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Dear readers,

Ahe April edition brings a collection of articles which convey the dynamic evolution of the transformer industry amidst the energy sector's shift towards sustainability, highlighting innovations in diagnostics, maintenance, and design to improve reliability and efficiency.

The transformation of the global energy sector towards renewable sources, coupled with shortages of materials and skilled labour, is having a profound impact on the transformer industry. This shift requires the modernisation of the transmission infrastructure worldwide, primarily transformers, but also shunt reactors, which are critical for absorbing excess reactive power and ensuring grid voltage stability. Therefore, the development of methods for calculating magnetic fluxes and stray losses in shunt reactors is discussed. Research into stray loss distribution in transformers using simulation and finite element analysis models aims to provide insights into loss reduction strategies, emphasising the role of tank magnetic wall shunt combinations in increasing efficiency.

The revision of the EU Ecodesign Regulation for power transformers may impose stricter energy performance standards, prompting a reassessment of costs and materials by the European Copper Institute.

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The industry also faces challenges in diagnosing transformer conditions, where contrasting tests can lead to confusion. In this context, Dr. Tony McGrail writes about how the golden ABC rule - Assume nothing, Believe nobody, Check everything - can guide thorough and effective inspections. The need for predictive maintenance is emphasised by the potential for transformers to age and fail

prematurely, affecting business operations. We bring you an article on data collection and predictive maintenance solutions designed to prevent such failures, as well as an article on digital solutions to meet the rising energy demands, aimed at extending the life of power transformers through advanced maintenance strategies.

The challenge of technology neutrality in transformer design is also at the forefront of this edition. The latest bushing design is presented as an example of innovation in electrical field optimisation, safety, and mechanical properties, suitable for both new installations and upgrades.

The energy transition requires modernisation of the transmission infrastructure worldwide, primarily transformers, but also shunt reactors

DGA is a standard diagnostic tool for oil-immersed transformers, but there has been no equivalent for dry-immersed transformers due to their different insulation materials. We bring you an article on research aimed at filling this gap by developing diagnostic methods based on physico-chemical measurements for dry-type cast resin transformers.

We also write about high quality transformer insulation components, in particular their customisable lead exits, highlighting the importance of safety and efficiency in transformer design.

Finally, I look forward to meeting you at some of the upcoming trade shows and conferences.

We hope you enjoy reading.

Yours sincerely,

Mladen Banovic, Editor-in-Chief