ABSTRACT

Study for enhancement of identification of gasoline quality has been held for a long time. Methods that used to efficiency enhancement is based on different light spectrum to identify octane number of gasoline. System operated will work based on linear combination of spectral function that come from illumination of light, in this case, illumination will be LED array.

LED array is the key for system. LED array that used have a different wavelength each other. More combination will be granted if more different wavelength is used on the system. These different wavelength will be fired to a sample, then the absorption will be measured by sensor. These absorption is based on beer-lambert law.

Illumination from LED array will set alternately with a typical speed. Light that was set from a mikrokontroller is added to an optical fiber before fired on the object. Light absorption from the object will be data to be processed. data acquisition of the object will be done with sensor. Then data from the sensor will be added to ADC in microcontroller. Output from ADC will be added to neural network system. Then, output from it, will be the output from a whole system before. This method will be expected as a most suitable methods for gasoline identification in the future.

This study proved if led array and sensor is capable to do the identification, where on 30 tests, we got 96,67% succesful rate. This rate can be improved by making a better tube for sample place.

Keywords : gasoline identification, LED array, optical fiber, Beer-Lambert, neural network