

3rd TRAFOTECH WORKSHOP 2020

10th & 11th September 2020



Theme: "Life Management of Transformer"

PREAMBLE

IEEMA Power Transformer Division conducts "TRAFOTECH" international conference every four years, which has earned the reputation of being the benchmark conference for professionals from transformer Industry and users to get abreast with the latest happenings in the transformer technology.

While the TRAFOTECH conferences cover aspects such as technology trends in design, material, manufacturing best practices, testing, diagnostics and condition monitoring techniques, the TRAFOTECH Workshops discuss issues related to life cycle of Power Transformers from installation to final disposal at end of life, covering erection & commissioning, operation and monitoring, maintenance and diagnostics, asset management and life extension.

With transmission grid increasingly becoming complex due to rapidly rising renewables proportion of generated and

transmitted power, the equipment installed in such a grid environment need special attention and care during their field life cycle to assure trouble free operation for 25-30 years. This requires not only the R&D, design & manufacturing technology and processes but a relook on aspects such as erection and commissioning, condition monitoring, protection systems in terms of controls as well as fault preventive management & protocols in case of undesired events.

Users at site are concerned about these aspects to manage and assure the intended life of a transformer.

The first two "TRAFOTECH Workshops" were successfully organised in August 2012 & November 2016 in Delhi, focusing on best practices for life management of transformers".

Encouraged with overwhelming success of first 2 editions of the Workshop, IEEMA presents 3rd edition of TRAFOTECH WORKSHOP 2020 on the theme “**Life management of Transformers**” to be held on 10th & 11th September 2020.

The fundamental objective of Life Management of a Transformer is to assure that the transformer serves its intended life of ≥ 30 years reliably by creating a synergy between users and manufacturers expectations. The Workshop is intended to disseminate the latest practices and knowledge with respect to installation, operation, maintenance and life extension of Power Transformers. In addition, the aim of this Workshop is to learn and share the experiences of users with regard to use of Power Transformers & reactors through the case histories presented during the workshop.

The TRAFOTECH WORKSHOP 2020 will have 6 Technical Sessions besides the Inaugural and Concluding Sessions. The indicative topics to be covered in these Technical Sessions are:

Technical Session I

Transportation & Installation:

- Challenges in view of limitations posed by transport infrastructure
- Role of specifications for safe transportation & packaging
- Safe transport guidelines & practices
- Pre-requisites before arrival at site, Material storage guidelines of bushings, liquids & fittings
- Unloading & handling checks for main units, bushings & accessories
- Site storage for long periods - case histories on transport incidents such as theft, accidents etc. and learnings
- Standard Operating Procedure (SOP) of Transit damage inspections at site
- Sea or air-worthy package requirements for various fitting and accessories and regulatory requirements
- Pre & Post Installation checks



Technical Session II

Processing & Commissioning:

- Pre-Commissioning checks and tests
- Limit parameter values for insulating fluid before energization
- Oil filling process for EHV transformers.
- Painting system repairs and feedback to improve OEMs
- Storage precautions prior to commissioning
- Site repairs on transport/installation damages and refurbishment
- Case histories

Technical Session III

Operation & monitoring:

- Overload limits and precautions
- Highly fluctuating load with renewable infeed
- What to check during visual inspection?
- Defective and faulty conditions
- Environmental issues
 - Fire safety
 - Noise control
 - Oil Leaks
 - Aesthetics
 - DC current in neutral
 - Higher altitude installations
 - Higher harmonics due to renewable infeed
 - Saline atmospheric conditions
 - High seismic zones
 - Energy efficiency
- Digitalization for effective and proactive life management
- Noise and vibration monitoring of Shunt Reactors
- Online / offline continuous monitoring techniques
 - Hot spot sensors
 - DGA
 - PD
 - Moisture in oil
 - SFRA
 - Winding tan delta
- Case Histories

Technical Session IV

Maintenance & Diagnostics:

- Diagnostic Tests
- Condition Assessment Tests
- Condition Assessment Parameter Limits
- Maintenance Strategy – Condition based
- Insulation ageing -Water and particle contamination
- Wet transformers
- Insulation dry out
- Online processing
- Degassing and dehydration
- Insulation regeneration
- Case Histories

Technical Session V

Asset Management & Life Extension:

- Failure mode cause, failure analysis and preventive measures
- Failure Investigation and Failure Reports
- Life Management methodologies
 - Condition based, functional based,
 - Electronic performance support systems
- Condition assessment methodologies
 - Finger printing
 - Trend analysis
 - Statistical analysis
- Transformer Assessment Indices (TAI)
- Residual life assessment
 - End of life criteria
- Residual life enhancement
- Repair Success Stories
- Repair/Replace decision
- Overhaul
- Up rating
- Life cycle data management & digitization
- Asset management
- Disposal and Post- Mortem Analysis
- Case Histories

Technical Session VI

Special Session- Service experience of Ester filled transformers and transformers for Wind & Solar Power:

- Condition assessment limits for ester filled transformers in service
- Regulatory recommendation - Elimination of firewall, oil pits, NIFPS for ester-filled units – Benefits realisation for Utilities
- DGA Analysis of ester filled units
- Site processing of esters prior to installation and in service
- Failure mode, cause and preventive measures for Wind and Solar Transformers
- Fire incidents in ester filled units.
- Special maintenance aspects for ester and wind/solar transformers

- Dry type transformers for Solar and Wind power
- Special monitoring checks
- Case Histories

Conduct of Workshop

Each session of approx 100-120 minutes will start with a tutorial presentation by a senior expert highlighting the relevance and state of the art status of the topic of the particular session. This will be followed by the Session Chair, a renowned industry expert giving a brief on session proceedings. Thereafter, Rapporteur will present a summary of all selected papers/case histories on the subject noted against the topic of the session. The floor will then be open for delegates to ask questions to particular authors for clarifications/elaboration. The answers can be supplemented by any expert present at the workshop, if required.

The focus for each session will be on questions / answers and experience sharing for the benefit of all participants. Session chairman will give opening and closing remarks.

Spot contribution and experience sharing by delegates will be encouraged.

Call for papers/Case Studies:

Papers or Case Histories covering the topics under technical sessions are invited from the authors. The main topics mentioned are suggestive and not restrictive. Papers/Case studies on subjects related to the theme of the Workshop will only be considered. The papers should be based on actual experience and of practical nature, useful to the delegates in their day to day business of asset management of transformers.

The papers can be short write up giving knowledge nuggets related to topics mentioned above. Case Histories may cover success stories, failure analysis or other interesting learnings. General format for failure case history shall be problem statement, product history, failure sequence and effect, failure mode and cause, repair and preventive measures.

Papers presented previously in any other conference/workshop or published in any Journal in India are not acceptable. The authors are required to give a declaration to this effect. While the Principal Author would be exempted from payment of any delegate fee, all co-authors will have to register as delegates by paying delegate fee.

Trade name or brand name of any particular product or service is not to be highlighted or promoted in any form. While critical reviews and analysis may be included, the paper should not be critical of any product, process, service, technology or performance in particular.

Those who wish to submit case histories/Papers may contact the Organising Secretary for getting the standard

formats and guidelines for submitting papers or alternatively can download these from www.ieema.org/trafotech2020. IEEMA will inform the authors whose papers are selected for the Workshop.

Time Lines

Submission of Papers and Case histories Scrutiny and acceptance of	20 th May 2020
paper with modifications, if any: Submission of revised paper along	20 th June 2020
with 2 slide summary for Presentation by Rapporteur:	20 th July 2020
Notification of final programme of the 2-day conference:	25 th August 2020
Providing link on website for downloading papers by registered delegates:	30 th August 2020

Who should attend

The Workshop will be of interest to the practicing Engineers from:

- Central/State/Private/Power Utilities who are responsible for the installation, operation, maintenance and life management of transformers.
- EPC Companies, engaged in the installation, testing /maintenance of transformers
- Transformer manufacturing companies who are responsible for the preparation of manuals, transport, installation, troubleshooting of site problems and after sales service.
- Manufacturers of equipment/instruments required for operation, condition monitoring and diagnostics of transformers

- Testing laboratories and STL members
- Companies involved in repair, overhaul, refurbishment and life extension activities.
- Research institutes and academic institutes
- Companies involved in developing renewables energy to share their service experience of transformers in renewable energy parks

Delegate Registration

The prospective participants, desirous of attending the Workshop may register themselves by sending the following details to IEEMA along with necessary payments:

Delegate Name:

Organization:

Mailing Address:

Phone/Email/Fax:

Delegate Fees

Category	Fee per delegate (+GST extra)
IEEMA Members	Rs. 12000/-
Non IEEMA Members	Rs. 15000/-
PSU's/Utilities/Discoms/ Technical Institutions	Rs. 7500/-
International Participants	US \$ 300

*One complimentary delegate will be registered against two paid nominations

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IEEMA - Organiser of TRAFOTECH 2020 Workshop

IEEMA is the apex industry Association of Electrical, Industrial Electronics and allied equipment manufacturers in India having over 800 members whose combined annual turnover is INR 137,000 Cr. As the national representative organization for the Industry, IEEMA is a part of many councils and committees constituted by the Government. In addition to providing a variety of services to the Indian Electrical Industry since 1948.

IEEMA also organizes various events including the world famous ELECRAMA Exhibitions.

For more details contact:



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