Effect of charging parameter on fruit battery-based oil palm maturity sensor

ABSTRACT

Oil palm is one of the key industries highly observed in Malaysia, due to its high demand both whether locally or internationally. The oil extraction rate (OER) in palm oil production is used as an element to identify the performance of the mills, estates and producers. In view of this, there are specific instrument or sensor needs to be implemented at the mills especially during the reception of fresh fruit bunches (FFB) transported from the field for oil content processing. This paper aims to study and propose the use of a fruit battery-based oil palm maturity sensor to analyse the effect of the sensor to various parameters. The study utilizes a charging method with different parameters, including a moisture content test on the palm oil samples. Three types of parameters are tested along with the different grades of oil palm fruit from different bunches, such as the load resistance, charging voltage and charging time. The repeatability data of the samples are obtained with the used list of values in each parameter. The results show that the parameters tested for the unripe, under ripe and ripe samples can affect the sensor sensitivity.

Keyword: Oil palm maturity sensor; Fruit battery base; Load resistance; Charging voltage; Charging time