



(1)

Analysis of Corona Discharge in Wire-cylinder ESP with and without Particle Loading

M. Abdel-Salam, M. Th. El-Mohandes, S. Kamal El-deen

Abstract:

This paper is aimed at investigating thoroughly the corona performance in the wirecylinder ESP with and without loading by suspended particles in the exhaust of a diesel engine. The onset voltage of negative corona on the discharge wire is calculated based on the criterion of self-sustained discharge. The ionized space between the discharge wire and the collecting cylinder of the ESP is mathematically modeled for calculating the spatial distribution of the space-charge density due to both the ions and the charged particles as well as the components of the electric field including the applied field and the field due to the space charge. This is in addition to the calculation of the currentvoltage characteristics of the ESP with and without particle loading.

Keywords:

Electrostatic precipitator, corona discharge, particle loading, electric field, Poisson's equations

Published In:

IEEE Transactions on Dielectrics and Electrical Insulation , Vol. 23, No. 5 , NULL



(2)

A GA-based Method for Performance Improvement of Distribution Systems Using DG Sources

M. Abdel-Salam, M. Th. El-Mohandes, Ali M. Yousef, Alaa E. Abdel-Hakim and R. Ramadan*

Abstract:

This paper presents a Genetic Algorithm (GA)- based method to determine the location and size of DG sources in distribution systems using single DG placement algorithm for determining the locations at first. Then, the GA is utilized to determine the global sizes of DG sources which minimize single- or multi-objective function related to these systems. The influence of active- and reactive-power injection on the sizing and placement of DG sources is investigated. The predictions of the proposed method as regards the sizing and placement of DG sources are compared with those obtained before using particle swarm optimization at steady weather conditions.

Keywords:

NULL

Published In:

Nineteenth International Middle East Power Systems Conference (MEPCON), Menoufia University, Egypt, , NULL , NULL



(3)

An improved perturb-and-observe based MPPT method for PV systems under varying irradiation levels

Mazen Abdel-Salama,1 , Mohamed-Tharwat El-Mohandesa , Mohamed Godab

Abstract:

The present paper studies thoroughly the performance of the classical perturb-and-observe (P&O) method under fast-changing solar irradiation, including increase or decrease of the irradiation level with small or large steps, when the initial operating point lies to the right or left of the MPP. In sixteen case studies of sudden variation of solar irradiation, the classical P&O method fails to track MPP properly in four cases. The classical P&O tracker does not work properly under a ramp change of irradiation level. A modified P&O-based-MPP tracking method is proposed and tested under step and ramp changes of irradiation irrespective of the value and direction of the perturbation in irradiation level and the location of the initial operating point. The proposed method succeeds in capturing the MPP under a ramp or slow change of irradiation level. The proposed method tracks correctly the MPP in the above-mentioned case studies and shows better performance in tracking speed, steady state efficiency, dynamic efficiency and tracking accuracy when compared with the classical P&O method and other modified methods reported in the literature.

Keywords:

Maximum power point tracking Photovoltaic Perturb-and-observe Sudden variation of solar irradiation Step change Ramp change

Published In:

Solar Energy , Vol. 171 , pp. 547-561