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(57) Abstract :
[027] The invention presents a Three-Phase Frequency Adaptive Digital Phase Locked Loop for Power System Measurement, Control, and Protection. The present invention comprising an independent phase-locked loops engineered to follow and synchronize with the frequency and phase of the respective phases in a three-phase power system, an adaptive frequency mechanism that automatically adjusts the parameters of the phase-locked loops to accommodate variations in the power system frequency and a digital signal processing components that facilitate frequency detection, phase comparison, and loop filter operations within the FDPLL system. The Three-Phase FDPLL system additionally includes a measurement module that employs synchronized signals from the phase-locked loops to measure power system parameters, encompassing frequency, voltage, and phase angles, a control module that deploys the measured parameters for power system control and protection functions. The digital signal processing components in the Three-Phase FDPLL system encompass field-programmable gate arrays (FPGAs) or digital signal processors (DSPs), enabling real-time implementation of phase-locked loop operations. Accompanied Drawing [FIG. 1-2]

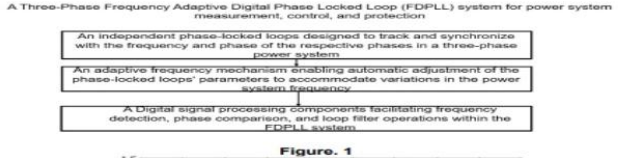

Figure. 1

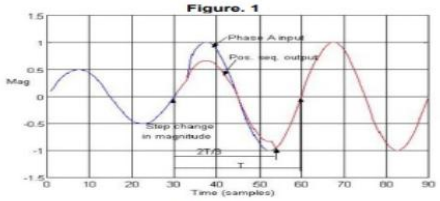

Figure. 2

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