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## Discrete Data Load Frequency Control of Two-Area Power System with Multi-Source Power Generation

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### Abstract

*This paper presents load frequency control (LFC) of interconnected power systems involving multi-source power generation. The investigations are carried on a typical two area power system comprising hydro, thermal, and gas power generations with speed governors in each area. A discrete time proportional-integral-derivative (PID) load frequency control is applied only to thermal and gas power generating units and hydro is allowed to operate at its scheduled generation level with only speed governor control. The transient performance of the two area power system is investigated for different combinations of generations from thermal and gas sources with different scheduled operating load conditions when subjected to step load disturbance of 1% in area-1. The PID controller gains are optimized using genetic algorithm (GA) for a sampling period of two seconds. The combination of integral squared error (ISE) and integral time an absolute error (ITAE) performance index is used for fitness evaluation.*

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