

Abstract

This paper presents main results of fault detection and diagnosis in a cement manufacturing plant using a new monitoring scheme. The scheme is based on multivariate statistical analysis and an adaptive threshold strategy. The process is statistically modeled using Principle Component Analysis (PCA). Instead of the conventional fixed control limits, adaptive thresholds are used to evaluate the common T^2 and Q statistics as faults indicators. The adaptive thresholds are computed and updated using a modified Exponentially Weighted Moving Average (EWMA) chart. These techniques are merged together to construct a novel monitoring scheme whose effectiveness is demonstrated using involuntary real fault of a cement plant process and some simulated faulty cases.