

## Real-Time Implementation of Self-Tuning Fuzzy-PID Controller for First Order Plus Dead Time System Base on Microcontroller STM32

**Authors :** Maitree Thamma, Witchupong Wiboonjaroen, Thanat Suknuan, Karan Homchat

**Abstract :** First order plus dead time (FOPDT) is a high dynamic system. Therefore, the controller must be intelligent. This paper presents the development and implementation of self-tuning Fuzzy-PID controller for controlling the FOPDT system. The water level process used represented FOPDT system and the mathematical model of the system was approximated by using System Identification toolbox in Matlab. The control programming and Fuzzy-PID algorithm used Matlab/Simulink and run on Microcontroller STM32.

**Keywords :** real-time control, self-tuning fuzzy-PID, FOPDT system, the water lever process

**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development

**Conference Location :** Chicago, United States

**Conference Dates :** December 12-13, 2020