

An
Industrial Visit Report
At
ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION
Makarpura GIDC, Vadodara



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Total Students: 63 (B.E.-IV Shift-I & Shif-II)

Faculty : 1. Prof. Kalpesh Patil
2. Prof. Niki Patel

Brief Introduction of ERDA

Electrical Research and Development Association popularly known, as 'ERDA' is a premier Testing Calibration, Certification and Research Organization of India. ERDA (www.erda.org) was established by the Indian Electrical Industries & Utilities with the support of Government of India and Gujarat and has acquired four decades of experience as a service provider. It is a not-for-profit sector organization.

ERDA's main laboratory complex is located in a 25 acre plot at Makarpura Industrial Estate, Vadodara, Gujarat. This laboratory complex has fully established and integrated facilities for providing services in areas of Certification Testing, Calibration, Research & Development, Residual Life Assessment (RLA), Condition Monitoring, Energy Audits & Management, Third Party Inspection (TPI) & Power Systems to the Indian Electrical & Power Sector in particular, and the Industrial Sector in general.

The major certification test facilities at the laboratory complex at Vadodara include Three 'Online stations for Short Circuit Testing', Station for Switchgear & Distribution Transformers upto 33 kV, Motors & Pumps, Refrigerators, Cables, High Voltage Impulse, Ingress Protection (40 ton capacity), Loss of Coolant Accident (LOCA) Qualification, Seismic Testing, State-of-the-art EMI/EMC Laboratory comprising of a 10 cubic metre Anechoic Chamber compliant with SVSWR as per CISPR 16-1-4 as well as MIL Standards, Solid & Liquid Dielectrics Laboratory, Mechanical Testing, Soft Magnetic Materials Laboratory catering to evaluation of CRGO / CRNO Laminations, etc.

Over 100 types of products are evaluated at ERDA with a customer base of more than 5,000.

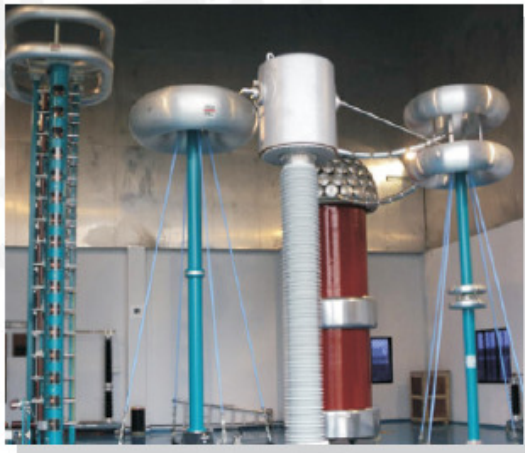
Student's Visit Report

As a part of our curriculum of study, we have visited the "ERDA", the esteemed association in the field of testing and research, especially electrical equipments. We have started our visit at sharp 8:00 AM in the morning on the date 19/10/2016 and reached to the location at 11:45 AM. Then after, we were accommodated to the conference hall for small presentation and video about the "ERDA" by the marketing key officials. They gave us brief information of ERDA about the testing facilities available, clients (national/international), rules, regulation, safety etc. At the end of this session, we moved for the lunch arrangement done by them. After the refreshment, our visit was started at 2:00 PM as per schedule given by them. We were taken to the different location mentioned below:

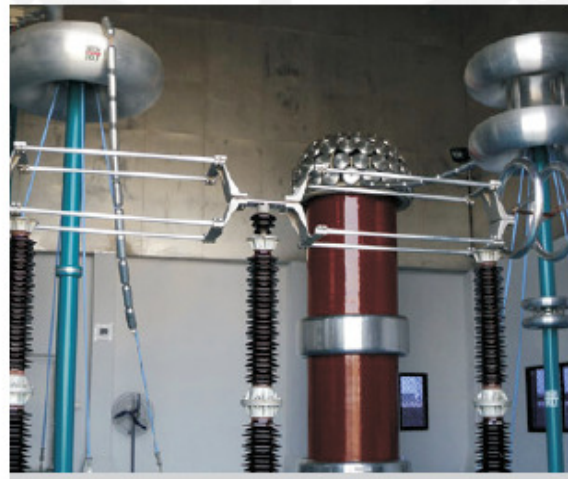
1. Online Short Circuit and High Voltage Lab

Our first visit was started with the 'High Impulse Voltage' test facility available in the high voltage lab. This test is performed on the electrical equipments like insulators, C.T, P.T., transformers etc to check the dielectric strength of the insulation. The involved technical person in this lab has explained everything about the test facilities as well as the technical details along with the procedure of testing step by step at very high voltage level (upto 1600kV). Hence, we understand the theoretical concept studied in the 'High Voltage Engineering' subject (Sem-6). test is performed on the equipments. It was really a good experience about to see giant size of

“Impulse Generator” to generate the Lightning Impulse as well Switching Impulse. It can be seen in the photograph below connected to test the equipments.



400 kV Current Transformer under High Voltage Test



400 kV Transmission line hardware under RIV Test

Impulse Voltage Generator	1200 kVp (60 kJ), 800 kVp (40 kJ)
Impulse Voltage Divider	1200 kVp, 800 kVp, 300 kVp
H. V. A. C. Transformer	600 kVrms
Multiple Chopping Gap	1200 kVp
Low Resistance Non Inductive Shunts	0.1, 0.5, 1.0 Ω
Digital Impulse Analyzer System	12 Bit Nicolet with software
PD/RIV Measurements	PD / RIV Measuring Instrument
Sphere gaps	500 mm sphere gap

Apart from this, we were thought the partial discharge measurement perform on the cables and different equipments by the expert in that domain. Finally, we were guided in the calibration department to perform the calibration test on the highly rated C.T. & P.T. measuring instruments by the technical person under the same roof. We have asked so many questions regarding the testing facilities i.e. 1). upto what rating C.T. & P.T. are going to be tested? 2). under which standard the test is performed? 3). Safety measure to be kept in mind while testing the equipment? Etc. At the end of this session, we have visited the short circuit lab. This lab is doing short circuit test on transformer and it was extremely explained by the technical person.

2. Switchgear and Protection Lab

Thereafter, we were at this laboratory and learnt the test performed on different equipments like C.T., P. T., switches used in home appliances and industrial purpose, relays, different substation components etc. It was really very helpful learning experience regarding the different components testing. Accordingly, we have visited the energy meter testing bench facility under this roof also. It was a great experience to see the energy meter testing currently going on. It was known from them that they are doing testing of energy meter make not only from India but International also.



20 kA high current Source

3. Lamp and Luminaries Lab

Feeling of great experience in the above laboratory made us more curious on the entrance of this laboratory building as this laboratory is recently developed. This lab is engaged in various tests on lamp/LED as well as to measure the lumens of the lamp. We have observed the different test carried out on the LED lamps and lumens measurement techniques and set up. They have designed the dark room and testing bench to measure the lumens of different types of lamps/LED as per IS, IEC standards.



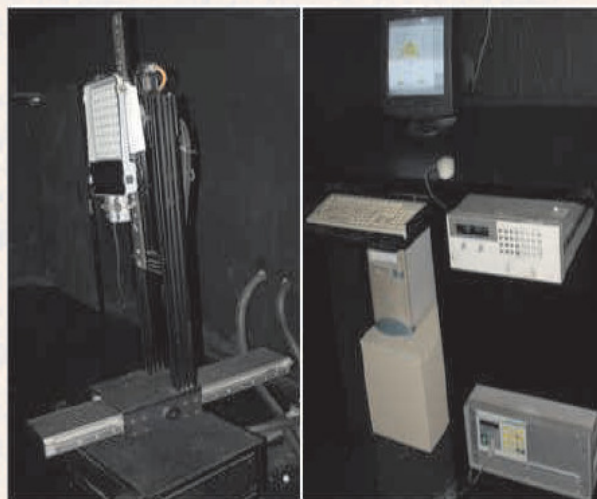
Photometric integrators (1m & 2.5m diameter)



Life test set up for CFL lamps



Digital Torsion Test Apparatus



Computerized Control Goniophotometer along with Lumbase software, PRC, Germany

Finally, we learn so many things after visiting the “ERDA” especially the various tests performed on the LED lamp and luminaries. LED lamps are the emerging trend in the movement of energy saving in the world. So, we are very thankful to the Director Dr. M.K. Shah, Mrs. Lata Shah and all technical and non technical supporting staff cooperation of the entire department during the visit.

After all, we can't forget the kind support from our faculty members **Prof. Kalpesh Patil** and **Prof. Niki Patel** for their efforts to arrange and to accompany this successful visit. We oblige these faculty members in enhancement of our knowledge lifelong.

Above all laboratory photographs are taken from their website.

Feedback All Students:

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	Excellence	Very good	Good	Avg.	Poor
54	✓	✓	✓		
55	✓	✓	✓		
56	✓	✓	✓		
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