

ABSTRAK
RANCANG BANGUN ALAT MONITORING KADAR AIR BIJI KOPI
BERBASIS *INTERNET OF THINGS* (IOT) DENGAN SENSOR
KELEMBAPAN

(Bunga Chantica Isabella 2026:48 Halaman)

Proses penjemuran merupakan salah satu tahapan penting dalam pascapanen kopi karena memengaruhi kualitas biji kopi yang dihasilkan. Pemantauan yang masih dilakukan secara manual dinilai kurang efektif karena memerlukan pengawasan secara terus-menerus dan dipengaruhi oleh kondisi cuaca. Penelitian ini bertujuan merancang dan membangun alat monitoring kadar air biji kopi pada proses penjemuran berbasis *Internet of Things* (IoT). Metode penelitian meliputi perancangan perangkat keras dan perangkat lunak, perakitan alat, pemrograman menggunakan Arduino IDE, serta pengujian sistem secara keseluruhan. Sistem menggunakan mikrokontroler ESP32, sensor *moisture*, sensor DHT22, sensor hujan, OLED *display*, dan *platform* IoT sebagai media monitoring. Hasil penelitian menunjukkan bahwa sistem mampu memantau kadar air biji kopi, suhu, kelembapan udara, dan kondisi hujan secara *real-time*. Data hasil pembacaan sensor berhasil ditampilkan pada OLED dan dikirim ke *platform* IoT. Selain itu, sistem dapat mengirimkan notifikasi otomatis ketika hujan terdeteksi dan ketika kadar air biji kopi telah mencapai kondisi kering. Dengan demikian, alat yang dirancang mampu membantu proses monitoring penjemuran menjadi lebih efektif, efisien, dan mendukung peningkatan kualitas biji kopi.

Kata Kunci: *Internet of Things* (IoT), ESP32, sensor *moisture*, penjemuran biji kopi, monitoring.

ABSTRACT
DESIGN AND DESIGN OF A COFFEE BEAN WATER CONTENT
MONITORING TOOL BASED ON INTERNET OF THINGS (IOT) WITH
HUMIDITY SENSOR

(Bunga Chantica Isabella 2026:48 Page)

The coffee bean drying process is an important stage in post-harvest processing because it affects the quality of the final product. Manual monitoring is considered inefficient as it requires continuous observation and is highly influenced by weather conditions. This study aims to design and develop an Internet of Things (IoT)-based coffee bean moisture monitoring system during the drying process. The research method includes hardware and software design, system assembly, programming using Arduino IDE, and system testing. The system employs an ESP32 microcontroller, a moisture sensor, a DHT22 sensor, a rain sensor, an OLED display, and an IoT platform for monitoring. The results show that the system is capable of monitoring coffee bean moisture content, temperature, humidity, and rainfall conditions in real time. The sensor data are successfully displayed on the OLED and transmitted to the IoT platform. In addition, the system automatically sends notifications when rain is detected and when the coffee beans have reached the desired dry condition. Therefore, the developed system provides a more effective and efficient solution for monitoring the coffee bean drying process while helping maintain coffee quality.

Keywords: *Internet of Things (IoT), ESP32, moisture sensor, coffee bean drying, monitoring.*