

## ABSTRACT

*Ammonia is a chemical compound with the formula  $NH_3$ . Generally, this compound is a gas with a very pungent odor or another term for the smell of ammonia. With this measuring instrument for the concentration of ammonia ( $NH_3$ ) levels, you can quickly and easily find out the level of ammonia gas levels. In this study, an ammonia sensor prototype was made using the MiCS-5524 sensor which was connected to the ESP32 Microcontroller. This process applies a polynomial regression equation to determine the accuracy of sensor readings that are close to the real value, so that the average percentage of error readings on the ammonia sensor is obtained. The calibration process is used to check the accuracy of prototype readings with the smart sensor Ammonia Gas Detector AR8500 as a comparison tool, so that the error value obtained can be known. Based on the results of research using the polynomial regression method can run well. The results of the overall comparison of readings between the prototype and the smart sensor have an average error percentage of 3.53%. Shows good results because the value is less than the tolerance error percentage on the ammonia sensor is 10%.*

**Keywords:** *Polynomial Regression, Ammonia Sensor, MiCS-5524 Sensor, Sensor Readout, and Percentage Error.*