

Fault Detection and Diagnosis Model for the Hyper Compressor in LDPE Plant Using Hotelling's T^2 and Principal Component Control Limit Index

김지선, 이창송¹, 이호경¹, 이인범[†]

포항공과대학교; ¹LG화학

(iblee@postech.ac.kr[†])

Due to the increasing interest in safety and productivity, fault detection is becoming increasingly important. Demand for effective operation monitoring has propelled research into fault detections and diagnosis methods based statistics. The aim for this study is to describe the application of Hotelling's T^2 index and Principal Component Control Limit (PCCL) index based Principal Component Analysis (PCA) method for fault detection and diagnosis for the hyper compressor in LDPE plant. This paper introduces the development of fault detection model based on a PCA algorithm, used to compare the current plant operation with a correct performance model based on a normal operational data set from July 2012 to June 2016. This model was tested with several sets of fault operational data with 10 min sampling time from 3 days before plant shut down. Several fault cases are compared with two different approaches. Fault cases more than 85% are detected a diagnosis of fault by PCCL index.