ABSTRACT

Hydroponic is a technique of cultivation by utilizing nutrient water as a medium for planting instead of soil. Since hydroponic uses water, some conditions must be considered, which are water distribution, nutrients, pH, and humidity, also the availability of electrical sources on it. To perform examination and adjustment of its environment as one will consume a great deal of time and energy. Such as process is also prone to human error.

Smart Farming system is then designed to aid hydroponics. In this thesis**,** the author designs Monitoring System of Acidity and Humidity Control Based Internet of Things in Hydroponic. So that the data from the sensors can be accessed directly via a smartphone.

According to the testing results of pH control system in water solution rise time value 53.86s, peak time value 5 minutes, maximum overshoot value 4.15%, error steady state +2% value 6.63, error steady state -2% value 6.37 and settling time value 11 minutes. For the humidity control system best *rise time* value 48.23s, peak time value 2 minutes, maximum overshoot value 11.76%, error steady state +2% value 86.7, error steady state -2% value 83.3 and settling time value 2 minutes. Based on T test results, the effect of using the smart farming system on plant height have a T-value of -8.771. The results appear that $| -8.771 | > 2.045$ then H1 is acceptable. The effect of using the smart farming system at leaf width have a T-value of -6.906. The results appear that $| -6.906 | > 2.045$ then H1 is acceptable. The influence of smart farming systems on the number of hydroponic plant leaves have a T-value of -3.247. The results appear that $| -3.247 | > 2.045$ then H1 is acceptable. So there is a significant difference in the height of the plant, the width and number of leaves before and after using smart farming system

Keywords **:** *pH, Humidity, Hydroponic, Internet of Things.*