

INDUSTRIAL VISIT

27th September, 2018

Wanankbori Thermal Power Station, Kheda, Gujarat

Introduction

IAS-PES Joint Chapter, IEEE GCET SB arranged an industrial visit to Wanankbori Thermal Power Station, Kheda, Gujarat on 27th September, 2018 for 7th semester Electrical Engineering students. Faculty co-ordinators were Dr. Hardik Pathak, Prof. Sameer Patel, and Prof. Jignesh Patel.

The visit was scheduled from 06:00 AM to 4:00 PM.

The visit was voluntarily supported by IEEE GCET student branch.



Wanakbori Thermal Power Station, Kheda.

The trip started at 06:00 AM and we were on the way to Wanankbori Thermal Power Station, Kheda. We reached at 10:30 AM. We were accompanied by Prof. Sameer Patel, Dr. Hardik Pathak and Prof. Jignesh Patel.

Wanakbori Thermal Power Station is a coal-fired power station in Gujarat, India. It is located on the bank of Mahi river in Kheda district. There are seven units of each 210 MW capacity.

Here are details of the station's existing units:

Stage	Unit Number	Installed Capacity (MW)	Date of Commissioning	Status
Stage I	1	210	March 1982	Running
Stage I	2	210	January, 1983	Running
Stage I	3	210	March, 1984	Running
Stage I	4	210	March, 1986	Running
Stage I	5	210	September 1986	Running
Stage I	6	210	November 1987	Running
Stage II	7	210	December 1998	Running

As soon as the we reached the Wanakbori Thermal Power Station we were given general instructions that we need to follow during the visit. Then we were directed towards the Training Department.



WTPS(Wanakbori Thermal Power Station) has 7 units each of 210 MW. So, the total installed capacity of the plant is 1470 MW. Following sections of the WTPS are visited.

1. Training center
2. Coal and ash handling plant
3. Boiler section
4. Turbine/Generator floor
5. Electrical control room (Unit No.3)
6. Cooling tower
7. Switch yard (220kV & 400 kV)

At the training center, Training Officer explained the working cycle of thermal power station. We visited various small scale models of equipment used in the power plant. We collected very important practical data like temperature, pressure, quantity of coal, etc. used for the power generation. We visited the coal and ash handling plant where Training Officer guided us. The 210 MW unit consumes 125 ton coal per hour to generate the electricity. So, bulk amount of coal is transported through railway and with the help of Wagon. Tripler coal is transferred to the coal storage area.

In 2012, Gujarat State Electricity Corporation proposed an additional unit 8 of 800 MW to the power station, originally projected to be commissioned in 2015 to 2016.

The project received environmental clearance in December 2013. Construction began in 2014. It is planned for operation in 2018.

The control room of power plant is the brain of the entire plant. We visited control room. It is equipped with DCS facility provide by ABB Ltd. All the important data were displayed in real time mode like MW, MVAR, frequency, power factor phase current, etc. on the display screen. There are 7 natural draught cooling towers (NDCT) used for cooling of circulating water of condenser. Switch yard consists of two sections, 220 kV and 400 kV. The voltage of unit no. 1, 2 and 3 is stepped up from 15.75 kV to 220 kV and the power is transmitted at 220 kV level. There are 7 outgoing transmission lines at 220 kV voltage level. The voltage of unit no. 4, 5, 6 and 7 is stepped up from 15.75 kV to 400 kV and the power is transmitted at 400 kV level. There are 4 outgoing transmission lines at 400 kV voltage level. The visit was very fruitful as we observed each of energy conversion stages used in power plant starting from fuel section to switch yard. We collected very important information like practical data which are not available in books and other literature. Many of our doubts are cleared by the discussion with experts of the plant.

We left WTPS at 2:20 PM to reach Vallabh Vidyanagar at 4:00 PM.