

process modeling luyben solution pdf

The distinguishing feature of the PID controller is the ability to use the three control terms of proportional, integral and derivative influence on the controller output to apply accurate and optimal control. The block diagram on the right shows the principles of how these terms are generated and applied.

PID controller - Wikipedia

INTRODUCTION. A drilling process presents a rotating drill string which is placed into the well. A drilling fluid is pumped through the drill string and exits through the choke valve (). There are many disturbances that produce fluctuations in the annulus pressure during oil well drilling.

SMART MONITORING AND DECISION MAKING FOR REGULATING

Disturbances in the drilling process can be categorized into two main types: random disturbances and systematic disturbances. Random disturbances are those that occur unpredictably and are often caused by changes in the drilling fluid properties or the wellbore conditions. Systematic disturbances are those that occur in a regular, predictable pattern and are often caused by changes in the drilling rate or the wellbore geometry. The PID controller is designed to handle both types of disturbances by adjusting the controller output based on the error signal. The proportional term reacts to the current error, the integral term reacts to the accumulated error, and the derivative term reacts to the rate of change of the error. This combination of terms allows the PID controller to maintain the desired drilling rate and annulus pressure despite the presence of disturbances.

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