Monitoring system in industrial process is needed to diagnose situation that happen in the process. For a complex system like anaerob digestion, there are many variables that affected to the process, therefore Multivariate Statistical Process Control (MSPC) is needed to replace Statistical Process Control (SPC) to analyze situation of process.

In this final project, Multivariate Statistical Process Control have been implemented to monitoring some situation modes in simulation happened in anaerob digestion system by assisting fuzzy system as decision taker. Principal Component Analysis is a MSPC method that could reduce multivariate data variable to become some new variables, and then from the new variables is applied $T^2$ to detect does the process stay in normal condition. Each condition that described have different $T^2$ value, then is applied fuzzy logic to determine the condition from $T^2$ value. Result of decision of simulation can identified the four situation in anaerob digestion.