PCA와 SVM에 기반한 폴리스티렌 중합 반응기
조업 모드 판별 및 이상 진단 모델 개발

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In a chemical process, small faults can make serious problems and deviations which occur accidents. Thus, it is very improtant to identify a fault before this make a serious accidnt. Fault diagnosis models should quickly identify the root cause of faults to mitigate the loss. Most previous researches in the field of fault diagnosis model just handle the data set of benchmark process generated on commericial programs such as MATLAB. To design a fault diagnosis model, the overall analysis of a process and its data should be performed. In this study, a polystyrene process is tested. In this process, a runaway reaction occurred and this caused a large loss since operators were late aware of the occurrence of this accident. To design a proper fault diagnosis model, we analyzed the process and tested a real accident data set. At first, a mode classification model based on support vector machine (SVM) was trained and principal component analysis (PCA) model for each mode was constructed under normal operational conditions. The results show that a proposed model can quickly diagnose the occurrence of a fault and they indicate that this model is able to reduce the potential loss.