

## **New on-line rotor ground fault location method for synchronous machines with static excitation**

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### **Abstract-**

**This paper presents a novel on-line rotor ground fault location method for synchronous machines, which, combined with rotor ground fault protection, can detect and locate faults in the rotor. This method is suitable for synchronous machines with static excitation systems, whose excitation field winding is fed by rectifiers through an excitation transformer. The main contribution of this new technique is that it can locate the position of a ground fault in the rotor winding online, reducing the repair time. The proposed technique is based on the analysis of the ac and dc components of the excitation voltage and the voltage measured in a grounding resistance located in the neutral terminal of the excitation transformer. This technique has been validated through computer simulations and experimental laboratory tests.**

**Index Terms-** AC generator excitation, fault location, power generation protection, synchronous generator excitation.

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