

## **ABSTRACT**

*Not all babies in the world born with normal condition or can easily adapt with their new environment. A few babies will born in premature condition which have a vulnerable body and hard to adapt their body's temperature to get optimal. In medicine, baby's incubator is known can solve this problem, temperature and humidity in incubator room is controlled in range 32 – 37 °C and 45 – 55 % . but, control temperature and humidity in baby's incubator is not effective, because it use on-off controller which applied in its heater. On-off controller has a lack of time's response transient that make a delay between ON condition to OFF condition. In other case, it makes a higher power to turn ON and turn OFF continuously. It encourages to make a research for finding the right method for controlling temperature and humidity.*

*For solve this problem, this final project focuses on controlling temperature technique with fuzzy logic method. Fuzzy logic will be applied on the prototype baby's incubator. This prototype consist of two important part, the control room and the baby room. The baby room where the sensor and display sensor are placed and control room where electronics components, heater, fan which produce air flow are placed. In this final project, controlling temperature and humidity on baby's incubator using SHT1x sensor. And the otherwise, LCD will display the temperature and humidity changes.*

*The results of fuzzy logic implementation on the baby's incubator is expected to be the solution of temperature control to get an effective and efficient results. For further development of this final project, it will be very useful in medicine, especially in the field of the childbirth and pregnancy.*

**Keywords:** *Baby's incubator, premature baby, fuzzy logic, SHT1x, TRIAC, ZCD*