

COMPUTER CONTROL OF BATCH PROCESS PLANT (SOFTWARE DEVELOPMENT)

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ABSTRACT

Batch processes are more complex and often poorly understood than continuous processes due to their multiproduct character and the process coordination in time as well as in quantity. The availability of low cost computers places a powerful tool to monitor, control, and improved the batch processing plant production. This thesis reports on the development of the control tools by means of programming using the Turbo Pascal 6.0 and MATLAB Student Edition software. The tool developed using the MATLAB Student Edition software provide the capabilities to analysis the system transfer function by using the PID controller. The output is in the form of bode plot, root locus, nyquist chart, nichols chart and the steady state error response analysis. The optimums PID parameters obtain are being expected to be implement on the computer control of batch process plant software based on the real-time Proportional, Integral and Derivative (PID) algorithms. The algorithm has been successful tested using the Non-interacting Liquid Level Control of Three Tank System plant models transfer function.

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CHAPTER 1

1. INTRODUCTION

Batch process is the processes in which a sequence of operations is carried out to produce a quantity of a product and in which the sequence is then repeated to produce further batches. The specifications of the product or the exact composition may be changed between the different runs. A common problem with the batch processing is the time taken to prepare the equipment for the next production batch. This is wasted time in that no output is being produced.

Continuous process is the processes in which production is maintained for long periods of time without interruption, typically over several months or even years. Continuous systems may produce batches in that the product composition may be changed from time to time, but they are still classified as continuous since the change in composition is made without halting the production process. For years, continuous operations have been the most prevalent in processing plant. One of the reasons for this is that continuous processes have been much easier to standardise than batch processes.

The competitive pressures in batch processing plant production and difficulties in planning and control all call for improved design of batch plants and provide and incentive for the application of computer-aided methods[1]. Basically batch processing requires sequential, continuous and supervisory control be implemented to effectively control the total process plant production system.