

## Abstract

Loss of field (LOF) in synchronous generator (SG) occurs when the source of excitation is removed accidentally. The condition of LOF is detected by a relay, which trips the unit and prevents potential damage. Relay detects LOF using signals from voltage transformers (VTs) and current transformers (VTs) mounted at the generator terminal. This paper examines the LOF scenario and how is it affected by generator loading conditions using impedance measurement in the R-X plane. M-3425A relay was used as a testing tool where generator parameters were configured into it for computation. The computer screen connected to the relay displayed the results after running the tests. The test results were analyzed at full, medium, and low loads. Computed results showed a smaller value of impedance in the RX plane for a fully loaded generator, concluding that a lightly loaded generator is less vulnerable to LOF tripping than a heavily loaded one.