

Abstract

**A NOVEL PREDICTIVE AND SELF-TUNING PI CONTROL APPARATUS
FOR EXPANDED PROCESS CONTROL APPLICATIONS**

A predictive and self-tuning PI controller includes apparatus for variably assigning
5 gains thereto in accordance with specified time functions following a change in set-
point. The control gains are computed in accordance with a plurality of input
parameters and subsequently continuously adjusted to set-point errors based on a
GPC approach thereby to optimize performance indices derived from simple and
classical user specifications. Variation and tuning of control gains in accordance
10 with set-point errors permits the PI controller to be useful in the general area of
process control and applicable to a wider range of processes compared to traditional
PI control, including time-delay processes, unstable processes and processes with
time-varying dynamics.

(Fig.2 is to be published)



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