

LOADABILITY ASPECTS FOR MEDIUM VOLTAGE DISTRIBUTION NETWORKS WITH INTEGRATION OF DECENTRALIZED GENERATION

*Nasser G. A. Hemdan, Michael Kurrat
Institut für Hochspannungstechnik und Elektrische Energieanlagen
Technische Universität Braunschweig
Schleinitzstraße 23, D-38106 Braunschweig, Germany
Phone (49) 531/391-7721, Fax (49) 531/ 391- 8106
E-mail: n.hemdan@tu-bs.de, m.kurrat@tu-bs.de*

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ABSTRACT

Decentralized Generation (DG) is an emerging concept in the electricity sector; its integration into distribution networks may have a significant impact on different technical aspects. The main aim of this paper is the investigation of the impact of DG on the loadability of medium voltage distribution networks. The loadability is evaluated in two aspects, the maximum loading according to the voltage limit (VL) and the maximum loading according to the voltage stability limit (VSL). The impact of the reactive power injection from DG on the system losses is also investigated. These impacts are evaluated on a 15-node radial distribution network while the DG is integrated at each node with different penetration levels and different reactive power injections. The Continuation Power Flow (CPF) method is used to evaluate the loadability with respect to the two aspects.