

## ABSTRACT

Hydroponic NFT is the plantation system without using of ground field, but use the water which combine it with the nutrition. This system become more popular to the people today, because this system has plus point than others such as this system is easier to be realized by anyone, the plantation system is not according to the season of the plant, and also is possible to built a cascade system, so it will increase the production number of plant without more field. In the other hand, this system need more attention and time from the owner, for example are monitoring the nutrient flow and the number of nutrient in tank frequently, temperature and humidity are controled manually etc.

For that reasons, in this final project will be design and realized the hydroponic automation system prototype by using of microcontroller as the main component. By combining it with the exact sensors, the microcontroller will automatize many kinds of system variables changes with an action, for example are turn on the alarm when the nutrient flow is rest, turn on the blower when the system temperature is up to 30 °C, turn on the heater when the system temperatur is below 20 °C, turn on the sprayer when the relative humidity is below etc.

The result of this design are using of two PCB plat as nutrient flow detector beause when these two plat was flowed by the water, its resistance is change from  $\infty$  Ohm to 33 kOhm. The result is also showed that NTC (Negative Temperature Coefficient) can be used as temperature detector because its resistance change invertly with the temperature. To know the number of relative humidity, a clock generator which was controlled by the RHK1AN is used, when the relative humidity is change from 20 % until 90 %, the output frequency of this circuit is also change from 90 Hz to 840 Hz.