

**ABSTRACT:**

This paper investigates the nonuniformed distribution of leakage current in a wooden pole with the cross arm attached by using the network ladder model and evaluates the effectiveness of leakage current shunting arrangements that could minimize the occurrence of pole fire. The mitigation method that is proposed in this paper diverts excessive leakage current from a fire-prone hotspot along the wooden structure by using a special shunting method. A comparison between the existing shunting methods and the new cost-effective shunting method is presented. The findings in this paper will be beneficial toward the understanding of the current flow in the internal wooden power pole and, thus, help us to find new methods that can effectively mitigate the pole fire.