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Speaker
Ir. Assoc. Prof. Dr.
Normiza Mohamad Nor
Lecturer, Multimedia University

GROUNDING DESIGN WITH SOIL IONISATION CONSIDERATION - IS IT NECESSARY?

WEDNESDAY
10:00AM - 12:00PM
09 JUNE 2021

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Synopsis

Lightning has been known to be one of the main causes of problems on electrical systems. It was reported in one study that more than 700, 000 strokes have occurred in Malaysia from 2004 to 2015. It was also reported, that more than 2, 000 outages from 2001 until 2013, where more than 50% of line outages in average, was caused by adverse weathers, which relatively due to thunderstorm and lightning.

It is necessary to ensure that this high lightning current to be effectively discharged to grounding system, while maintaining the safety of personnel and equipment in the vicinity of the grounding system. There are two main parameters that have been considered in designing the grounding system; ground electrode configuration/geometry and soil properties. Several standards discuss and outline all important aspects of grounding system, namely measurement, testing, design, methods of installation and soil resistivity data at low voltage, low frequency currents have been published. However, many studies have demonstrated that, under high impulse conditions, thermal and ionisation processes would occur in soil, which result in a reduction in impulse impedance, with increasing current, and lower impedance values than the resistance value measured at low voltage, low frequency current. At the same time, under fast surges, an inductive component can be pronounced, due to a fast rise of impulse currents, and large extended of ground rod electrodes, strips, or wires.

Very limited study nor patent has been directed towards improvement in the design of ground electrodes with ionisation consideration. This talk provides an insight on the topic of grounding system under high impulse conditions, which hopefully can provide a better understanding on the soil conduction, and to see whether there is a need to progress towards the new design of ground electrodes with soil ionisation consideration.

Speaker's Profile

Normiza Mohamad Nor received the BEng (Hons) in Electrical and Electronic and PhD degrees from the University of Wales, College of Cardiff in 1996 and 2002, respectively. In April 2002, she joined Multimedia University, where she is currently an associate professor of the Faculty of Engineering Department.

Dr Normiza has supervised research projects in the areas of earthing systems, high voltage and lightning protection systems, at undergraduate and postgraduate levels. She has also lead a number of various government and industrial grants in these areas. She has authored and co-authored more than 60 technical papers in international journal and conference proceedings, and has successfully filed for 3 patents. She has been actively involved in the consultancy work and delivered seminars, particularly in the areas of earthing systems and high voltage engineering.

Dr. Normiza is a permanent member of NSC S - Electrical and Electronics Equipment and Accessories of SIRIM, a corporate member of the Institution of Engineers Malaysia (IEM), a professional engineer registered to Board of Engineers, Malaysia (BEM) and a Senior Member of Institute of Electrical and Electronics Engineers (IEEE).

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