World Academy of Science, Engineering and Technology
International Journal of Mechanical and Industrial Engineering
Vol:11, No:08, 2017

Generation of Automated Alarms for Plantwide Process Monitoring

Authors : Hyun-Woo Cho

Abstract : Earlier detection of incipient abnormal operations in terms of plant-wide process management is quite necessary in order to improve product quality and process safety. And generating warning signals or alarms for operating personnel plays an important role in process automation and intelligent plant health monitoring. Various methodologies have been developed and utilized in this area such as expert systems, mathematical model-based approaches, multivariate statistical approaches, and so on. This work presents a nonlinear empirical monitoring methodology based on the real-time analysis of massive process data. Unfortunately, the big data includes measurement noises and unwanted variations unrelated to true process behavior. Thus the elimination of such unnecessary patterns of the data is executed in data processing step to enhance detection speed and accuracy. The performance of the methodology was demonstrated using simulated process data. The case study showed that the detection speed and performance was improved significantly irrespective of the size and the location of abnormal events.

Keywords : detection, monitoring, process data, noise
Conference Title : ICIME 2017 : International Conference on Industrial and Mechanical Engineering
Conference Location : Paris, France
Conference Dates : August 28-29, 2017