

Simultaneous Cyclic Scheduling and Control of a Multiproduct CSTR

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Problem Statement

Given are a number of products that are to be manufactured in a single continuous multiproduct CSTR. Lower bounds for the product demands expressed as constant rates are specified. Steady-state operating conditions for manufacturing each product are also specified, as well as the price of each product and the inventory and raw materials costs. The problem then consists in the simultaneous determination of a cyclic schedule (i.e. production wheel) and the control profile for the selected transitions. The major decisions involve selecting the sequence (i.e. cyclic time and the sequence in which the products will be manufactured) as well as the transition times, production rates, length of processing times, amounts manufactured of each product, and manipulated variables for the transition such that the profit is maximized.