

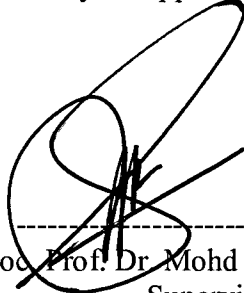
**THE BEHAVIOUR AND PERFORMANCE OF METAL OXIDE VARISTOR UNDER
THE APPLICATION OF MULTIPLE LIGHTNING IMPULSES**

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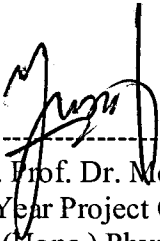
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This Final Year Project Report entitled “**The Behaviour and Performance of Metal Oxide Varistor under the Application of Multiple Lightning Impulses**” was submitted by Mohd Aizad Safwan Bin Abdul Majid, in partial fulfillment of the requirements for the Degree of Science (Hons.) Physics, in the Faculty of Applied Science, and was approved by



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ABSTRACT

THE BEHAVIOUR AND PERFORMANCE OF METAL OXIDE VARISTOR UNDER THE APPLICATION OF MULTIPLE LIGHTNING IMPULSES

The behavior and performance of lightning protective devices such as the metal oxide varistor (MOV) under the application of multiple lightning impulses are different from that of the standard single stroke test. Since the MOV is the most common, economical and reliable device for low voltage and telecommunication systems lightning protection, a precise method of testing has to be adopted based on natural characteristics of lightning to accurately determine its performance and capability. The generator can produce up to five sequences of impulse voltage and current with variable characteristics such as impulse wave shapes and time interval between impulses. This system also incorporates an electronic triggering and delay circuit to initiate and delay the breakdown process of the sphere gaps. Laboratory studies are then being carried out on 2 kV and 5 kV voltages and 1 kA current ratings metal oxide varistors. The electrical and thermal responses of the device are then being analyzed to determine the effect on the varistor characteristics. From the results it has been found that material degradation has occurred on the MOV test samples when multiple lightning impulse are being subjected as compared to the standard testing procedures.