APPLICATION OF CONTROL AND AUTOMATION IN CHEMICAL INDUSTRIES

Alessandra Sovrani*

Michel Brasil da Silva**

Resumo

Modern chemical industrial processes and production systems have evolved into complex systems in recent years, involving several interconnected stages, being leveraged by the difficulty of monitoring individual processes. The processes had to be interconnected in a way to unify the production flow, where the operation of each stage interferes directly with the next. Failure of a production system component can transfer to the entire system, causing major problems as it goes through later stages. No matter which of industrial application, the control should aim to maximize economic yield, minimize the ecological footprint and risk of process failure. For anaerobic treatment of wastewater, several control systems are able to achieve these objectives, but for biogas plants this control has not yet been successfully implemented on a large scale due to the lack of measuring devices that would make the main steps of the process. To solve problems such as these methods of monitoring have been proposed, where they do not only consider the global information of measured variables, but also the relationships among them and their neighbors. The basic idea is to first represent the industrial chemical process as a complex network and then design its dynamic topological network characteristic to characterize the local structure information of each measured variable and monitor the process with conventional techniques of

global analysis. Based on relationships built between measured variables, it is possible to increase failure detection rates.

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E-mails:

* alessandrasovrani@hotmail.com

** micbrava@yahoo.com.br