

**Sarvajanik Education Society  
Sarvajanik College of Engineering & Technology  
Dr. R.K.Desai Marg,Opp.Mission  
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**FACULTY OF ELECTRICAL ENGINEERING**

**Report of Industrial Visit**

**At**

**“UTRAN Power Plant”**

**For BE – II EL (Shift-I and II) STUDENTS**

**Academic Year: 2017-18**

**Date:** 22/3/2018 (For Shift-I); 23/3/2018 (For shift-II)

**Venue:** Utran GAS based Power plant, Utran

**Faculty Coordinator:** Prof. Krishna Vakharia

**No. of Students:** 72 (Shift-I) & 57 (Shift-II); Total: 129

**No. of Faculties:** 08

## **INTRODUCTION**

A student of 4th semester electrical engineering department of SCET Degree Engineering College, Surat visited the Gas Power Plant, Utran. As a part of EPG subject offered to BE II EL students, the visit was arranged. Utran Gas Based Power Station is located at bank of Tapi river near Surat city, in Surat district in the Indian state of Gujarat. The power plant is one of the gas based power plants of Gujarat State Electricity Corporation Limited.

Gujarat State Electricity Corporation Limited was incorporated in August 1993 and is registered under the companies' act 1956 with the objectives to initiate a process of restructuring of power sector and to mobilize resources from the market for adding to the generating capacity of the state and improving the quality and cost of existing generation.

The Government of Gujarat has also given to the GSECL the status of Independent Power Producer with approval to undertake new power projects. The company commenced its commercial operation in the year 1998. The operations of GSECL were limited to power stations units Gandhinagar #5, Wanakbori #7, Utran GBPS & Dhuvaran CCPP till the complete unbundling of erstwhile GEB was undertaken up to 31st March 2005.

All these companies have been structured as subsidiaries of a holding company, Gujarat UrjaVikas Nigam Limited. GUVNL is also the single bulk buyer in the state as well as the bulk supplier to distribution companies. It will also carry out the trading function in the state.

Electricity Transmission has been entrusted to the already existing company GETCO. Distribution network in the state has been split up among four distribution companies, which cater to the northern, central, southern, and western parts of the state respectively.

## **COMPONENTS**

### **Compressor:**

The compressor used in gas power plant is rotating type. The air at atmosphere pressure is drawn by the compressor through a filter which removes the dust. The rotary blades in the compressor push the air through the stationary blades to raise its pressure. Thus air with high pressure is available at compressor output.

### **Regenerator:**

A regenerator is a device which recovers the heat from the exhaust gases to heat the air from the compressor. The exhaust is passes through regenerator before releasing it to the atmosphere. Several numbers of tubes are nested in a shell of the compressor. The compressed air passes through these tubes and exhaust gases from the gas turbine passes through the shell side which transfers heat to the compressed air. In this way compressed air heated by the exhaust gases which is an effective usage of waste gasses.

### **Combustion chamber:**

This is one of the important components of the gas power plant where the high pressure air from the compressor is entered in it via regenerator. The air from regenerator is quietly heated which is not adequate to drive the gas turbine. Only hot air with high pressure can only drive the gas turbine. So in combustion chamber the compressed air is heated up to high temperature (3000 F). The heat is added to the air by burning oil which is injected through a burner in to the chamber at high pressure. The heated air with high pressure is then applied to gas turbine after it attains suitable temperature.

### **Gas Turbine:**

This is heart component of the gas power plant. The hot air with high pressure and temperature is passed through gas turbine. The gases are expanded on the gas turbine blades which causes the rotation of blades to the intended mechanical work. After expanding, the exhaust gases with the temperature about 900 F are applied to the regenerator.

### **Alternator:**

Alternator is directly coupled with the gas turbine same as in the case of steam power plant. Alternator converts the mechanical energy of the turbine in to electrical energy. The output generated electrical energy is then passed to the grid through a generator transformer, isolators and circuit breaker.

**TRANSFORMER:**

A transformer is a static electrical device that transfers electrical energy between two or more circuits through electromagnetic induction. A varying current in one coil of the transformer produces a varying magnetic field, which in turn induces a varying electromotive force (emf) or "voltage" in a second coil. Power can be transferred between the two coils through the magnetic field, without a metallic connection between the two circuits.

**OIL STORAGE TANK:**

Some storage tanks need a floating roof in addition to or in lieu of the fixed roof and structure. This floating roof rises and falls with the liquid level inside the tank, thereby decreasing the vapor space above the liquid level. Floating roofs are considered a safety requirement as well as a pollution prevention measure for many industries including petroleum refining.

**Plant Information:**

Stage	Unit Number	Installed capacity (MW)	Date of Commissioning	GT/ST
1	1	30	1992 December	GT
1	2	30	1992 December	GT
1	3	30	1993 July	GT
1	4	45	1993 July	ST
2	5	228	2009 July	GT
2	6	147	2009 November	ST
Total	6	510		

### List of faculties visited UTRAN power plant:

Sr. No .	Class	Date	Batch	Time	Faculties
1.	BE II EL-Shift-I	22/3/2018	1 (En.No. 160420109001 to 160420109039) Total:35	10 am to 12 pm	Prof. Chinmay Naik Prof. Bijal Mehta
2.	BE II EL-Shift-I	22/3/2018	2 (En.No. 160420109041 to 160420109062 and D2D) Total:37	2 pm to 4 pm	Prof. Harin Desai Prof. Ashish Patel
3.	BE II EL-Shift-II	23/3/2018	3 (En.No. 160420109501 to 160420109545) Total: 35	10 am to 12 pm	Prof. Ekta Desai Prof. Krunal Patel
4.	BE II EL-Shift-II	23/3/2018	4 (En.No. 160420109546 to 160420109561 and D2D) Total:22	2 pm to 4 pm	Prof. Naman Bhatt Prof. Siddhi Patel

