

1. KEYNOTE ADDRESS (Provisional Details)

Dr Hendri Geldenhuys



Earthing Africa is honoured to have Dr Hendri Geldenhuys presenting the Keynote Address.

Dr Hendri Geldenhuys has been working in the SA power industry for more than 36 years: He is an Electrical Engineer, employed by Eskom as Corporate Specialist in the Technology Division. Dr Geldenhuys has served on the council of the South African Institute of Electrical Engineers for several years and is currently the Vice President of the SAIEE.

Large utilities have complex structures, many stakeholders and wide reaching impacts. Hendri often deal with technology business integration matters, assisting in dealing with these wide impacts mostly in the Distribution business of Eskom.

This ranges from business processes and strategies for renewable energy integration, the evolution of smart grid especially with respect to engineering applications thereof, to hard technical issues such as insulation coordination design, MV system design, network safety issues and lightning protection. Cost effective technologies for electrification and off grid electrification solutions.

Hendri focuses on technology innovation in this environment and most of his work involved the development of technologies and improving existing technologies.

Dr Geldenhuys is an expert on lightning protection and high voltage insulation with papers published internationally. He is in particular an expert on Medium Voltage system insulation design as well as Low Voltage. This also focuses on safety related aspects of these systems with respect to electrocution and other damage. He has extensive experience in power system loading at MV and LV level. More recently he is leading Eskom work in ensuring the safe integration of embedded generators at LV level into the grid.

Dr Geldenhuys started his career at the CSIR Institute for Electrical Engineering's (Enertek later) Electric Power group which did work on lightning phenomena, its effects on engineering systems (such as underground mining, electronic systems etc.), lightning protection of power systems and high voltage air insulation issues.

Academic Qualifications: B Eng. (Electrical) 1979, B Eng. Honours 1982, M Eng. 1986 all at the University of Pretoria and PhD from WITS in 1994.

2. INVITED GUEST LECTURE (Provisional Details)

Measured Effects of Adjacent Towers on Transient Earthing Impedance

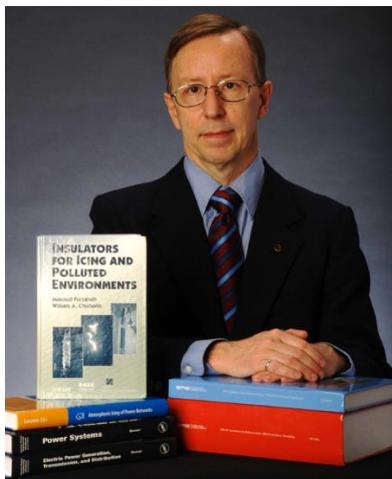
Under lightning surge conditions, travelling wave physics along overhead ground wires (OHGW) (also referred to as shield wires) governs the time of arrival and the magnitude of reflections from the

mismatch between OHGW surge impedance and earthing impedances at adjacent structures. For span lengths exceeding 300 m, the wave impedance, consisting of surge impedance of all OHGW in parallel with local structure earthing impedance, can be efficiently measured using impulse tests at the tower base. For span lengths in the range of 100 to 300 m, there can be a significant reduction in the wave impedance at times corresponding to the span lengths. Field experiments were carried out, and results organized to quantify the degree of insulator impulse voltage reduction afforded by adjacent structures.

Presented by:

Dr William A. Chisholm (Invited Guest Lecturer)

Ph.D. (University of Waterloo), P.Eng. (Ontario, Canada), IEEE Fellow



Earthing Africa is delighted to confirm the participation of William A. Chisholm, a noted international expert in lightning protection, grounding (earthing) and adverse weather effects on overhead lines. He had a thirty-year career at the Ontario Hydro Research Division, now Kinectrics, that included making lightning measurements, high voltage and impulse grounding tests on 500-kV transmission towers, installing and calibrating a lightning location system, recommending the first use of transmission line surge arresters on unshielded 230-kV lines, using airborne geomagnetic surveys to measure two-layer soil resistivity along 345-kV right-of-way, and conceiving a grounding test, the “Zed Method” that can measure earthing impedance and local soil resistivity, without lifting overhead ground wires (shield wires).

From 2007 to 2017, he led the IEEE Power and Energy Society, Transmission and Distribution Committee; co-authored books for Wiley and McGraw-Hill; developed hands-on graduate and utility courses in grounding, Smart Grid and insulation coordination; contributed quarterly columns on lightning protection, “Transient Thoughts”, to INMR magazine; and supported the development of the EPRI Zed-Meter®, a portable, computer-based instrument that standardizes the Zed Method. Off-line, he holds a Masters Swim Canada record in the 200-m butterfly.

Chisholm will participate in all aspects the conference and will deliver a special four-hour tutorial, Earthing and Lightning Protection of Overhead Power Lines, based on some of the collaborative resources developed by IEEE under his leadership.