

WORKSHOP ON  
**'POWER EQUIPMENT CONDITION MONITORING'**

9<sup>th</sup>March 2020 to 13<sup>th</sup>March 2020

**Organised by**



Department of  
Electrical and Electronics Engineering  
National Institute of Technology Mizoram

**Under TEQIP III, NIT Mizoram**

AND

**TECHNICAL SPONSORSHIP  
of**



**IEEE DEIS Kolkata Chapter**



**About the Institute:** NIT Mizoram was started in the year 2010 in the scenically beautiful state of Mizoram with an objective to impart education, research & training leading to B.Tech, M.Tech& PhD. degrees. This institute has been declared as an Institute of National Importance by an Act of Parliament. Wrapped between clouds and mountain rocks, which adds to its beauty, it is amongst the most educated states of our country with a literacy rate of 91%. It also beholds a very peaceful and calm environment suitable for studies. The institute is situated in the capital city Aizawl which can be reached by Air through Kolkata / Guwahati. Silchar is the nearest railway station to Aizawl. The journey (by road) from Silchar to Aizawl may take approx. 6 Hrs. Now NIT Mizoram is working under the Ministry of Human Resource Development, Govt. of India.

**About the Department:** Electrical and Electronics Engineering was one of the first three disciplines in the B. Tech programme that had started in NIT Mizoram since July 2010, while it was functioning under the mentor Institute, VNIT, Nagpur. Since its inception in 2010, the department had been actively engaged in teaching and research in diverse fields of Electrical and Electronics Engineering with well experienced faculty. The department offers a UG Program in Electrical & Electronics Engineering, PG Programs in the specializations of Power Electronics & Drives and also offers Ph.D in Electrical and Electronics Engineering.

**About the Topic of Workshop:**

Condition monitoring is a form of predictive maintenance where continuous monitoring of the performance of machine or condition of the specific part is monitored which will affect the quality of the product. It can also be described as ‘assessing the current state and estimating the future state of a system by means of measurements and calculations’. Condition-based maintenance and its associated condition monitoring procedures are ideal for spinning plant because most of the vital components earmarked for planned replacement are such that they fail gradually and progressively. These failures are truly serviceable. Failures are not mechanical failure when the machine does not stop but the quality of material processing on the machine deteriorates. Fortunately most of the major repair and replacement activities can be made condition-based rather than fixing arbitrarily their service life by choosing suitable measurement methods

which are sensitive to component deterioration and/or to poor performance of the concerned machine parts.

Condition monitoring is used for detecting changes or trends in controlling parameters or in the normal operating conditions which indicate the onset of failure. By providing an early problem diagnosis, the underlying idea is to organise in advance the intervention for replacement of components whose failure is imminent, thereby avoiding heavy consequences. Condition monitoring is particularly important in cases where the time for mobilisation of resources for repair is significant. The early problem diagnosis it provides helps to reduce significantly downtime associated with unplanned intervention for repair. A planned or opportune intervention is considerably less expensive than unplanned intervention initiated when a critical failure occurs. Ordering spare components immediately after the onset of failure has been indicated, helps to reduce significantly the downtime for repair and the associated cost of lost production. Early identification of an incipient failure reduces significantly:

The risk of environmental pollution, the number of fatalities, the loss of production assets, the cost of repair (damaged components require the mobilisation of specialised repair resources), the losses caused by dependent failures, the loss of production associated with uncontrolled shutdown, the loss of production due to the time spent on troubleshooting.

Condition monitoring has a great potential for enhancement in the reliability of operation, machine up-time, reduction in consequential damage and improving operational efficiency at lower operational cost. In electrical equipment incipient faults are often characterized by variations in temperature, vibro-acoustic signature, etc. Different condition monitoring techniques use dedicated sensing and data analysis tools to analyze particular type of variation in operational characteristics. Research in this domain is primarily focused on specific use of a sensing technology. The basic principle of condition monitoring is to select a physical measurement which indicates that deterioration is occurring, and then to take readings at regular intervals. Any upward trend can then be detected and taken as an indication that a problem exists. Since failures occur to individual components, the monitoring measurements need to focus on the particular failure modes of the critical components.

Condition monitoring surveillance rounds may be conducted by the FI&R group and are particularly focused on critical equipment. Usually these

rounds are very detailed and could take up to a day for each round to be completed, depending on the amount of critical equipment and detail of each facility area. Typically, condition monitoring surveillance rounds are conducted on a monthly basis.

More often than not, the information is recorded directly onto a handheld device because of the volume of data that is collected and uploaded to a computer once the round is complete. The data is then analyzed and a report issued as necessary once the condition monitoring technician completes the round. Hence the need for a workshop on Power Equipment Condition Monitoring at NIT Mizoram for the academicians and the working engineers.

## Organising Committee

**CHIEF PATRON:** Prof Rajat Gupta, Director, NIT Mizoram

**PATRON:** All Deans of NIT Mizoram, TEQIP Coordinator

**Chairman:** Mr. Anagha Bhattacharya, HOD, EEE Department, NIT Mizoram

**COORDINATORS:** Mr. Ramesh Kumar, Prof.Saibal Chatterjee

**MEMBERS:** All faculty members of EEE Department, NIT Mizoram

**VOLUNTEERS:** PhD and PG students of EEE department

### Registration fee:

- Professionals from Industry and R&D Units: Rs. 5000/-
- Faculty members from universities/institutes: Rs. 3000/-
- Students: Rs.1000/-

### Registration:

Application in the prescribed format duly sponsored by the Head of the Institution along with the registration fee in the form of online payment. Please send the filled up registration form and the online receipt to

[saibal.eee@nitmz.ac.in/rameshelectric@gmail.com](mailto:saibal.eee@nitmz.ac.in/rameshelectric@gmail.com) on or before **2<sup>nd</sup> March, 2020.**

### For Online Payment:

Account No.: 32959192569, SBI, Bawngkawn Branch.

IFSC code: SBIN0007059

### Important dates:

Last date for online registration: **2<sup>nd</sup> March, 2020**

[Complete application should be received by the coordinator by this date]

Selection intimation to the applicant: **5<sup>th</sup> March, 2020**

### Boarding and Lodging:

Out station participant need to pay for accommodation and food.

## Resource Persons

### **A. Prof. Sivaji Chakravorti, Director, NIT Calicut:**

1. Non-invasive monitoring of oil insulation of transformers.
2. Remote monitoring of High voltage insulator.
3. Power system over voltages and insulation coordination.

### **B. Prof. L. Satish, Department of Electrical Engineering, IISC Bangalore:**

1. Frequency Response analysis- what else it can do?
2. Partial discharge measurement- its basic and possibilities.

### **C. Mr. Prasenjit Paul, Global R&D Technical Head-MPT(Medium Power Transformer), Schneider Electric:**

1. Connected Transformer (Digital Transformer)
2. Special aspects of Solar Transformer (speciality of solar transformer design).
3. Modern requirements of Phase Shift Transformer (DC Application)

### **D. Mr. Prasanta Kanungo, Senior General Manager, In-charge of Misa group Sub Stations (Misa, Dimapur, Mokokchung, Mariani&Kopili Stations):**

1. Protection of Power Transmission System.
2. Maintenance of Substation Equipment.

### **E. Prof. Saibal Chatterjee, Department of EEE, NIT Mizoram:**

1. Importance of condition monitoring in Indian power scenario.

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## Registration Form

Please complete the details below and mail along with the registration fee.

1. Name (Mr./Ms.) \_\_\_\_\_

2. Category: **Academic/Industry/Student**

[For registration as student, please enclose a bona fide certificate from parent institution]

3. Organization: \_\_\_\_\_

4. Address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Tel. No. (Mob): \_\_\_\_\_

6.E-mail ID: \_\_\_\_\_

7.Highest Acad. Qualification: \_\_\_\_\_

8. Receipt No.: \_\_\_\_\_ Dt \_\_\_\_\_

9.Amount Rs. \_\_\_\_\_

10. Accommodation Required: Yes /No

(Out station participant needs to pay extrafor accommodation and fooding)

Signature of the Candidate

Signature of the Head of the Department/Institution