Implementing Proportional Controller on SBHS, remotely

Talk To a Teacher
http://sakshat.ac.in
National Mission on Education through ICT
http://spoken-tutorial.org

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In this tutorial we will learn to:

- **Use Ziegler Nichols tuning method to calculate proportional controller gain**

Objectives

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- **Modify step test code to design a Proportional controller**

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In this tutorial we will learn to:

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- **Modify step test code to design a Proportional controller**
- **Implement this Proportional Controller on SBHS**

Software requirements

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- **I am using Windows-7 32-bit OS**

- **Watch the following tutorial**

Prerequisites

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  - **Using SBHS Virtual labs on Windows OS**

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- **Teaches how to do a step test experiment on SBHS, remotely**

- **Basic knowledge of PID tuning is required**

- **Step test experiment code folder must be available**

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- **Step test experiment data file must be available**

Prerequisites

- **Step test experiment code folder must be available**
- **Step test experiment data file must be available**
- **If not, re-do the step test experiment to generate a new data file**

Ziegler-Nichols PID tuning methods

PID Tuning rules given by Ziegler-Nichols

- **Reaction curve method**

Ziegler-Nichols PID tuning methods

PID Tuning rules given by Ziegler-Nichols

- **Reaction curve method**
- **Instablity method**

Reaction curve method

- **Step input is given and output is observed**

Reaction curve method

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- **Exponential response of system**

Reaction curve method

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- **Exponential response of system**
- **Tangent is drawn at the point of inflection**
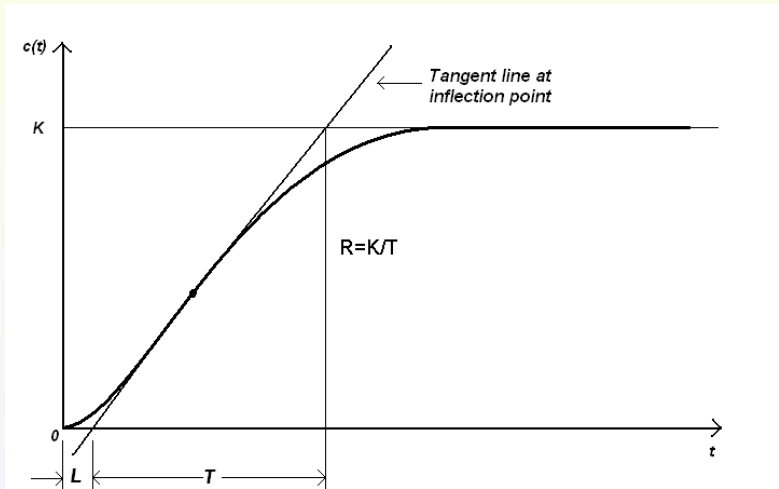
Reaction curve method

- **Step input is given and output is observed**
- **Exponential response of system**
- **Tangent is drawn at the point of inflection**
- **Dead time and time constant are computed from the time axis**

Step response

Ziegler Nichols PID tuning table

Type of controller	K	τ_i	τ_d
P	$\frac{1}{RL}$	∞	0
PI	$\frac{0.9}{RL}$	$3L$	0
PID	$\frac{1.2}{RL}$	$2L$	$0.5L$

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Summary

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Summary

In this tutorial, we have learnt how to,

- **Use Ziegler Nichols tuning method to calculate proportional controller gain for SBHS**
- **Modify step test code to design a Proportional controller**
- **Implement the designed Proportional Controller on SBHS**

- Watch the video available at http://spoken-tutorial.org/What_is_a_Spoken_Tutorial

- It summarises the Spoken Tutorial project

- If you do not have good bandwidth, you can download and watch it

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The Spoken Tutorial Project Team

- **Conducts workshops using spoken tutorials**
- **Gives certificates to those who pass an online test**

For more details, contact

contact@spoken-tutorial.org

Acknowledgements

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- **It is supported by the National Mission on Education through ICT, MHRD, Government of India**
- **More information on this Mission is available at:**
  http://spoken-tutorial.org /NMEICT-Intro