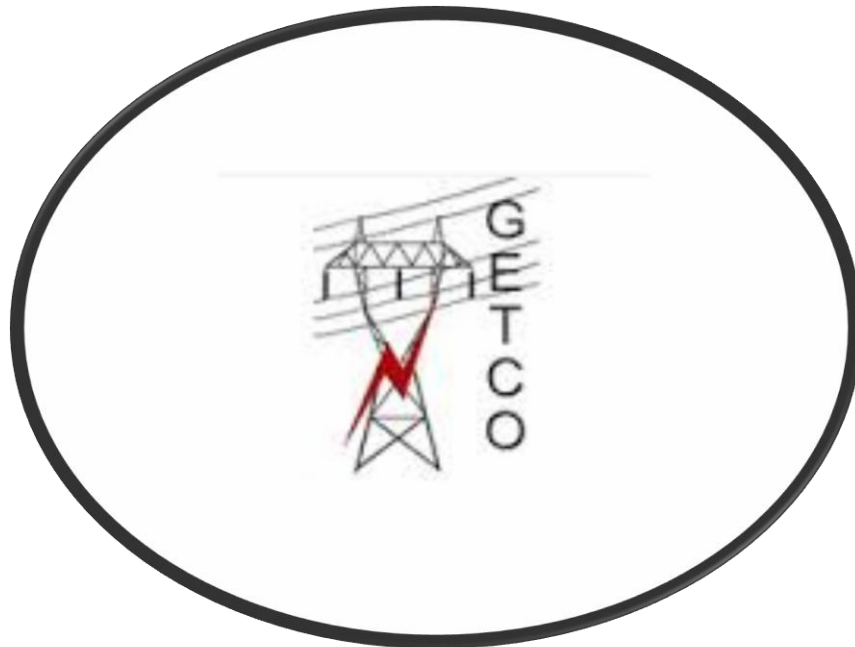




GIDC Degree Engineering College

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**Industrial Visit at Gujarat Energy Transmission Corporation
Limited(GETCO) ,Navsari**



ACKNOWLEDGEMENT

The industrial visit at **Gujarat Energy Transmission Corporation Limited (GETCO), Navsari** 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.Ankur P Desai (Assistant Professor)

Mr.Bhavesh Patel (Assistant Professor)

Mrs.Apexa Desai (Lab Assistant)

Introduction:

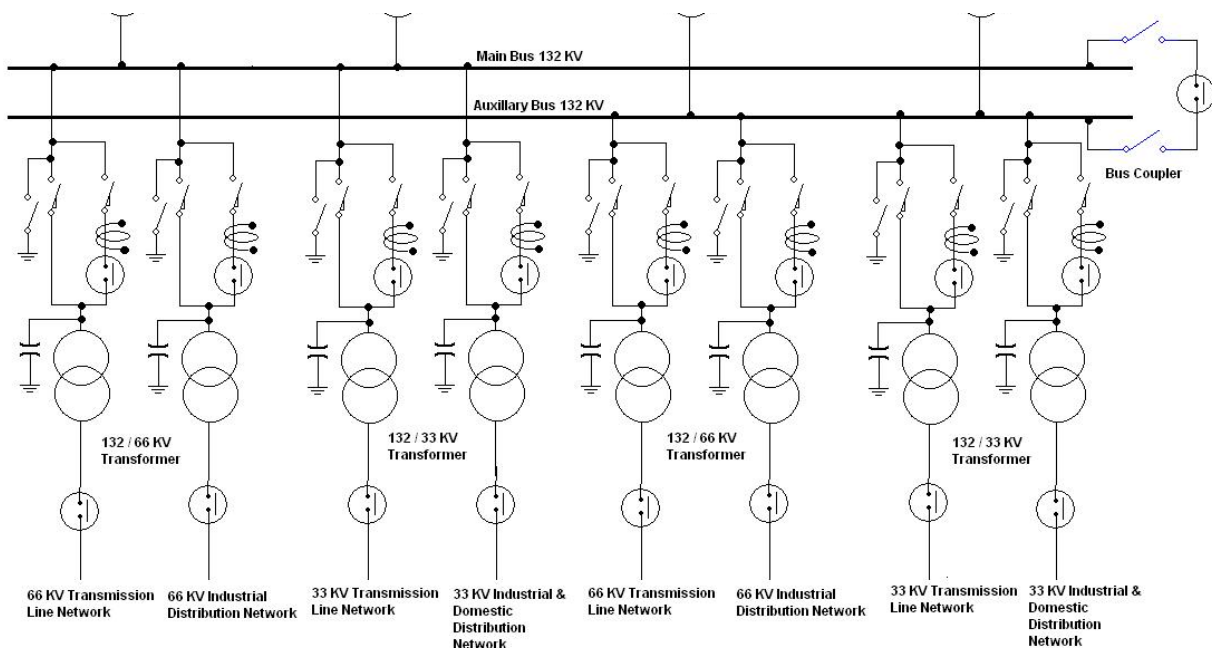
Gujarat Energy Transmission Corporation Limited (GETCO) was set up in May 1999 and is registered under the Companies Act, 1956. The Company was promoted by erstwhile Gujarat Electricity Board (GEB) as its wholly owned subsidiary in the context of liberalization and as a part of efforts towards restructuring of the Power Sector.

As a part of the ongoing reforms process in the state power sector, in the year 2003, the Government of Gujarat under the provisions of Gujarat Electricity Industry (Re-Organization & Regulation) Act, 2003 framed the Gujarat Electricity Comprehensive Transfer Scheme, 2003 (the Transfer Scheme) vide Government Notification No: GHU-2003-58-GEB-3537-K dated the 24th October, 2003. The Government of Gujarat issued Notification No. GHU-2004-99-GEB-1104-7318-K dated the 31st December 2004, notifying the Provisional Opening Balance Sheet as on 31st March 2004 of the Six Transferee Companies containing the value of assets and liabilities transferred from erstwhile Gujarat Electricity Board (GEB) to the Transferee Companies. Assets of the Board were dis-aggregated into six companies – One each in Generation and Transmission and Four in Distribution. As a part of the above exercise, all the generation plants of GEB have been transferred to GSECL, which was a company already, existing since 1993.

Subsequently, the Government of Gujarat vide Notification dated 31st March, 2005 notified that pursuant to the Transfer Scheme, the effective date for the transfer of assets, liabilities, proceedings and personnel be further extended to 1st April, 2005. A holding company, Gujarat Urja Vikas Nigam Limited (GUVNL), has been also been formed. Apart from co-ordination functions, GUVNL is also handling Trading and Bulk Supply functions.

Basic regarding Substation:-

A **Single Line Diagram (SLD)** of an electrical system is the line diagram of the concerned electrical system which includes all the required electrical equipment connection sequence wise from the point of entrance of power up to the end of the scope of the mentioned work.



lightning arrestor, C.T/P.T unit, isolators, protection and metering P.T. and C.T. circuit breakers, again isolators and circuit breakers, main power transformer, all protective devices/relays and other special equipment like CVT, GUARD RINGS, etc. as per design criteria.

A Single Line Diagram (SLD) of an Electrical System is the Line Diagram of the concerned Electrical System which includes all the required electrical equipment connection sequence wise from the point of entrance of Power up to the end of the scope of the mentioned Work. As in the case of 132KV Substation, the SLD shall show Lightning Arrestor, C.T/P.T Unit, Isolators, Protection and Metering P.T & C.T. Circuit Breakers, again Isolators and circuit Breakers, Main Power Transformer, all protective devices/relays and other special equipment like CVT, GUARD RINGS, etc as per design criteria. And the symbols are shown below. There are several feeders enter into the substation and carrying out the power. As these feeders enter the station they are to pass through various instruments.

1 FEEDER CERCUIT:

1. Lightening arrestors;
2. CVT;
3. Wave trap;
4. Isolators with earth switch
5. Current transformer;
6. Circuit breaker;
7. Feeder Bus isolator
8. BUS;
9. Potential transformer in the bus with a bus isolator

2 TRANSFORMER CIRCUIT:

i) HV side:

1. Transformer bus Isolator
2. Current transformer
3. Circuit breaker
4. Lightning Arrestors
5. Auto Transformer 100MVA (220/132KV)

ii) LV side:

1. Lightening arrestors
2. Bus

3. Current transformer
4. Potential transformer with a bus isolator
5. Circuit breaker
6. A capacitor bank attached to the bus
4. Bus Isolator.

The major stations include a **control room** from which operations are coordinated. Smaller distribution substations follow the same principle of receiving power at higher voltage on one side and sending out a number of distribution feeders at lower voltage on the other, but they serve a more limited local area and are generally unstaffed.

The central component of the substation is the transformer, as it provides the effective interface between the high- and low-voltage parts of the system.

At GETCO,Nasari during Vsit.....



View of 220kv Receiving Substation, GETCO, Nasari

Navsari Circle Division wise Substation's Detail (As on 01.01.2013)												
Sr. No.	Name of sub-station	Taluka	Dist	Date of commi.	No. of bays (voltage class wise) (Incl. Capacitor , PT, bus coupler bays etc.)	BUS Details		Max. load of each Bus in MW	Power transfor mer (Voltage ratio wise in KV)	Capacit y in MVA	Max. load (in MVA)	
						Volt	Type cond.				X'mer	s/s
Navsari Transmission Division												
1	220KV Navsari	Navsari	Navsari	04.04.67	220kv-17	220kv	Twin moose	750	220/66kv	50	37.67	146.6
										50	40.78	
										100	71.33	
					132kv-08	132kv	Twin moose	156	220/132kv	100	70.77	173.3
										100	78.00	
										100	77.73	
					66kv-13	66kv	Twin moose	132	66/11kv	15	11.11	28.19
										15	11.56	
										10	7.22	
2	220KV AMBHETA (CHIKHLI)	Navsari	Navsari	27.03.99	220kv-08	220kv	Twin Zebra	315	220/66kv	100	63.10	93.6
					66kv-09	66kv	Twin Zebra	90	220/66kv	50	30.50	
									66/22kv	5	(Stn.Tra.)	
3	66KV MAROLI	Navsari	Navsari	31.03.90	66kv-05	66kv	Panther	11.12	66/11kv	10	6.10	12.35
									66/11kv	10	6.25	
4	66KV EROO	Navsari	Navsari	15.08.72	66kv-06	66kv	Panther	13.37	66/11kv	10	7.12	14.86
									66/11kv	10	7.74	
5	66KV CHHAPRA	Navsari	Navsari	12.04.89	66kv-06	66kv	Zebra	25.91	66/11kv	10	5.75	18.56
									66/11kv	10	6.15	
									66/11kv	10	6.68	
6	66kv Gandevi	Navsari	Navsari	28.03.71	66kv-06	66kv	Panther	19.50	66/11kv	10	7.56	14.88
									66/11kv	10	7.32	
7	66kv	Navsari	Navsari	15.08.	66kv-07	66kv	Panther	13.9	66/11kv	10	7.85	15.44

	Bilimora			54					66/11kv	10	7.59	
8	66kv Amalsad	Navsari	Navsari	02.09. 02	66kv-04	66kv	Panther	6.25	66/11kv	10	6.94	6.94
9	66kv Chikhli	Navsari	Navsari	07.11. 88	66kv-06	66kv	Panther	52.3	66/11kv	10	6.94	13.67
									66/11kv	10	6.73	
10	66kv Khergam	Navsari	Navsari	14.03. 94	66kv-04	66kv	Panther	9.60	66/11kv	10	5.05	10.10
									66/11kv	10	5.05	
11	66kv Tankal	Navsari	Navsari	20.08. 06	66kv-04	66kv	Panther	30.1	66/11kv	10	5.84	5.84
12	66kv Anaval	Navsari	Navsari	06.08. 87	66kv-06	66kv	Panther	27.5	66/11kv	10	6.10	11.99
									66/11kv	10	5.89	
13	66kv Dolwan	Vyara	Tapi	16.01. 90	66kv-05	66kv	Panther	10.3	66/11kv	10	6.83	11.52
								7	66/11kv	5	4.69	
14	66kv Vansada	VANSAD A	Navsari	02.03. 90	66kv-06	66kv	Panther	18.6	66/11kv	5	4.23	10.82
								5	66/11kv	10	6.60	0
15	66kv Waghai	AHWA	DANG	19.02. 66	66kv-05	66kv	Panther	9.90	66/11kv	5	2.90	5.76
									66/11kv	5	2.86	
16	66kv Ahwa	AHWA	DANG	27.02. 99	66kv-04	66kv	Panther	4.86	66/11kv	5	2.65	5.40
									66/11kv	5	2.75	
17	66KV FADWEL	CHIKHLI	Navsari	02.02. 08	66kv-04	66kv	Panther	16.6	66/11kv	10	5.05	5.05
18	66KV Navsari CITY	Navsari	Navsari	09.08. 08	66kv-04	66kv	Moose	9.81	66/11kv	10	5.32	10.90
									66/11kv	10	5.58	
19	66kv SINGOD	Navsari	Navsari	23.09. 09	66kv-03	66kv	Zebra	3.01	66/11	10	3.35	3.35
20	66Kv SAPUTAR A	AHWA	DANG	20.01. 09					66/11	10	66kv Saputara comm. As switching s/s as on 22.01.10, but 11kv feeders load not taken by DGVCL	

Faculty Detail:

Mr.Ankur P Desai (Assistant Professor)

Mr.Bhavesh Patel (Assistant Professor)

Mrs.Apexa Desai (Lab Assistant)

Student's details:

45 (Pre Final Year Electrical)

Date: 21.10.2016



Venue:

Gujarat Energy Transmission Corporation Limited(GETCO) ,Navsari

Transmission Division Office,Kabilpore-396424

Navsari Ph.no.(02637) 236058

Snapshot at time of Demonstration held by Deputy Engineer, Shri Rana sir of Switchyard, GECTCO



Snapshot at time of Demonstration held by Deputy Engineer, Shri Rana sir of Three Phase Power Transformer, GECTCO





Group Photo of all the students, Faculties of GIDC Degree College, abrama & Deputy Engineers of GETCO, navsari

Feedbacks:

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

It is great experience of GECTCO, Navsari Visit involves on field working and live inspections of Power system switchgears like CT, PT, Breakers, isolators, Transormesrs, PLCC, Bus bar systems, Earthling Switch. It will help to Pre- final year students to understand practical Explorer of 220 kv Receiving substation and it's working. Also it will good the information about

controlling room, battery room and relay system for different kinds of power system faults and their control.

2. Mr.Bhavesh Patel (Faculty of GIDC Degree Engineering, Navsari)

It is nice industrial visit at GETCO; Navsari. It will help to students in their studies also. I have gather lot of information about 220 kv and 66 kv receiving Substation & their working.....Control Room, Relays, Battery room etc.

3. Student-

It is nice visit. I got lot of information about working of CT, PT, Breakers, and Transformers etc.

4. 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

