Abstract

The problem of Automatic Generation control is examined widely and thoroughly in this project through the most relevant techniques. The primary and the most important objective of Automatic Generation Control (AGC) is to regulate frequency within acceptable bounds and to maintain the tie-line power at the scheduled values by adjusting the output of selected generators. In this project work, Automatic Generation Control (AGC) of a distributed generation system (DGS) comprising of solar and diesel generation has been analyzed. This project work deals with the load frequency control of Distributed Generation Systems (DGS) feeding a certain load. The Diesel Generator is controlled either by I, P, PI or PID controller to inject regulated amount of real power to the power system based on its rating. As a result it regulates the mismatch between the real power generation and the load which will lead to a minimum power and frequency deviations. Systematic way of tuning the gains of the Proportional, Integral and Derivative controller (PID) based on Bacteria Foraging method and ISE performance criterion and again with Matlab PID tuning Tool are analyzed. The simulation studies are carried out for different types of controllers, and disturbances and it is found that it regulates the frequency with less number of oscillations, minimum peak over shoot, and settling time in the case of PID controller and even better with Thyristor Controlled Phase Shifter (TCPS) present in the tie-line.