



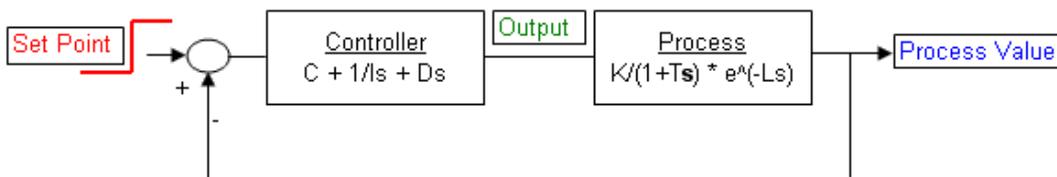
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PID Loop Simulator

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This app simulates a control loop consisting of a first order process with deadtime and a PID controller.



An [advanced version](#) of this app (and a free demo version) suitable for tuning loops in the industry is available at the sister site [XLnControl.com](#).

Download

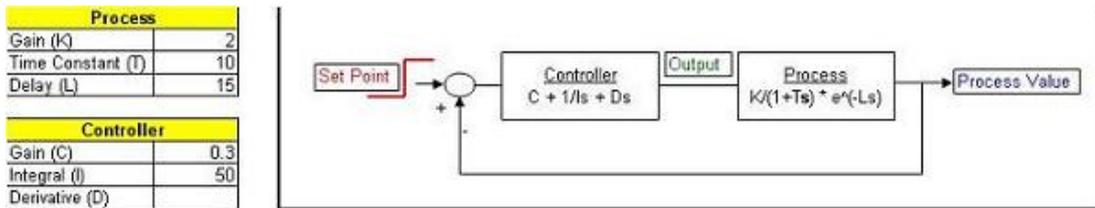
[.xls](#) file (118 KB) or [.zip](#) file (27 KB)

How to use

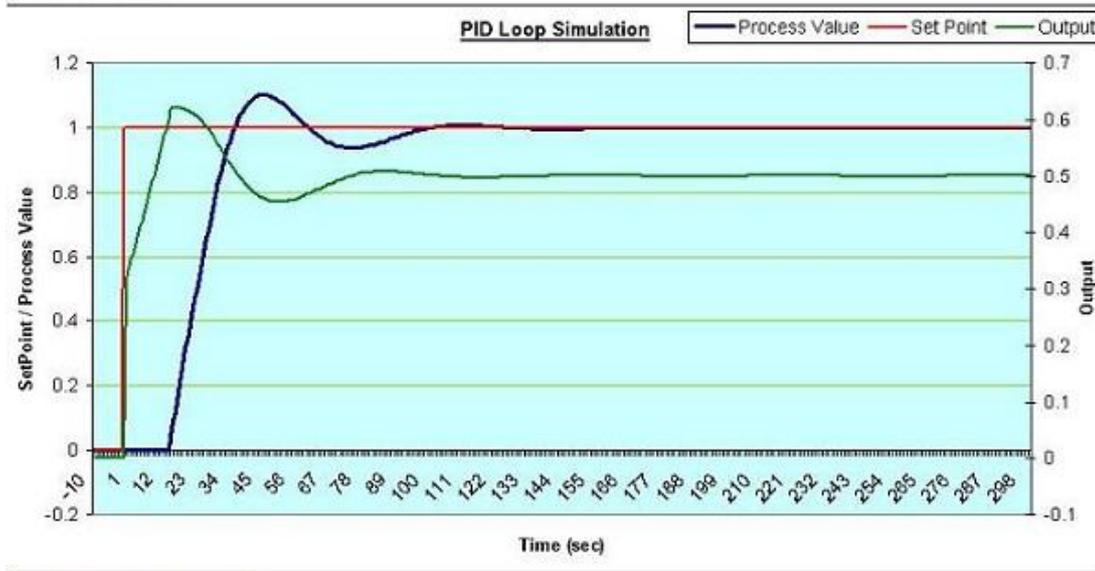
The process is specified by the process gain, time constant and dead time (see the [Process Model](#) page for more details). The PID controller has 3 parameters: gain, integral and derivative. Key in these values into the appropriate cells. If the integral time is keyed in as 0, the integral term is ignored.

The response to a step change in the set point is displayed in the chart.

The screenshot below shows an example of the inputs and the output chart.



(All times in seconds)



<http://www.engineers-excel.com>

Feedback and Contributions from Visitors

The PID Simulator tool has been the most downloaded tool on this site and I am grateful to the users who sent me a lot of positive feedback about it.

Torcuato Fernandez pointed out an error in original version, which has since has been corrected. I would like to thank Torcuato for pointing out the error.

I would also like to thank Hannu Lehmuskujja for pointing out an error related to the delay.

Jose Maria, has shared some of his work with me and has kindly agreed to let me share it with others through this site. He has added scrollbars to the tool, which assist the user understand how the controller settings affect the loop.

Download the file [here](#).

I also get a lot of queries on the form of the controller equation used in this app - for a discussion of the different equations and to download the tool containing the ideal form of the PID equation, visit the [PID Equations page](#).

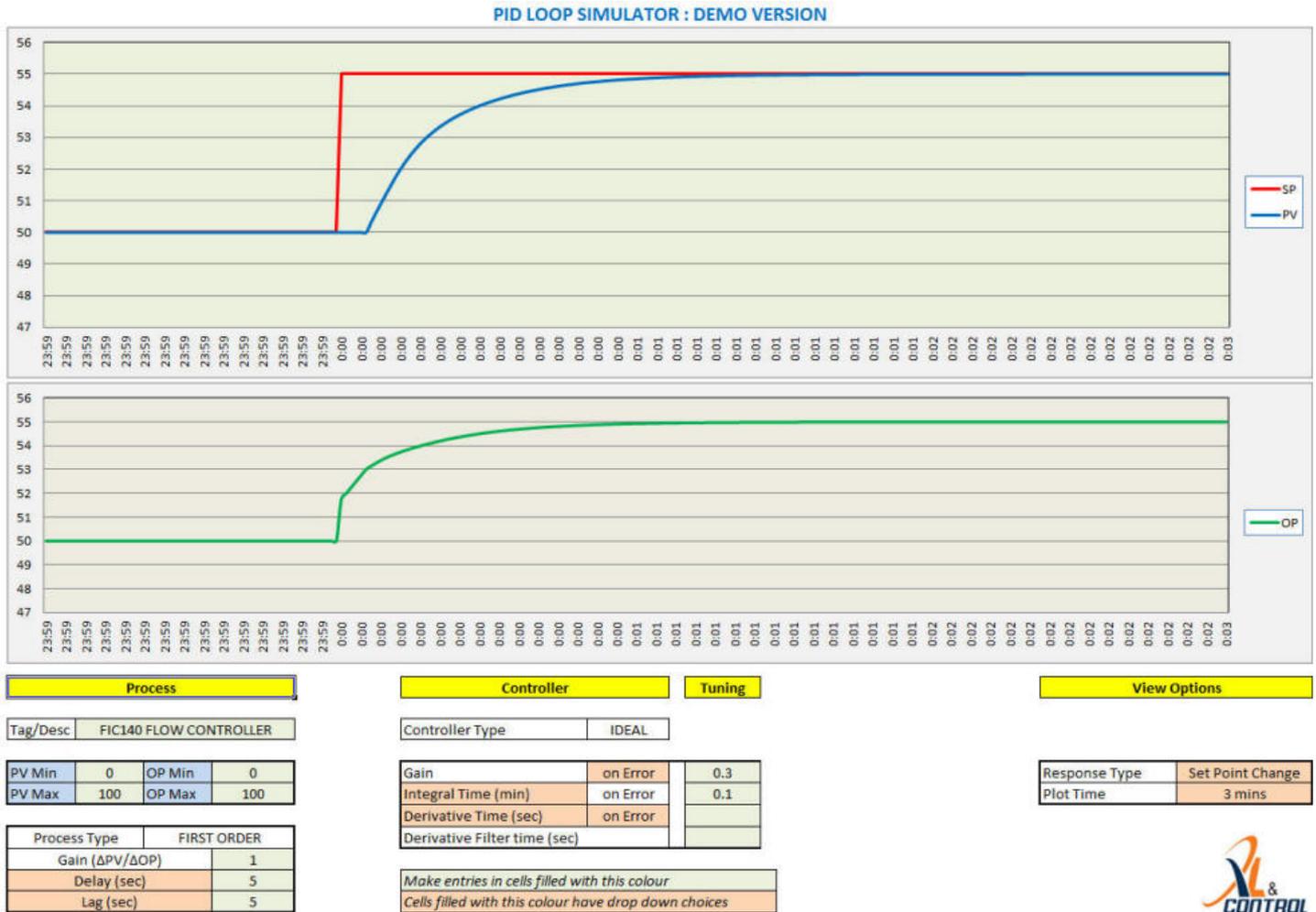
For any comments and discussions on this app, you can join and initiate a discussion on the open Linked-in group [Engineering Using Spreadsheets](#).

(Alternatively, email mehta.nitin@gmail.com)

I look forward to getting more great suggestions and comments. Thank you! :)

Advanced version

Professionals in the industry may want to check out the [advanced version](#) of this tool. A free demo is also available, see screenshot below.



More Control Simulators

[Simulation of On Off Control](#)

[System Identification](#)

[PI Control of First Order Process](#)

[PI Control of Integrating Process](#)

[Simulation of a Model Predictive Controller \(MPC\)](#)

Also See:

[Instrument Loop Drawings using Excel](#)

[Excel OPC Client](#)

[Bode Plot Generator](#)

[Nyquist Plot Generator](#)