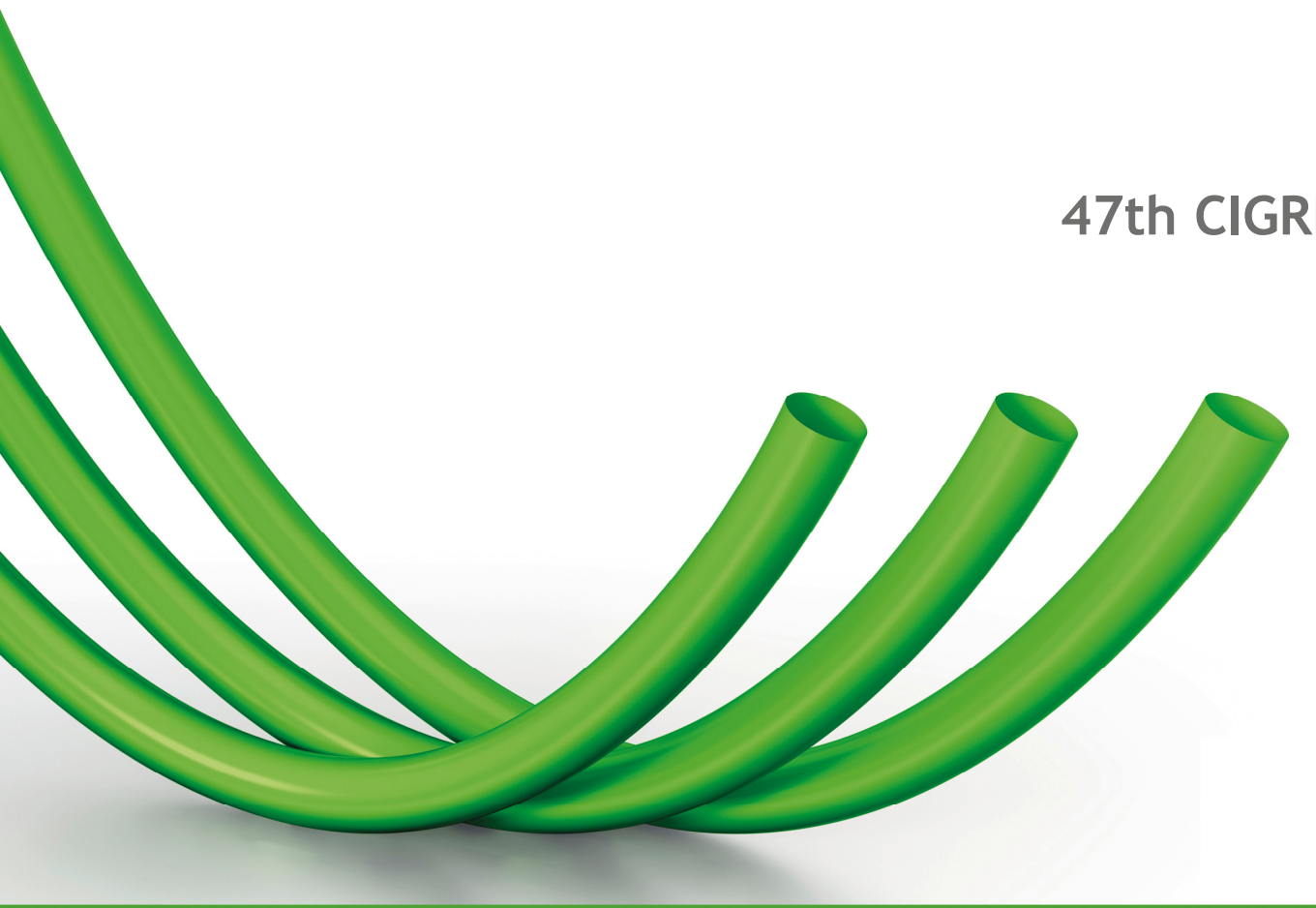


Roma, 29 Novembre 2018

47th CIGRE General Session - Paris 2018

Study Committee A2 - Power Transformers

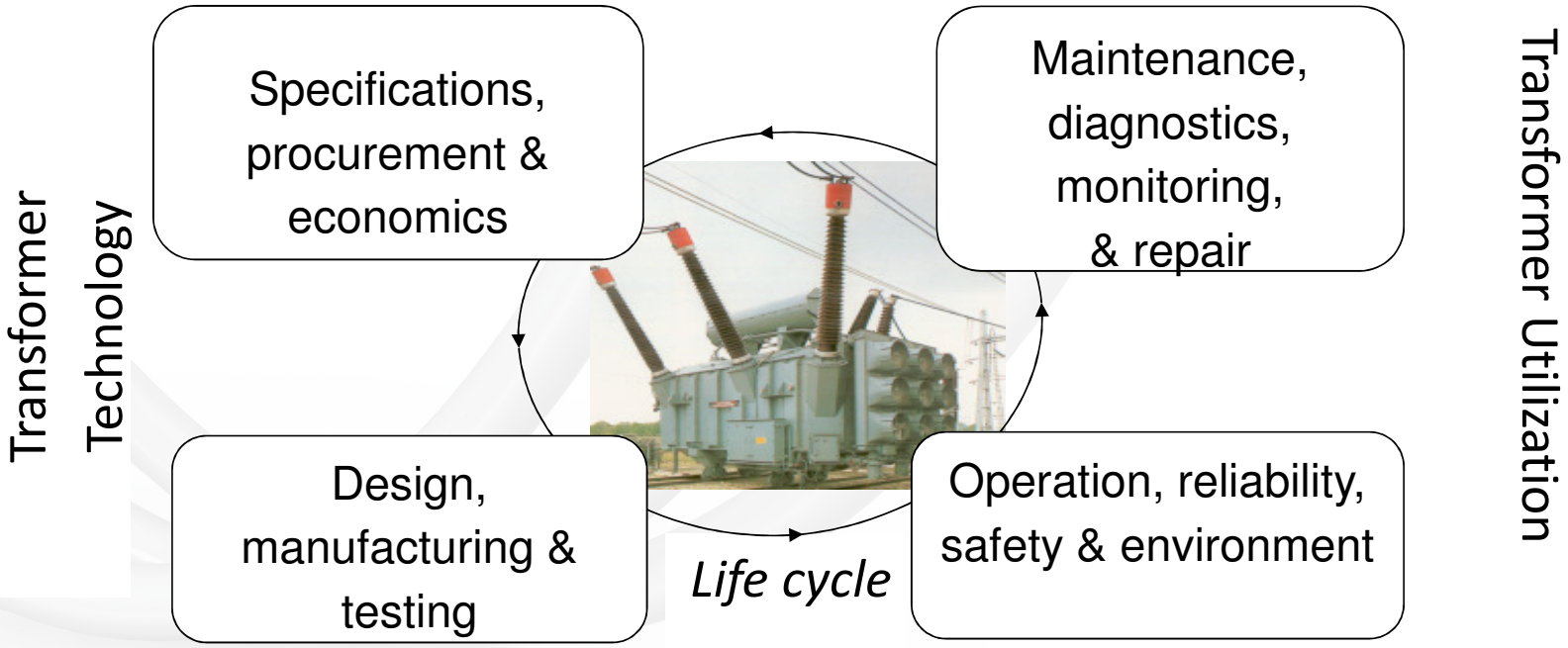
Field of activity of the Study Committee A2

The scope of SC A2 covers:

- All kinds of power transformers, including HVDC transformers converter and phase-shifting transformers;
- All kinds of reactors, including shunt reactors, series reactors, and HVDC smoothing reactors;
- All transformer components, including bushings, tap changers, and other transformer accessories.

Field of activity of the Study Committee

The activities are related to the four following key domains:



Technical Brochures

Already published this year:

- TB 735, “Transformer Post Mortem Analysis”, final report of WG A2-45, published June 2018
- Reference paper “Insulation Condition during Transformer Manufacturing”, published in Electra 299, August 2018
- Approval in progress, expect to be published this year:
- New TB, “Transformer Bushing Reliability”, final report of WG A2-43
- New TB, “Condition Assessment of Power Transformers”, final report of WG A2-48

In preparation:

- New TB, “Field Experience with Transformer Solid Insulation Markers”, final report of WG A2/D1-46
- New TB, “Advances in DGA Interpretation”, final report of WG D1/A2-47
- New TB, “DGA Monitoring Systems”, final report of WG D1/A2-47

CIGRE SC A2; B2 & D1 New Delhi 18 - 22 November 2019

PS1 - Transformer technologies to enable wider access to electricity (Intended to support CIGRE's mission of "Sustainable Electricity for All")

- Development of the supplier base
- Specification, design, construction
- Works and field testing
- Operational experience

PS2 - Use of new materials

- New solid insulation materials
- New liquid insulation materials, including natural and synthetic esters
- Operational experience with transformers using new materials

PS3 – ON-load Tapchangers

- Advances in on-load tapchanger technology
- New applications for on-load tapchangers, including shunt reactors and phase-shifting transformers
- Operational experience

Reserve PS– Short-circuit withstand capability of transformers

RESERVE PREFERENTIAL SUBJECT
Short-circuit withstand capability of transformers

- Specification, design, Testing, Operational experience
- **Strong discussion in order to merge PS1 and PS2 and to upgrade the RPS to PS**

POSSIBLE WORKSHOP
Tertiary windings

- Applications, specification, design
- Effect on zero-sequence impedance
- Effect on short-circuit withstand capability
- Operational experience with and without tertiary windings
- Auxiliary (“yoke”) windings as alternative

CIGRE SESSION 2020 – Preferential Subjects

PS1 - Transformer technologies to enable integration of distributed renewable energy resources (Intended to support CIGRE's mission of "Sustainable Electricity for All", and also the extension of CIGRE's mission to include distribution systems)

- Application, specification, design, construction
- Effect of harmonics, including supraharmonics (possible future working group on Effect of Harmonics on Transformers)
- Effect of extreme operating environments, especially offshore and also subsea

PS2 – Advances in dielectric design and construction (possible future working group on Impulse Testing)

- Specification of dielectric design requirements, especially for new or unusual applications
- New and advanced dielectric design concepts, including use of new materials and design techniques
- Challenges in dielectric testing and how to overcome them

PS3 - Sustainability and transformers

- Sustainable sourcing of transformers, transformer components, and transformer materials
- Life extension, adaptation to new use, repair, and refurbishment of transformers
- Recycling of transformers, transformer components, and transformer materials

SCA2 Meeting 2018

- The **keywords** relevant to next SCA2 activities are distributed among traditional thematics (**Impulse Testing, Dynamic Thermal Behaviour, Short-circuit Withstand Capability**), evidence that not everything is well established in tradition too, and focus on more fashionable – but also, at least for SCA2, recent – aspects (**Renewable and Storage Connection**, **HVDC application, On-Load Tap Changers**, **New Insulating Fluids...**);
- Cooperation among **CIGRE** and **World Bank** aimed at the electrification of African Countries, focus on the «**Technologies** to enable **wider access to electricity**»;
- **Women in Engineering.**

Study Committee A3 High-Voltage Equipment

WG A3.31 – Accuracy, Calibration & Interfacing of Instrument Transformers with Digital Outputs

Farnoosh RAHMATIAN[1] and Paolo MAZZA[2], Convener[1] and Secretary[2] of WG A3.31

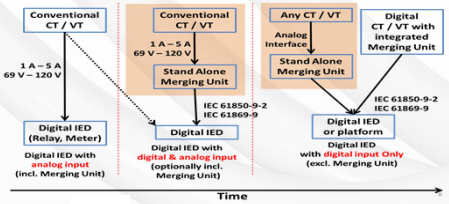
NuGrid Power Corp[1] and RSE SpA - Ricerca sul Sistema Energetico [2]

Scope

Proposal & analysis of procedures for calibration of the entire measuring chain, both in the factory and on site, for digital output of NCITs or for a SAMU connected to classical ITs and/or EITs.

Description of the practical applications of using flexible EITs for on-site calibration without disconnection or de-energisation.

Progression of Measurement Solutions



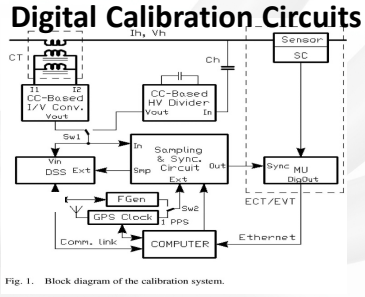


Fig. 1. Block diagram of the calibration system.

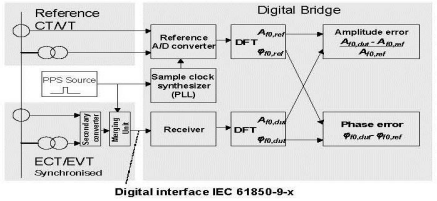


Fig. 4: Digital bridge circuit for variable delay protocols

NCIT Tools for Live On-Site Calibration

Status

- **Technical Brochure December 2018**

cigre

For power system expertise

Is knowledge sharing…

RSE Ricerca Sistema Energetico