GIDC Degree Engineering College
Managed by GIDC Education Society

Industrial Visit at Thermal Power Plant, Wanakbori

ACKNOWLEDGEMENT

The industrial visit **at Thermal Power Plant, Wanakbori** was impossible to us without the efforts and valuable inputs from collage and faculties. We are here extending to our great acknowledgement and appreciation to following persons with their memorial inputs that are not limited only those mentioned below:-

The first and the most acknowledged is **Dr.K.N.Mistry, Principal Sir** who was very helpful to us. As a principal, he has inspired us to arrange industrial visit to Pre final year students. He has injected us the familiarity and methodology of planning of visit. Not only that as giving the permission of industrial visit, his academic guidance, fairness and responsiveness to kind of queries remains him as a role model, there of we are extending our gratitude to **Dr.K.N.Mistry, Principal Sir.**

Next and the acknowledged **Mr.Rajesh T.Patel (H.O.D. of Electrical Engineering Department)** who was faithful to us, he is also always ready for solving problem related to industrial visit and conclude it, ascertaining him a commemorative plaque at deep of our heart.

Again thanks for valuable collaborations

Mr.Rohit B Damor (Assistant Professor)

Mr.Ankur P Desai (Assistant Professor)

Mrs.Apexa Desai (Lab Assistant)

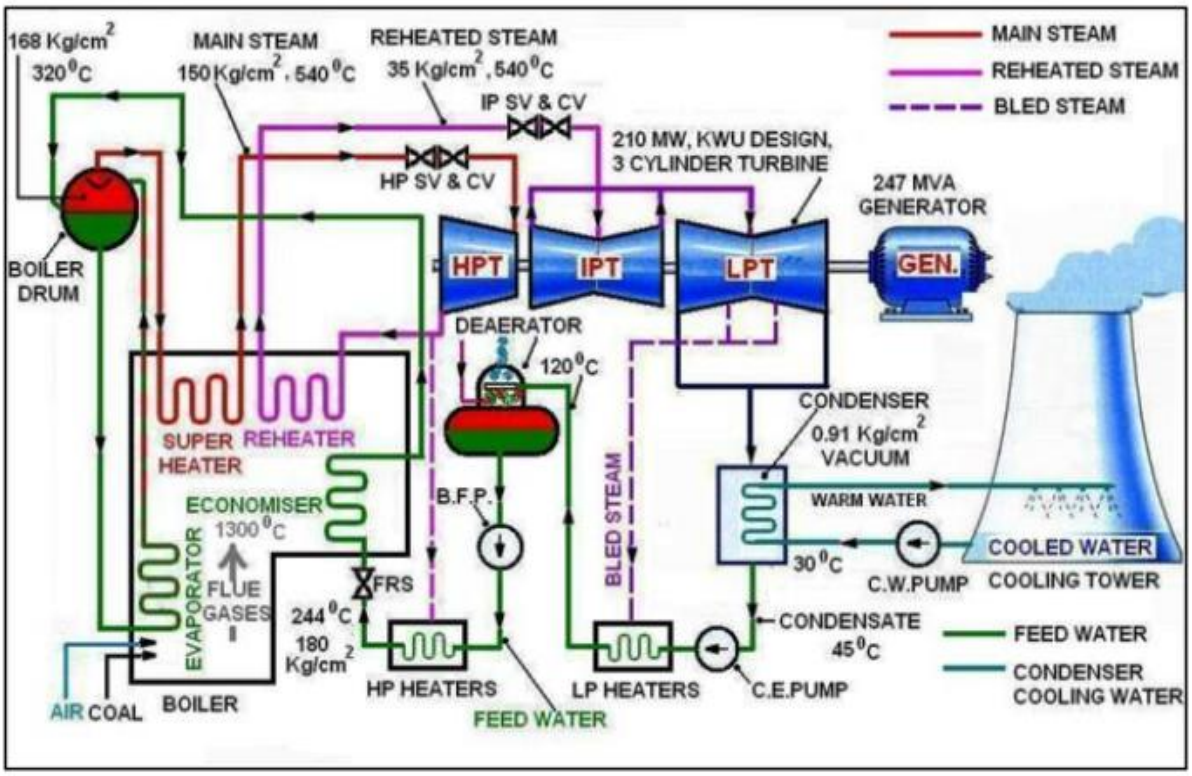
Introduction:

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.

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
Stage III	8	800	-	Under Erection

GSECL has recently entrusted BHEl with an Oder for setting up an 800-MW superctrical Coal-Based project at Wanakbori in Gujarat on EPC basis.

Basic Working of TPS, Wanakbori



Name of Industry: Thermal Power Station, Wanakbori (GSECL)

Date of Visit: 17.02.2017

Faculty Coordinators: Prof.Rohit B Damor,Prof Ankur P Desai, Mrs.Apexa Desai

Department of Electrical Engineering has organized an industrial visit of Thermal Power Station, Wanakbori (GSECL) for 2nd and 3rd year PG students. 61 students along with 3 faculty members visited the thermal power station on above mentioned date. WTPS 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, Gandhi Sir (DE,TPS Wanakbori) explained the working cycle of thermal power station. Students visited various small scale models of equipments 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 Mr. Gandhi 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. To start the ignition of the boiler residual furnace oil (RFO) or light diesel oil (LDO) is used which is transported through tanker wagon by railway. After the combustion of coal in boiler furnace, ash is produced which is collected and treated by ash handling plant. The ash is used for many industrial applications like production of cement, ceramic, etc. At boiler section we visited FD fan, ID fan, PA fan, APH, boiler furnace area and other auxiliary devices essential for boiler operation. Each boiler unit has 2 FD fans, 2 ID fans and 2 PA fans. The boiler consumes 125 ton pulverized coal per hour with 720 ton of air to generate heat at the temperature of 1200-1300o At turbine/generator floor, students visited HP, IP and LP sections of turbine coupled with generator. Superheated steam at 140 kg/cm2 pressure and 545o C temperature is fed to the turbine. Generator has capacity of 210 MW at 15.75 kV, 9050 A. The control room of power plant is the brain of the entire plant. We visited control room of unit no. 3. It is equipped with DCS facility provided 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. Water is sprayed at the height of 21 meters in the tower and due to natural draught of air, its temperature is reduced by 10o C and this water is pumped in to condenser tubes for condensation of steam exhausted from LP turbine. 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.

Faculty Detail:

Mr.Rohit B Damor (Assistant Professor)

Mr.Ankur P Desai (Assistant Professor)

Mrs.Apexa Desai (Lab Assistant)

Student's details:

61 (2^{nd} and 3^{rd} Year Electrical students)

Visit Date: 17.02.2017

Venue:

Wanakbori Thermal Power Station

Kheda District, Wanakbori, Gujarat 3488239

At TPS, Wanakbori….

Group Photo of all the students, Faculties of GIDC Degree College, Abrama & Mr.Dilip Panchal Superintendent Engineer (MECH DEPT), TPS Wanakbori

Feedbacks:

1. Prof. Ankur P Desai (Faculty of GIDC Degree Engineering,Navsari)

It is great experience of Thermal Power Plant, Wanakbori. It is very useful to students because students can observe working of TPS and its various working Cycles like Ash Handling cycle, Gases cycle, Water cycle, Stream cycle, Electrical cycle. They can understand working of Boiler, Alternator, Pump, Cooling Tower, Control room etc.

2. Prof.Rohit B Damor (Faculty of GIDC Degree Engineering, Navsari)

It is nice industrial visit at TPS; Warankbori. It will help to students in their studies also. I have gather lot of information about working of Thermal Power plant and its different working cycles.

4. Student-

It is nice visit. I got lot of information about working Thermal Power Plants and its working….

5. Student-

It is exciting to see how control system works. It is beyond the typical text book of our study.

Report Compiled and edited by,

Ankur P Desai

Assitant Professor,

Electrical Engineering Department

GIDC Degree Engineering College,Abrama

Annexure-1 Permission letter by GIDC Degree Engineering College

GIDC Degree Engineering College
(Approved by AICTE and Affiliated to Gujarat Technological University)
(Managed by GIDC Education Society)
Abrama, Ta : Jalalpore, Dist. : Navsari - 396 406
E-mail : gidcengcol@gmail.com
Website:www.gdec.in Phone : (02637) 229040

Ref No : Gdec/Adm/Indvisit/2016-17/3346 Dt. :12/01/2017

To,
The Superintending Engineer, (S.E.M.1)
WTPS, GSCEL
Wanakbori Thermal Power Station,
Gujarat State Electricity Corporation Ltd.
Kheda District, Wanakbori,
Gujarat 3488239

SUBJECT: Permission for field Visit for B.E Electrical Engineering (2nd year, Sem-4th) Students.

Dear Sir/Madam,

As you may be aware, GIDC Degree Engineering College, Village-Abrama, Taluka-Jalalpore, Dist- Navsari is the first PPP Mode College of the "GIDC EDUCATION SOCITY, GANDHINAGAR" Supported by Government of Gujarat. The college offers bachelor degree courses in Electrical, Mechanical, Civil, Automobile and Computer engineering.

Apart from the curriculum, we encourage students to undertake field visit to industries of repute to further enhance their knowledge. We feel it will be fruitful that the students with academic background of electrical power have a glance of the generation, distribution and transmission of power in order to have a better appreciation of practical exposure for real time process.

In above background, we would like to send strength of about 65 students of B.E. Electrical Engineering accompanied by 03 staff members to visit your esteemed industry preferable any date of FEB-2017 (third week of month).

We request you to kindly accord the necessary permission for site visit of Wanakbori Thermal Power Station, Gujarat State Electricity Corporation Ltd, Gujarat. Let us know the date of visit as per your convenience.

We shall be grateful for a favourable response.

Mr.Ankur P Desai
Assistant Professor;
Electrical Engineering;

12/01/17
Mr. Rajesh T. Patel
Head of Department,
Electrical Engineering,

Dr.K.N.Mistry
PRINCIPAL
G.I.D.C. Degree Engg. College
Abrama. Ta:Jalalpore.Dist:Navsari-396406

Annexure-2 Permission/Undertaking by Teachers/ Parents/Guardian

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Letter of Undertaking for industrial tour given by Parents/Guardian

Date:

To,
The Principal
GIDC Degree Engineering College,
Abrama, Navsari

Dear Sir,

SUB: Submission of "Industrial Tour Undertaking"

We, Mr./Mrs._____ parents of _____ bearing enrollment number _____ studying in _____Semester, Department of _____ in GIDC Degree Engineering College Abrama, Navsari herewith voluntarily submitting the under taking.

We, the undersigned parents/guardian are aware that, our son/daughter is participating in the industrial tour organized by the Institute scheduled during_____with our full acceptance and will be bearing all the expenditure incurred for the Industrial tour towards travel and other expenses from our end.

We shall ensure that our son/daughter shall abide by the college terms and conditions for industrial tour. We , hereby declare and confirm that the college shall not be held responsible in the event of any misfortune or accidents and/or personal injuries whether fatal or otherwise involving our son/daughter.

We shall undertake full responsibility of all the consequences should any other person or body suffer such accidents and/or personal injuries and/or damage to property as a result of our son/daughter negligent act during the period of industrial tour.
We further confirm that the college shall not be held responsible for our son/daughter misconduct or wrongdoing at all times during the period of industrial tour and shall obey the instructions of the faculty members who are accompanying during the industrial tour.

Yours sincerely,

_____ _____
_____ Signature of the student
(Parents/Guardian's Signature)
Name of the Father: _____
Name of the Mother: _____
Name of the Guardian: _____
Contact Address:_____
Contact Phone No:_____
