



Dear readers,

Disruptive innovation rarely comes as a sudden revolution. In the transformer industry, it takes the form of deliberate progress: thoughtful steps that question established methods while preserving what has always worked. This special edition of Transformer Magazine explores that process in depth, showing how digitalisation, data, and design are reshaping the very core of our field.

As everything starts with specifications, this issue includes an interview with Robert le Roux, Senior Technical Specialist at ESB, whose experience from Eskom to Ireland's grid offers a rare insight into how transformer specifications evolve through time, regulation, and practical engineering.

By integrating monitoring systems, asset-management platforms, and intelligent sensors, data becomes a practical tool for improving reliability and extending service life

Maschinenfabrik Reinhausen sets the tone with an exploration of how digital ecosystems are changing transformer operation. By integrating monitoring systems, asset-management platforms, and intelligent sensors, data becomes a practical tool for improving reliability and extending service life. Hitachi Energy brings four perspectives on how technology and responsibility meet. Alan Sbravati writes about dependable innovation and the company's commitment to advancing the grid without compromising stability. Luiz Oliveira discusses how dry-type transformers are being re-engineered for renewable energy applications, while Genaro Andrew-Morlet examines the engineering challenges behind floating offshore substations. Dr Mauricio Soto explains how artificial intelligence and digitalisation are now woven through the transformer life cycle.

Adding to this spectrum of innovation, SGB-SMIT presents an acoustic localisation technique that allows precise mapping of partial discharges during factory

testing, demonstrating how advanced measurement can directly improve quality and reliability.

The edition features a column by Vitaly Gurin and Marius Grisar, who continue their long-term study of insulating liquids, analysing how oil flow and interfacial tension influence breakdown voltage and testing accuracy.

Artificial intelligence and digitalisation are now woven through the transformer life cycle

Several technical papers continue the theme of purposeful disruption. Bhaba Das presents a new approach to carbon-emission reporting based on real-time temperature monitoring, providing a more accurate picture of operational performance. Ismail Güner introduces a structured framework for life-cycle management that turns scattered data into clear investment priorities. Ahmet Kerem Köseoğlu explores how blockchain could create digital identities for transformers, supporting transparency and circular economy practices. Vladimir Gurevich addresses the often-overlooked threat of high-altitude electromagnetic pulses, offering a simple and scalable protective solution.

Together, these contributions paint a picture of an industry that is not defined by disruption, but by direction where intelligence, sustainability, and collaboration are becoming integral to every stage of transformer design and operation.

We hope this edition offers a clear reflection of how the next transformation of our industry is already underway: built on knowledge, shaped by purpose, and driven by innovation.

With best regards,

Mladen Banovic, PhD
Editor-in-Chief, *Transformer Magazine*

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