

A model based fault detection and diagnosis system for rolling mill equipments

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Abstract

In this paper, the implementation of a Model Based Fault Detection and Diagnosis System, that uses fuzzy logic to determinate the nature of the detected faults in rolling mill equipments is presented. The system is built with 4 components which work independently. An Identification module estimates the parameters of a continuous domain second order transfer function model for the process by analyzing the step response. A Predictive model module generates the controlled variable residual which is statistically analyzed in a Detection module. The results of the statistical analysis are fuzzified and processed in a Diagnosis module to determine detected fault's nature. The system is tested using real operation data of a main motor process in order to detect and classify abnormalities into Operation Point Change (OPC) or Process Fault (PF) alarms.

Keywords

Fault detection, Mathematical model, Fault diagnosis, Equations, Predictive models, Standards, Transfer functions.