Implementation Of Coffee Bean Drying With Integration Of Ds18b20 Sensor Control System And Soil Moisture Resistive Based On Arduino Nano

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ABSTRACT

Drying is an important stage in the post-harvest process of coffee beans that greatly affects the quality and taste of the final product. Traditional drying methods that are still widely used rely on sunlight and weather conditions, making it difficult to control temperature and humidity accurately. This study developed an automatic coffee bean dryer based on Arduino Nano with a DS18B20 temperature sensor and a resistive soil moisture sensor. This system allows maximum temperature settings via a potentiometer and indirectly monitors humidity because the sensor must be embedded in the coffee beans to obtain accurate data. Therefore, the water content measurement process is carried out after drying by moving the beans to a special container equipped with a sensor. The assessment of three experts showed that this tool is very suitable for use with a score of 90.13%. Testing of the tool showed a high level of accuracy with an MAE value of 0.375%, RMSE 0.456%, MAPE 2.176%, and a deviation of 0.4316. Comparison with commercial water content measuring instruments showed a difference of only 0.81%, still within the tolerance limit.

Keywords: *Automatic coffee dryer, Arduino Nano, DS18B20, Soil moisture sensor, Control system, Moisture content.*