MODELLING OF A LEVEL DRUM PROCESS CONTROL TRAINING SYSTEM



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LAPORAN AKHIR PENYELIDIKAN "MODELLING OF A LEVEL DRUM PROCESS CONTROL TRAINING SYSTEM"

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Sekian, terima kasih.

Yang benar,

BELINDA CHONG CHIEW MENG

Ketua

Projek Penyelidikan

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APPENDIX A

DERIVATION PARAMETERS FOR PI MODE

WATER LEVEL CONTROL LOOP

APPENDIX B

DERIVATION PARAMETERS FOR PID MODE

WATER LEVEL CONTROL LOOP

ABSTRACT

The purpose of this research is to study a mathematical formulation of a water level control loop in a process control training system. Mathematical modelling was carried out to understand the dynamics of the water level changes in the water tank for different settings of the PID controller mode. The idea of transfer functions was used to represent the physical systems of the plant. Thus, a system dynamic model of this plant was developed. Lumped approximation model was derived from the physical and chemical principles where mass balance was applied to obtain the equation of the water level control loop. In addition, system identification was also use to construct the process models and to estimate the unknown model parameters. Control System Toolbox simulation software embedded in the Matlab was used to compare the parameters between theoretical and experimental results. The model obtained from the theory were shown to be accurate at a cerain limited range with the experimental results. These may due to the system being run in the nonlinear region. Instrumental and environmental errors also may cause incorrect readings in the equipment used such as the sensing element and may directly affect the accucacy of the results obtained from the experiment.