

Fuzzy Logic and Control Strategies on a Sump

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Abstract : Sump can be defined as a reservoir which contains slurry; a mixture of solid and liquid or water, in it. Sump system is an unsteady process owing to the level response. Sump level shall be monitored carefully by using a good controller to avoid overflow. The current conventional controllers would not be able to solve problems with large time delay and nonlinearities, Fuzzy Logic controller is tested to prove its ability in solving the listed problems of slurry sump. Therefore, in order to justify the effectiveness and reliability of these controllers, simulation of the sump system was created by using MATLAB and the results were compared. According to the result obtained, instead of Proportional-Integral (PI) and Proportional-Integral and Derivative (PID), Fuzzy Logic controller showed the best result by offering quick response of 0.32 s for step input and 5 s for pulse generator, by producing small Integral Absolute Error (IAE) values that are 0.66 and 0.36 respectively.

Keywords : fuzzy, sump, level, controller

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