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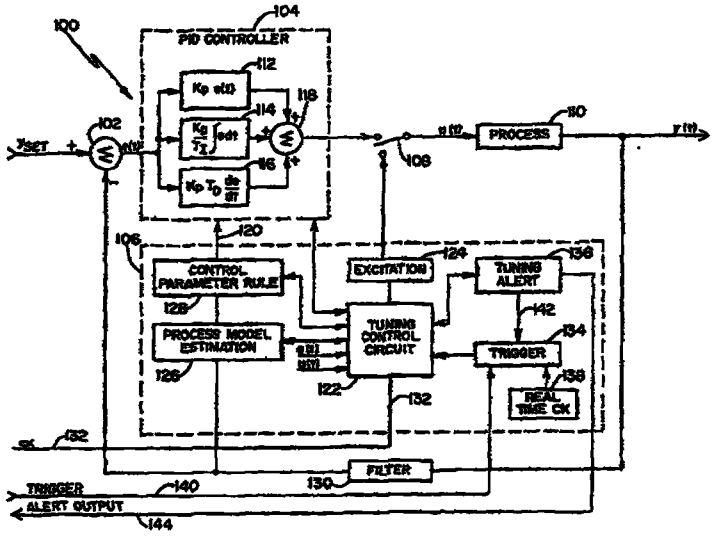
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(54) Title: FIELD BASED PROCESS CONTROL SYSTEM WITH AUTO-TUNING



(57) Abstract

A process control system (100) controls a process (110) through a control output signal (u(t)) based on a set point (Y_{SET}) and a measured process variable (y(t)). The process control system (100) includes a control circuit having a set point input, a process variable input and a control output. The control circuit generates the control output signal (u(t)) on the control output as a function of the set point (Y_{SET}) received on the set point input and the measured process variable (y(t)) received on the process variable input. An auto-tuning circuit (106) excites the process (110), estimates a process model based on a rising dead time, a rising rate-of-change, a falling dead time and a falling rate-of-change in the measured process variable (y(t)) and then tunes the control function to the process (110) based on the process model. The auto-tuning circuit (106) obtains robust results, but is computationally simple such that the circuit can be implemented with hardware or software in low-power and low-memory applications, such as in field-mounted control units.