

A NOVEL VOLTAGE STABILITY ANALYSIS OF POWER SYSTEM

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ABSTRACT

Nowadays, the voltage stability analysis plays a vital role in secure operation of any power system. This paper proposes a novel voltage stability analysis of power system using five different methods known as Repeated Power Flow (RPF), Repeated Optimal Power Flow (ROPF), Continuation Power Flow (CPF), Voltage Index and Radial Basis Function Neural Network (RBFNN) as an intelligent technique. All these methods are necessary for the analysis of voltage stability because the voltage stability is the sensitive issue in any power system and it depends on several factors. Therefore the power engineer should have keen observation towards the voltage stability of their power system by keeping ready of the all the existing methods of voltage stability analysis. The results presented in this paper are obtained on 24-bus extra high voltage Indian southern power grid and these are analysed with respect to different case scenarios at different buses. These results are very useful for the analysis of any type of power system. In this way, the proposed novel voltage stability analysis shows a way to deal with sensitive problems of existing power systems using conventional methods and as well as Intelligent techniques.

KEYWORDS: Repeated Power Flow (RPF), Repeated Optimal Power Flow (ROPF), Continuation Power Flow (CPF), Voltage Index and Radial Basis Function Neural Network (RBFNN)