

## A Hybrid Model for Fault Diagnosis based on Model-based Approaches & Support Vector Machine

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To get the best final product, chemical engineers have to consider many factors; environmental effect, stability, economy, and so on. Especially To make a more stable process, it is very important to detect any fault in the chemical process immediately.

In this paper, a hybrid model for fault diagnosis based on Diagnostic Observers, Signed Digraph (SDG) and Support Vector Machine (SVM) is used. This model is applied to develop a inferential model that diagnosis faults of a chemical process. Several factors such as system complexity, high dimensionality, nonlinearity often render it very difficult even impractical to develop an accurate model for the system. To overcome these problems, SVM has been used as a powerful technique for process modeling and SDG is used to know the casual relations. In this paper by using SVM based on SDG, more accurate and fast fault detection model is proposed. In addition to SVM model, we use the SDG. To verify the superior performance of the proposed model, Tennessee Eastman Process is applied.