Functional block diagram

Business, Management

A Functional Block Diagram is a multi-system, time-sequenced, stepwise flow diagram of a functional flow. A chemical process-operating unit does consist of many unit operations. The control of operating unit is to considering the control of each unit operation separately. Figure 1–1 shows an example of a chemical process in a representation. The inputs are categorized as either manipulated or disturbance variables while the outputs are as measured or unmeasured. To initiate the operation of a process, it is of great importance to use necessary measurements of the outputs while disturbance inputs can be used to help make decisions about the appropriate values of manipulated inputs.

The control signals and measures are by dashed lines. These latter concepts seemed to be very vague to an individual at this point. With careful consideration of the process flow diagram described in Figure 1–2, where process 1 effluent fluid is to the surge tank where the effluent are directed to process 2. several constraints exist such as the height in this reservoir. In the event the tank overflows, it may pose a serious environmental risk and hazards that may result in negative economic influence (Levin & Ted, pp. 124-178). Below is the stepwise analyzes of the system in a procedural manner. Control Objective: here, the goal is to maintain the height of the tank within certain bounds since too high height will lead to overflow while too little height problems may arise due to the flow of process 2. Typically, specific height will be selected. This desired height is as the set point.

Input variables

In this section the effluent from process 1and, it is channeled through to process 2. It is that an outlet flow rate is considered an input to this kind of

set up (Levin & Ted, pp. 167-189). In most cases, the problem is always to identify and the manipulated input and the disturbance input. Output variables: the most considered out variable is the liquid level with assumption t in the measured quantity.

Constraints

These are the actual number of constraints while solving this process. The liquid levels allowed up to a certain maximum level; upon which when exceeded, the tank overflows. There are limitations on the flow rates via the inlet and outlet valves.

Fig 1. 1

Fig 1. 2

Operating characteristics

Since this is a continuous process, that is, there is an inflow via inlet and out flow via outlet of the tank. Safety, economic considerations and environmental factors: This aspect majorly depends on the futures of the fluid. If it is a lethal chemical, then there exist tremendous environmental considerations to prevent the tank to overflow.

Indeed, this is also an economic consideration, due to costs incurred while attending to injuries and the environmental clean ups (Levin & Ted, pp. 124-178). Every effluent has to be treated to prevent any damage in case of an overflow, and the fact that any industrial loss incurs economic penalty, therefore safety considerations are very important while administering the control for the valves. For this particular problem, the control-valve specification will depend on which input is manipulated. This is discussed in

detail shortly. Control structure: provides various ways in controlling the system.

In summation, the paper explains a case study elaborating the best practices in designing and construction of a functional block diagram. The auction system was designed using unified modeling language. The use of case diagrams were implemented successfully during the process.

Work Cited

Levin, Mark A, & Ted T. Kalal. Improving Product Reliability: Strategies and Implementation. Chichester, England: Wiley, 2003. Print.