

ARTIFICIAL IMMUNE SYSTEM BASED CLONAL SELECTION ALGORITHM TO SOLVE ORPD PROBLEM WITH UPFC

A. BALA NAGA LINGAIAH & B. SRINIVASA RAO

V. R. Siddhartha Engineering College, Vijayawada, Andhra Pradesh, India

ABSTRACT

This paper presents single objective optimal reactive power dispatch (ORPD) problem using an artificial immune system based Clonal selection algorithm. The proposed algorithm is used to minimize the voltage deviations at load buses, transmission losses and voltage stability index (L-index) by incorporating the multi type FACTS device namely Unified power flow controller (UPFC). The power injection model of the UPFC was also incorporated in the single objective optimization problem. The proposed algorithm uses a Clonal selection principle and evolutionary approach consists cloning of antibodies and affinity maturation for a better optimal operation of the power system. The algorithm was tested on standard IEEE-30 bus system with UPFC. The proposed method results compared with and without device in the test system.

KEYWORDS: *Reactive Power Dispatch, Clonal Selection Algorithm, FACTS, UPFC*

Received: Nov 22, 2015; **Accepted:** Nov 25, 2015; **Published:** Dec 02, 2015; **Paper Id.:** TJPRC: IJPSMDEC20151