



## **SCHOOL OF ENGINEERING**

# **Design of Glow Engine Speed Regulator using Fuzzy Logic**

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## **ABSTRACT**

The purpose of this report is to design, develop, implement and evaluate an engine speed controller using fuzzy logic methodology. In the recent years, particularly in engine development and application advancement, the industrial sector has encountered the problem of monitoring speed control for their engine and allied machinery. This problem has indirectly affected their operation especially so in the area of process control and energy conservation. So a solution was asked for to satisfy their operational needs in the industry.

The solution in this proposed project was to focus in engine speed control and to design and develop an engine speed controller. The aim in this project is to develop an engine speed controller using fuzzy logic to monitor the engine shaft speed and indirectly monitor the engine speed and throttle position so as to achieve its desired settings for maximum performance. The engine to be used in the proposed project is a glow engine and the proposed control system shall incorporate a PC-based servo operated controller directly linked to the glow engine, all set in a dedicated test stand.

This report details the modeling and implementation of the controller system for the glow engine. The control strategies which include the use of feedback control system in the design are presented. Results of a simulation from an adequately detailed model of the engine and its test stand are also presented.

The reason for the use of the fuzzy logic methodology has been highlighted. The fuzzy logic method used in the project enables to configure the solution to the initial problem quickly without extensive experimentation and offer reliable results which would not be possible if the task was to be performed manually. The result presented a reasonable solution to the speed control problem generally encounter in engines and open the opportunity for future works in the area of engine speed control in relation to their more complex and sophisticated applications in the industry. The principle behind fuzzy logic concept was also highlighted in this report together with the conclusions that were made for this project.

(Keywords: engine speed controller, feedback control, glow engine, fuzzy logic)