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EXPERIMENTAL STUDY FOR PERFORMANCE EVALUATION OF INSULATOR USING VARIOUS COATING MATERIALS UNDER DIFFERENT ATMOSPHERIC CONDITIONS

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Abstract

In this study, we have an insulator is subjected to high voltage under various atmospheric condition. Without porcelain and asbestos coatings to judge the performance and with porcelain and asbestos coatings to judge the performance of electrical insulation materials, upto 44 KV during various atmospheric condition. And for porcelain insulating material, upto 41 KV.

Keywords: Insulator; Asbestos Electrical Insulation; Porcelain; Mini Impulse Generator.

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1. Introduction

1.1. Experimental Setup

Breakdown voltage is also called dielectric strength. Good insulators have high air permeability, since air is an insulating substance.

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Figure 1: Experimental setup

Figure 2: Insulator

Figure 3: Mini Impulse Generator (45KV)

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Figure 4: Loading Capacitor

2. Result and Discussion

Table 1: Reading of simple insulator

Sr. No.	humidity	Temperatures	Breakdown
1	60%	36℃	28KV

Table 2: Reading of Asbestos coating Insulation Materials

Sr. No.	humidity	Temperatures	Breakdown
1	85%	28℃	42KV
2	80%	33℃	43KV
3	60%	40℃	44KV

Table 3: Reading of porcelain coating Insulation Materials

Sr. No.	humidity	Temperatures	Breakdown
1	85%	28℃	42KV

3. Conclusion

During the Experimental study it is observed that the various breakdown in KV during various operating condition. For Insulation Materials, the maximum breakdown voltage without any coating it was 28 KV. For asbestos coating insulation materials, the maximum breakdown voltage is 44 KV when humidity is 60% and temperature at 40℃. For porcelain coating insulation materials, the maximum breakdown voltage is 41 KV when humidity is 85% and temperature at 28℃. Which shows a remarkable increase in the breakdown voltage, it can increase upto 1.5 times more then the simple insulation materials.

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