

Generation of Quasi-Measurement Data for On-Line Process Data Analysis

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Abstract : For ensuring the safety of a manufacturing process one should quickly identify an assignable cause of a fault in an on-line basis. To this end, many statistical techniques including linear and nonlinear methods have been frequently utilized. However, such methods possessed a major problem of small sample size, which is mostly attributed to the characteristics of empirical models used for reference models. This work presents a new method to overcome the insufficiency of measurement data in the monitoring and diagnosis tasks. Some quasi-measurement data are generated from existing data based on the two indices of similarity and importance. The performance of the method is demonstrated using a real data set. The results turn out that the presented methods are able to handle the insufficiency problem successfully. In addition, it is shown to be quite efficient in terms of computational speed and memory usage, and thus on-line implementation of the method is straightforward for monitoring and diagnosis purposes.

Keywords : data analysis, diagnosis, monitoring, process data, quality control

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