

Nakorn Threesinghawong 2009: Automatic Temperature Control in Packed-Bed Reactor by Fuzzy PID Method. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Assistant Professor Peerayot Sanposh, D.Sc. 106 pages.

Today Koji Fermenting Process in packed bed reactor is important to producing basic material with use to producing soy bean source. In this process, *Aspergillus oryzae* produces heat from its metabolism. This heat is stored in fermenting material. Thus, the temperature in packed-bed reactor is increased. When the temperature is higher than 40 degree Celsius, most of *Aspergillus oryzae* will die. And the good condition for fermenting is 30 degree Celsius. So we must maintain the bed temperature to not exceed 30 degree Celsius.

This thesis proposes a Fuzzy PID method to Control bed temperature. In this thesis we use MCU PIC 24HJ128GP306 to develop the controller board and use matlab simulation with mathematical model of Koji process to find out Fuzzy PID rule and Membership function.

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Thesis Advisor's signature

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