

Adaptive multivariate statistical process monitoring of ammonia-based CO<sub>2</sub> capture process

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CO<sub>2</sub> capture processes have been received considerable attention in recent years as an effective method for reducing CO<sub>2</sub> emission in many industries. As the environmental regulations have been strictly enforced, there is a large push to meet the higher standards in CO<sub>2</sub> emission for most of the industries. Therefore, ammonia-based CO<sub>2</sub> capture process has to collect large number of on-line measurements to ensure that process outputs meet requirements of regulations with efficient use of resources. In such a situation, multivariate statistical data analysis provides capabilities to extract desired information from a massive amount of data. The primary object of this study is to confirm that adaptive PLS model is suitable for the modeling and monitoring of the ammonia-based CO<sub>2</sub> capture process which has time-varying and non-stationary behaviors. This approach can provide complementary information about the inherent conditions of the process and integrate them to develop optimal monitoring system suitable for the given process.