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A Novel Approach of DG Allocation using Grey Wolf Optimization and Particle Swarm Optimization

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Abstract – **Distributed generations (DGs) connected to distribution networks are becoming more and more popular. They can be used as a means to reduce the environmental impacts of energy production. However, despite the many advantages the DG brings to the network, poor planning and malfunctioning can lead to negative effects on distribution networks. An increase in power losses, a problem of voltage stability and poor functioning of the control equipment are three of the main impacts that a poor integration of a DG can bring to the network. To compensate for these negative effects, this paper presents an approach to find the optimal location and sizing of the integration of new DGs into the network while reducing power losses and improving the voltage profile. In addition, a coordinated voltage control is presented to find the optimal setting of the active and reactive powers of the DG. This paper proposes a framework for DG allocation unit using Grey Wolf Optimization and Particle Swarm Optimization to minimize the active power loss. IEEE-33 bus test system is used for Type-I, Type-II and Type-IV DG allocation.**

Keywords – **Distributed Generation, Electric Power Systems, Grey Wolf Optimization, Particle Swarm Optimization, Distribution System.**