Abstract

A shell and tube heat exchanger is a class of heat exchanger designs seen most common type of heat exchanger in oil refineries and other large chemical processes, and is suited for higher-pressure applications. As its name implies, this type of heat exchanger consists of a shell (a large pressure vessel) with a bundle of tubes inside it. One fluid runs through the tubes, and another fluid flows over the tubes (through the shell) to transfer heat between the two fluids. In this paper, the mathematical modelling of Shell and tube heat exchanger is developed and transfer function is obtained using process reaction curve method. The PID controller for a shell and tube heat exchanger is designed using Z-N tuning method. The shell and tube heat exchanger is modeled using fuzzy c-means algorithm (FCM) and its output is compared with that of actual shell and tube heat exchanger output.
References

- Subhransu Padhee, 2011 Performance Evaluation of Different Conventional and Intelligent Controllers for Temperature Control of Shell and Tube Heat Exchanger System, MS Thesis Thapar University, India.

Index Terms

Computer Science  Electrical And Instrumentation  Engineering

Keywords

Pid  Fuzzy C-means Algorithm  Clustering