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FAULT ANALYSIS IN HYDRO POWER PLANTS USING MATLAB/SIMULINK

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Abstract

Scarcity of electrical power is the key problem in developing countries, needs are to be addressed. Due to the depletion of fossil fuel, their usage as a conventional source for production of electrical power is not adequate. Hydro power plant is a possible environment friendly solution in developing, hilly countries where rivers are available, for rural electrification. Hydro power plants are advantageous because of their low administrative and executive costs, possibility of using water for drinking and irrigation purposes, suitability for rural areas and low environmental pollutions. Hydro is a flexible source of electricity since plants can be ramped up and down very quickly to adapt to changing energy demands. Hydro turbines have a start-up time of the order of few minutes. Hydro power plant constructed at a remote area is capable of supplying electrical power to local consumers through an isolated transmission line. In the present study an attempt has been made to develop a Hydro power plant model and study the suitability of different controllers in a governor model for a fault occurrence in a transmission line by means of carrying out a MATLAB based simulation. With MATLAB/SIMULINK, the models of the proposed simulation system are all modularized and visualized, and can be reused easily [1]. Simulation results performed on the proposed control scheme have demonstrated the efficiency of proposed virtual model.

Author Keywords

Hydro-Power Plant, Hydraulic Turbine, Governor, Excitation System, Line Fault, Controllers

Index Keywords

Hydro power plant model, Fossil fuel, Electrical power Scarcity, MATLAB

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