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[2008-0940]Improved performance of fault detection based on selection of the optimal number of principal components

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摘要

关键词

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[2008-0940]Improved performance of fault detection based on selection of the optimal number of principal components

LI Yuan, TANG Xiao-Chu

Abstract
This paper presents a new method that selecting the number of principal components (PCs) in fault detection based on principal component analysis (PCA). Fault signal-to-noise ratio (SNR) is proposed and the optimal number of PCs can be determined based on it. Fault SNR indicates the relationship between the sensitivity of fault detection and the number of PCs. By maximizing the fault SNR, the optimal number of PCs can be selected and the performance of fault detection can be improved. This method is applied to Tennessee Eastman process (TEP) comparing with cumulative percent variance (CPV) method and the simulation results demonstrate its superiority.

Key words Fault detection Fault SNR Sensitivity The number of PCs

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通讯作者

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