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| <b>Thesis Title</b>        | Development of Adaptive Fuzzy Logic Control System<br>for Temperature Control in Electric Kiln |          |
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## ABSTRACT

The objective of this thesis is to develop an Adaptive Fuzzy Logic Control System for Temperature Control in Electric Kiln that result indirectly controlled color quality of the ceramic products whose were coated with deep red, green, and black chemical substances. The system consisted of 4 main parts. 1) The design of the AFLC control whose output membership was adaptable, 2) The design and construction of a 1.5 cu feet - electric kiln, 3) The development of a computer program for control the kiln temperature, and 4) Interfacing a signal converter SG-95, thermocouple transmitter TT-95, D/A,A/D converter interface card. Then, 300 samples were tested and the control system parameters were measured and finally the results were analyzed.

The results from these tests show that the developing AFLC system can control the temperature and gives a good color quality very close to the standard color product The operation time is short. The system performance of AFLC depends on cycles of sampling temperature. If it is less than the sum of time constant and dead zone that heat is transferred to the electric kiln. The change of temperature is zero then AFLC response is big, rather fast, and it is better to set the sampling cycles a little greater than the sum of dead zone and time constant .