



# Effect of wind generation system types on Micro-Grid (MG) fault performance during both standalone and grid connected modes

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## Abstract:

Recently, there are three wind generation (WG) system types. The first type is called Fixed Speed Wind Generation (FSWG) system, which employs squirrel cage induction generators. Double Fed Induction Generator (DFIG) is utilized in the second type. The third type is called Full Converter Wind Generation (FCWG) system, which is interfaced with Micro-Grid (MG) through a back to back converter. During fault occurrence, each WG has its performance and characteristics which are determined by the generator physical characteristics and the MG earthing system configuration. For some WG types, the fault current depends also on the control algorithm of the power converter. The main target of this paper is to investigate and estimate how the fault performance of MG during both standalone and grid-connected modes is influenced by the type of WG. It is found during standalone mode that the type of the employed WG has a dominant impact on the MG performance under fault disturbance. On the contrary, the type of the employed WG has a negligible effect on the MG fault performance during grid-connected mode. This is because the main grid contributes most of the fault current. Effects of earthing system type on MG performance are highlighted.

## Keywords:

Micro-Grid Standalone mode Earthing systems Fault current Touch voltage Wind generation system type

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