Hadzi-Kostova B.
Styczynski Z.
Otto- von- Guericke University, Magdeburg, Germany

CHALLENGES IN DIGITAL PROTECTION TECHNIQUE ON BEHALF OF IMPLEMENTATION OF DISPERSED GENERATION

ABSTRACT

With the implementation of the decentralised (dispersed) energy resources on the power system the structure of the power network changes in the sence of changes in the direction of power flow and reduction of short current power.

The new electrical structure requires new concepts for the realisation, placement and settings of the protection technique. The changed EES structure is affecting the installed power system protection. The implementation of DER through power electronic elements on the power system characterises itself with higher amount of injected harmonics that also may affect the protection technique. New concepts for protection systems in sence of selectivity, effectivity and promptness are needed.

This paper presents two methods for calculation of the distance to the fault: classical and modern (based on artificial inteligence and methods for parametar estimation). A theoretical comparation of the methods for calculation of the distance to fault is going to be presented on a few examples. As criteria for the comparation into concederation are taken: selectivity, sensibility on influence of higher harmonics and promptness.

Keywords: Dispersed energy resources, digital protection, power quality, methods for calculation of the distance to fault.