has the India's longest conveyor for the transformation of coal of 22Kms.

Port Connectivity :-

APSEZ offers inland connectivity via rail track, road network, airport and cross country pipelines.

Rail

Adani Ports and Special Economic Zone Limited has developed a 117 km railway network from Mundra to Adipur. The rail infrastructure is capable of handling 130 trains per day including double stack container trains and long-haul trains. ASPEZ also owns 6 locomotives which are deployed for internal shunting of trains.

Road

APSEZ is connected to the hinterland in Northern and Western parts of India through the National Highway 8A Extn. & State Highways 6 & 48. For internal connectivity, the company plans to build 150 km of arterial and sub-arterial road network within the SEZ, of which 70 km is already completed. The port has also constructed a four-lane Rail-over-Bridge (ROB) in the proximity of the port to ensure that two modes of transportation i.e. road & rail, do not impede each other's movement.

Air

Mundra Airport is a licensed airport in 'Private Category' with Air Traffic Control (ATC) which is operated by the Airport Authority of India (AAI). The nearest commercial airports are at Bhuj (65 km) and Kandla (60 km). The company plans to extend the current runway at Mundra to 4500 meters. It has also installed a Precision Approach Path Indicator (PAPI), and approach and runway lighting for safe night landings for aircraft. APSEZ plans to upgrade an International Air Cargo Hub with night landing facility.

Pipelines

APSEZ is connected to the northern hinterland with three cross-country pipelines. One feeds the IOCL Panipet refinery, second crude oil pipeline feeds Batinda refinery and third is a white oil line which feeds the national capital region.

ADANI POWER PLANT

Mundra Thermal Power Station or Mundra Thermal Power Project is located at Mundra in Kutch district in the Indian state of Gujarat. The power plant is one of the coal-based power plants of Adani Power. The coal for the power plant is imported primarily from Bunyu, Indonesia. Source

of water for the power plant is sea water from the Gulf of Kutch. It is the world's 11th-largest single location coalbased thermal power plant as well as India's second largest operational power plant. The plant has nine power generating units, unit 5 to 9 involves super- critical boiler technology.

The company is India's largest private power producer, with capacity of 4620 MW and also it is the largest solar power producer of India with a capacity of 40 MW. It uses a 55000 MT coal per day for the power plant use only.

Operations :-

- **Mundra Port:** Designing, engineering, financing, construction, development, management and operation of multi user and multi-cargo port at Mundra on build, own, operate and transfer (BOOT) basis situated at Mundra in the District of Kutch, Gujarat under a concession granted by the Government of Gujarat (GOG).

- **Adani Petronet (Dahej) Port Pvt. Ltd.:** Operates a port in Dahej in Gujarat state under sub-concession with Petronet LNG Ltd for handling dry bulk and break bulk cargoes in pursuance to the Concession granted by Government of Gujarat.[15]

- **Adani Hazira Port Private Ltd.:** Engaged in designing, engineering, financing, construction, development, management and operation of a multi-cargo port in Hazira in Gujarat State under Sub-Concession route with Shell B.V. for non-LNG cargoes like coal, containers, automobile and chemicals. There is a plan to build 13 berths at Hazira port for handling general cargo, Container and Liquids.

- **Adani Murmugoa Coal Terminal Pvt. Ltd.:** Licensee for development and operations of coal import terminals in Major Port of Goa under Concession from Mormugao Port Trust.

- **Adani Vizag Coal Terminal Pvt. Ltd.:** Licensee for development and operations of coal import terminals in Major Port of Visakhapatnam under Concession from Visakhapatnam Port Trust.

- **Adani Abbot Point Terminal Pty Ltd.:** Recently acquired Abbot Point Coal Terminal in Queensland, Australia on 99 years lease in June 2011. Adani Ports plans to invest INR12 billion in this project, which will be operational by 2014 and will have an annual capacity to handle 20 million tons of cargo.

Day 1:

5TH APRIL 2019

4:00 am The journey started from Ahmedabad. The 76 students along with 4 faculties were ready for an exciting visit. Sharp at 4 o'clock early in the morning two buses of Adani arrived. It was still dark and chilly morning but the students created a very energetic and disciplined environment. The buses were well maintained and comfortable. Within an hour we were on NH947 and our speed geared up. We were yet to cover around 300 kms to reach our destination.

8:00 am As our fun time started we started to feel hungry and luckily the first halt was not far away. We took our halt at a hotel at Halvad and we were served breakfast. And after that the journey resumed and we started to play fun games like cards on the way.

12.45 pm After a long and fun filled journey we reached a very secluded and poised place named ‘Shanti Vihar’. We were mesmerized by the view of the place and a spiritual vibe was felt by the ‘Shanti Nath’ temple. We were received by the in charge of ‘Shanti Vihar’. Rooms were allotted to us in a group of three. We found out the rooms very spacious and equipped with all the basic amenities that an individual needs.

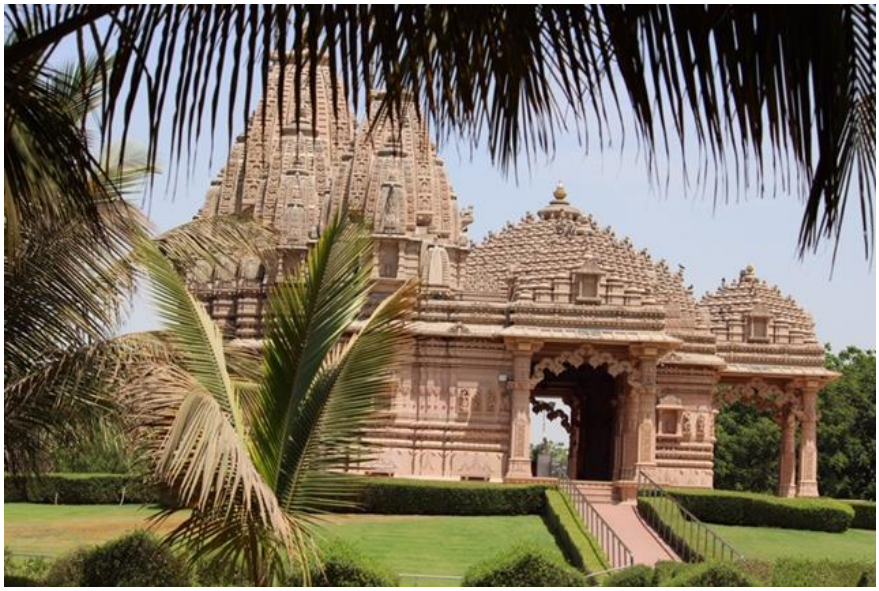
1.30 pm After some rest we were called by a whistle for lunch in the mess. The meal was very delicious and hygienic as well. Also the service was excellent. After lunch we again went back to our room. One of the most significant part of the visit was that our electronic gadgets were taken. And this was done for rules and also the fact that we can focus on learning rather than posing for pictures

3.00 pm We left accommodation for the purpose we came for. With all the safety instructions and helmets we kick-started our crusade of learning about the industry. The buses took us to the Adani Port. Meanwhile we saw huge machinery and were astonished to see tons of cargo loading and unloading. Heaps of coal was alongside the road. The coal was unloaded to conveyer belts by huge grabbers.

Throughout the travel to port we were amazed to see the work of mechanics. About an hour later we reached the port. The authority received us and gave facts and information about the port. There was no material which was not imported or exported from that port. We saw huge containers being loaded on ships for export. After that we went to Adani Wilmar Oil Refinery. There various types of edible oils were processed. An engineer gave a quick information about the processing of tin canisters as well as the plastic bottles. On our way we could see the oil being filled in the bottles by automated machines. Samples of oil at its different stages were shown to us.

6.30 pm We were taken back to our accommodation in the evening. After a quick break we were shown a presentation on Adani industry. The presentation gave a nice visualization of their whole infrastructure and planning. And this presentation ended with Adani caps on our head which was given to us as a gift.

7.00 pm It was time for daily 'Aarti' in the Shanti Nath temple. The temple was a piece of art in itself. The garden and fountains were well maintained. Inside the temple we could see the sculptures on the ceiling. The temple priest completed aarti with holyness and we went back to our rooms for rest.



DAY 2:

6TH APRIL 2019

5:30 am The day started with a knock on our doors as a wakeup call. After getting fresh we gathered in the Garden. A very inspiring lecture was given to us about healthy lifestyle and yoga. But the part which made our day was the laughing session. We laughed our sleepiness off and got ready for another day start.

9:00 am After breakfast we went for our last spot that was Adani West Base. Again the journey to port was interesting in itself. Heaps of coal was again there but this was less dusty than before. The fact behind this we came to knew later that this base uses modern grabbers which stack the coal without much dust. The atmosphere was pleasant on west base. The port was made in a curve which was actually in a 'G' shape. This port also held the record for unloading in minimum time in India which was almost 55 seconds. Also there was a 22 km long conveyor which loaded with coal for transportation. Along with these amazing facts we continued our journey.

10.30 am Our next stop was Adani Power Plant. Meanwhile we saw transmission lines and huge transformers. The power plant was a multistory building with boilers at the basement and controlling unit above. We went to control unit and engineer gave us information about the power generation. The steam was generated by boiling water with the help of coal as a fuel. And this steam went to generator at high pressure to produce electricity. The power plant supplied Megawatts of energy and we could see the live status of frequency and power generated in the control room.

12:00 pm We went back to accommodation for lunch. The visit was about to end but without a group photo it was incomplete. After the photo-session we left for Ahmedabad. The visit ended quite comfortably.

Follwing is the abstract of overall knowledge that we gained from the visit

- Adani Power generation plant generates about 4620 MW of power.
- There were huge transformers which covers acres of land .
- Along with that there were 4 boilers.
- By giving a huge amount of coal, company produces a enormous power.
- They are also transmitting power to Haryana and such other states.
- There was other section of refinery, where we saw the 5 process of refining edible oil, production and making of bottles and oil tins.
- The bottles manufactured by Adani itself of 250 ml, 500ml etc.
- The Port section was divided in two: West Port and South Port.
- On West Port a dockyard of 6km has been established by the company.
- This port was made in such a way that 17 ships could berth, all at one time,
- This Port was created in shape of 'C'.
- There was a conveyer belt of 11km long, which delivers coal at the speed of 7m/s.
- At the South Port, there was conveyer belt of about 2km long.
- South Port consists of total 12 berths.
- Among which 8 berths were operated by other company while other 4 were operated by Adani itself.
- After having a great and gainful interactive session with company engineers and our coordinates we left for Ahmedabad.