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(54) Title: **PLANT PARAMETER DETECTION BY MONITORING OF POWER SPECTRAL DENSITIES**

(57) Abstract

A method for determining whether a current state of a process variable output signal is within acceptable limits includes the following steps: establishing reference data by sampling a plant's process variable output signal when the plant is operating at steady state and analyzing the sampled output signal to derive normalized reference data including an energy content of each of a plurality of frequency components of the sampled output signal. The procedure establishes a current operational data base by sampling a process variable signal when the plant is in operation. The sampled current output signal is analyzed to derive current data including a normalized energy content of each of a plurality of its frequency components. For each common frequency component of the reference data and the current data, the procedure compares their normalized energy contents and issues a non-steady state signal if the comparison indicates that the compared energy contents exceed a predetermined limit.

