

Simulation and Performance Analysis Two Area Four Machine System Power Stabilization Using PID-PSS

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Abstract— Power systems are steadily growing with ever larger capacity with their demand. Formerly all separated systems are interconnected to each other parts. Modern power systems are evolved into systems of very wide size. With day by day growing generation capacity, different areas on a power system are added with even large inertia. As a consequence in large interconnected power systems, low frequency oscillations have an increasing importance. Low frequency oscillations include local area modes and inter-area modes. Inter-area modes of oscillations may be caused by the either high gain exciters or heavy power transfer across weak tie line. The occurrence of the inter-area oscillations depends on various reasons such as weak ties between interconnected areas, voltage level, transmitted power and load. At time, the oscillations may continue to grow causing the instability of the power system. lots of power system stabilizers have been developed by the researchers in the past few years, but the area is still open for the efficient power stabilizer development which can efficiently able to handle the power oscillations without increasing the system controller system complexity. This proposed work presents simulation and performance analysis of two area four machine system transmission lines power stabilization capability using conventional PID Power System Stabilizer (PID-PSS). The implementation of this work is with the Simulink of MATLAB 2012(b).

Keywords: PID Controller, Power System Stabilizer (PSS), Multi area machine system, Power oscillation Damping.