



IEC Liaison Report

TC 14 Power Transformers

Chair: Christoph Ploetner, DE / Secretary: Stephany Lavy, UK

TC 10 Fluids for electrotechnical applications

Chair: Ivanka Hoehlein-Atanasova, DE / Secretary: Massimo Pompili, IT

TC 15 Solid electrical insulating materials

Chair: Bernhard Klaussner, DE / Secretary: Solomon Chiang, US

IEEE Transformers Committee Meeting
2024 March, Vancouver, BC, CA



IEEE Transformers Subcommittee

IEC Technical Subcommittee

IEEE Transformers Subcommittee

IEC Technical Committee

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| 1. Bushings (Eric Weatherbee)..... | SC 36A |
| 2. Dielectric Tests (Poorvi Patel)..... | TC 14 |
| 3. Distribution Transformers (Jerry Murphy)..... | TC 14 |
| 4. Dry Type Transformers (Casey Ballard)..... | TC 14 |
| 5. Transformers and Reactors for HVDC Applications (Ulf Radbrandt) | TC 14 |
| 6. Instrument Transformers (Thomas Sizemore)..... | TC 38 |
| 7. Insulating Fluids (Stephanie Mabrey)..... | TC 10 |
| 8. Insulation Life (Sam Sharpless)..... | TC 14, TC 15, TC 112 |
| 9. Performance Characteristics (Rogerio Verdolin)..... | TC 14 |
| 10. Power Transformers (Ryan Musgrove)..... | TC 14 |
| 11. Standards (Dan Sauer)..... | TC 14 |
| 12. Subsurface Transformers & Network Protectors (George Payerle) | TC 14 |



TC 14 General Information

- Membership countries 48
- Active experts 248
- Currently active MT, PT, WG, AG, AHG 10 + 3 joint groups
- Documents in charge of (TR, TS, IS) 40
- Documents under maintenance / in development 12 / 0
- IEC/IEEE dual logo documents 6 (3 out of 6 in revision)
- No document published since last report
- Next Plenary Meetings
 - 2024, April 18th in Rome, Italy – full meeting week together with TC 10
 - 2024, October 2nd in Edinburgh, Scotland – within IEC General Meeting week



Revision of TC 14 documents in progress (12)

1. IEC 60076-1 General
2. IEC 60076-2 Temperature rise test
3. IEC 60076-4 Guide to the LI and SI testing
4. IEC 60076-5 Ability to withstand short circuit
5. IEC 60076-6 Reactors
6. IEC 60076-9 Terminal and tapping markings
7. IEC 60076-18 Measurement of Frequency Response
8. IEC 60076-19 Uncertainties in Loss Measurements
9. IEC 62032 / IEEE C57.135 Phase Shifter Guide –
to become after revision IEC/IEEE 60076-57-135
10. IEC/IEEE 60076-57-129 HVDC Converter Transformers
11. IEC 60076-21 / IEEE C57.15 Step-voltage regulators
12. IEC 60076-26 Functional requirements of insulating liquids for use in
power transformers (jointly with TC 10)

Chair / Convener

E. Schweiger /
K. Juchem

W. Ziomek / tbd

D. Sauer / Sauer



TC 10 General Information – Ed Casserly

- 42 Member countries; 12 Active MT, PT, WG, AG; 225 Experts
- 64 Documents under supervision; 12 Documents in revision / development
- 2 Documents published since last report:
 - IEC 60867 ED 3.0: Insulating liquids - Specifications for unused liquids based on synthetic aromatic hydrocarbons; 2022-10
 - IEC 60567 ED 5: Oil-filled electrical equipment – Sampling of gases and analysis of free and dissolved gases – Guidance; 2023-12
- Last plenary meeting, June 2022 Bled (SLO) – jointly with TC 14
 - Hybrid meeting – 73 participants (~25 in-person) - 3 USNC TAG represent.
- Next plenary meeting, 2024 April 18/19 Rome (IT) – jointly with TC 14
 - Hybrid meeting



TC 10 Standards Currently Under Revision (10)

For details see TC 10 webpage

- MT22 (David Walker, GB)
 - FDIS - 60422 ED5: Mineral oils - Supervision and maintenance guidance
- MT30 (Massimo Pompili, IT)
 - CDV - 60156 ED4: Insulating liquids - Determination of the breakdown voltage - Test method
 - CD - TR 61294 ED2: Insulating liquids - Determination of the PD inception (PDIV) - Test procedure
- MT36 (Russel Martin, GB)
 - FDIS - 62770 ED2: Unused natural esters for transformers and similar electrical equipment
 - FDIS - 61203 ED2: Synthetic organic esters - Guide for maintenance of transformer esters
 - FDIS - 61039 ED3: Classification of insulating liquids
- MT42 (Lance Lewand, US)
 - CD - 60465 ED3: Specification for unused insulating mineral oils for cables with oil ducts
- MT43 (Patrik Ågren, FI)
 - CD - 60666 ED3: Detection and determination of specified additives in mineral insulating oils
- WG41 (Yannick Kieffel, FR)
 - CD - 63359 ED1: Specifications for the re-use of mixtures of gases alternative to SF₆
 - FDIS - 63360 ED1: Mixtures of gases alternative to SF₆



New TC 10 Standards in Development (2)

- WG45 (Ivanka Höhlelein-Atanasova, DE)
 - Interpretation of DGA analysis in natural and synthetic esters
- WG46 (Yihua Qian, CN)
 - Retro-filling mineral oil immersed transformers with alternative insulating liquids



TC 15 General Information – Solomon Chiang

Scope: Solid electrical insulating materials incl. coatings and varnishes

- 39 Member countries; 10 MT, PT, WG; 91 Experts dealing with
 - plastic films, combined flexible materials, mica products, pressboard and related material, cellulosic paper products, flexible insulating sleeving, rigid fibrous reinforced laminates, resins and varnishes
- 188 Documents under supervision; 18 active projects (revision/development)
- 5 Documents published in 2023 – for details see TC 15 webpage
- Last plenary meeting, October 2023, St. Louis, Missouri, US
 - Hybrid meeting – 30 participants (7 in-person) - 6 USNC TAG representatives
- Next plenary meeting, November 2024-11-(11-14), Vienna (AT)
 - Hybrid meeting



TC 15 Project of interest to the IEEE Transformers Committee

TC15/MT15 to revise definition of TUP to be more flexible and technological neutral

60554-1 definition of thermally upgraded paper or presspaper

- Kraft insulating paper or presspaper which contains Nitrogen, as dicyandiamide only*, and compliant with the requirements of Part 3 **or** which has min 50% tensile retention after ageing test as described in the IEEE C57.100 2022 D1 part.

*other industry proven material containing a mixture of dicyandiamide, melamine and polyacrylamide can be used if they are compliant with local environmental regulations.