

# **Abstract**

**Alaa Eldin Ahmed Khalil**

## **Adaptive Fuzzy Controller for Loop Control in a Distributed Control System**

Abstract— to simplify the control task and reduce the computation burden of control system, Distributed Control system (DCS) becomes the most suitable control system structure especially for medium and large size of industrial processes. In DCS system the control task is distributed among some controllers, which communicate to each other via communication network, such as PLC or/and industrial PC. In most DCS system, each controlled variable is manipulated in an individual loop, which is called control loops in DCS. Since it is difficult to design a control function that can handle all the circumstances of operations at the start phase, the control function needs to be adapted online. Adapted fuzzy controller is suggested here in order to handle the control loops of a DCS system. An Experimental setup simulates the master loops of Liquefied Petroleum Gases (LPG) subsystem in a refining petroleum industry. The controller is implemented using HP-VEE software and Matlab packages. KEY WORDS: LPG, DCS, ADAPTIVE CONTROLLER, NORMALIZED FUZZY CONTROLLER