



## **INDUSTRIAL VISIT AT ALDC, JAMBUVA**



The department of Electrical Engineering, Sarvajani college of Engineering and Technology, Surat had organized a one day Industrial visit to Area Load Despatch Centre (ALDC), Jambuva, Vadodara on 21<sup>st</sup> September, 2017. There were 28 students from B.E- 4<sup>th</sup> year evening shift along with two teaching faculties Prof. Naman Bhatt and Prof. Siddhi Patel.

We had coordinated with Shri P.G. Gupta, Executive Engineer, Sub-LDC, Jambuva. At 11:00 am, we reached at Sub-LDC, Jambuva. After reaching there, Shri P.G. Gupta received us with a warm welcome. P. G. Gupta sir had explained the role of ALDC in operation and control of power system network in depth. Then we were taken to the control room. In the control room, every quantity of the power system network is continuously monitored and we observed the real time data of DGVCL & MGVL on the screen.

Shri R. R. Umrawala had explained us how they are monitoring power system network in control room in detail and also shown us the networks of 220 kV & 400 kV of Gujarat. He too explained about calculation of UI rate. He had conveyed very useful information regarding SLDC website. We interacted with P.G. Gupta sir and had a great technical discussion.

Functions of Area Load Despatch Centres are as follows:

- (1) The Area Load Despatch Centre shall be the apex body to ensure integrated operation of the power system in an Area.
- (2) The Area Load Despatch Centre shall--
  - (i) Be responsible for optimum scheduling and despatch of electricity within an Area.
  - (ii) Monitor grid operations.
  - (iii) Keep accounts of the quantity of electricity transmitted through the Area grid.

(iv) Be responsible for carrying out real time operations for grid control and despatch of electricity within the Area.

Power network of Gujarat is shown in Fig. 1.

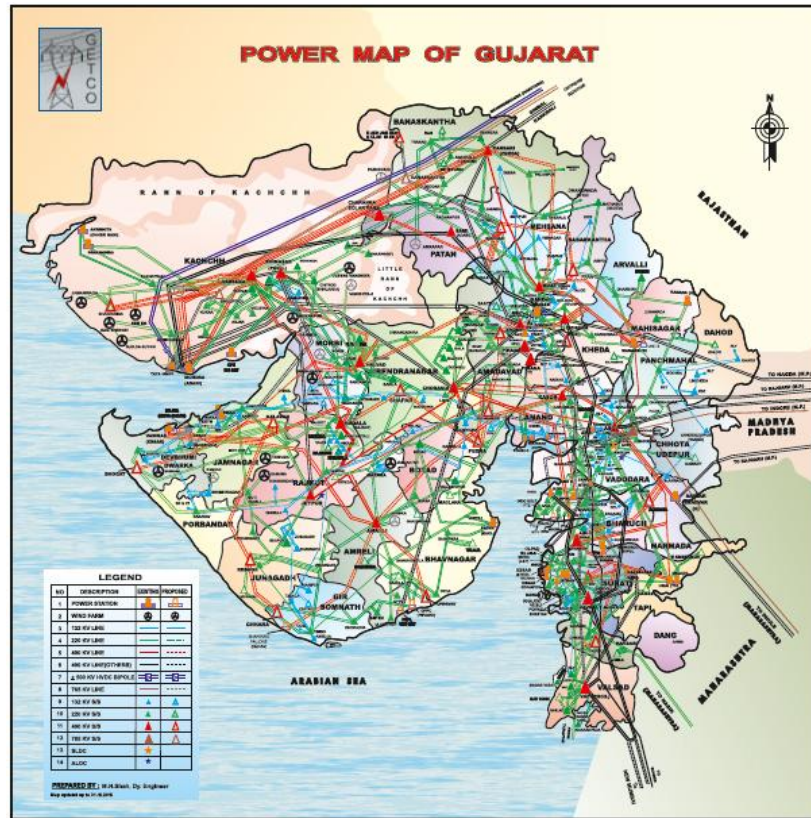


Figure 1 : Power network of Gujarat State

- **“Scheduled generation”** at any time or for a time block or any period means schedule of generation in MW or MWh ex-bus given by the concerned Load Despatch Centre.
- **“Scheduled drawal”** at any time or for a time block or any period time block means schedule of despatch in MW or MWh ex-bus given by the concerned Load Despatch Centre.
- **“Time-block”** means a time block of 15 minutes, for which specified electrical parameters and quantities are recorded by special energy meter, with first time block starting at 00.00 hrs.
- **About UI rate:**  
The charges for the Unscheduled Interchanges for all the time blocks shall be payable for over drawal by the buyer or the beneficiary and under-injection by the generating station or the seller and receivable for under-drawal by the buyer or the beneficiary and over-injection by the generating station or the seller and shall be worked out on the average frequency of a time-block at the rates specified in the Schedule.
- Ultimately, UI rate is a part of ABT (availability based tariff). It means that if there is a change in drawal and scheduled quantity of an entity, it needs to pay in form of money.
- **Advantages of UI mechanism:**
  - UI is a real time pricing mechanism
  - UI can be used for Merit Order Despatch
  - UI increases efficiency of the grid

- Capacity best matched with load by UI mechanism
- Implications of deviating from scheduled supply/drawal known
- Improvement in grid parameters such as Frequency and Voltage
- A mechanism for harnessing Captive & Co-generation
- More consumer load can be catered at any time
- UI prevents costly damage to electrical & mechanical equipment
- **Improvements brought about by UI mechanism:**
  - Grid frequency has drastically reduced from 48 to 52 Hz earlier to 49.5 to 50.5 Hz for most hours in a day.
  - The hydro electric utilities are handled in an efficient manner than it was done before.
  - States share have acquired a new meaning in the central generating stations and grid discipline is promoted.
  - Power deficit states can meet their occasional excess demand by over drawing from the grid and paying the UI charges to the state which has under drawn.

Real time data of Gujarat state can be obtained from sldc website and are shown in Fig. 2.

Gujarat Power System - Real-time Data					
7-10-2017 14:21:40			49.906 Hz	DSM Rate(Rs./Unit): 3.916	
Station Name	Installed Capacity	Schedule	Generation	Name	Discom Drawal
Ukai(3-5)+Ukai6	610+500	553,480	605 + 507	DGVCL	2861
Wanakbori	1470	784 , 192	856	MGVCL	1881
Gandhinagar	630	380 , 192	630	UGVCL	3524
Sikka(3-4)	540	410	446	PGVCL	5373
KLTPS(1-3)+KLTPS4	215+75	175 , 53	0 + 0	TPAEC0	1332
Utran(Gas)(II)	375	188	255	TPSECO	642
Dhuvaran (Gas)(I)+(II)	219+376	69 , 0	91+78		
Ukai (Hydro)	305		81		
Kadana (Hydro)	242		57	GSECL Total Generation	3604
GIPCL(I)	145 (s2)	68	88	Public owned IPP Generation	504
GIPCL(II)	165		0	Private IPP Generation	2344
SLPP(I+II)	250+250	198 , 213	214+203	(Wind+Solar) Generation	537 + 750
Akrimota	250	60	0	Torrent Power	1192
GSEG(I+II)	156+351	0	-0+7	Gujarat Total Conventional Generation	10741
GPPC	703	0	0	Gujarat Catered MW 16689	
CLPI	655	0+0	562		
TPAEC0	500		358		
EPGL(I+II)	1200 (1000)	559	545		
Sugen + Unosgn	1148+383	835	835		
Adani(I+II+III)	1320(1000)+1320(1000) +1980 (5)	2432	1236+0 +1231		
BECL(I+II)	250+250	0	0+1		
CGPL	4150 (1971)		2934		
KAPP	440 (125)		-2		
KAWAS	656 (187)		623		
JHANOR	657(237)		562		
SSP(RBPH)	1200		-1		

Name	Drawal	Schedule	DSM
Gujarat	5949	5507	442
At periphery			

Figure 2 : Real time data of Gujarat

We are very grateful to ALDC, GETCO for giving permission for this visit. Students got an opportunity to know regarding practical aspects about what they are learning in theory. We hope that such kind of permission will be given in future also. It was an informative, interesting and a successful visit. Some glimpse of visit is shown in form of picture in Fig. 3.



Figure 3 : Glimpse of visit