

ABSTRAK

**RANCANG BANGUN SISTEM PENIMBANGAN GETAH KARET
TERINTEGRASI RFID BERBASIS *Internet of Things* (IoT)
(2026: 50 Halaman + Gambar + Tabel + Daftar Pustaka + Lampiran)**

ALSYA AMANDA PUTRI

062330320612

JURUSAN TEKNIK ELEKTRO

PROGRAM STUDI TEKNIK ELEKTRONIKA

POLITEKNIK NEGERI SRIWIJAYA

Proses penimbangan getah karet pada tingkat petani maupun pengepul masih banyak dilakukan secara manual sehingga berpotensi menimbulkan kesalahan pencatatan data dan kurang efisien dalam proses pengelolaan hasil timbang. Pembuatan laporan ini bertujuan untuk merancang sebuah sistem penimbangan getah karet terintegrasi RFID berbasis *Internet of Things* (IoT) menggunakan mikrokontroler ESP32, sensor *loadcell* 350 kg, modul HX711, modul RFID RC522, dan LCD I2C 16x2. Data hasil penimbangan dikirim secara otomatis ke *Google Spreadsheet* melalui koneksi WiFi setelah kartu RFID petani berhasil terbaca. Hasil pengujian menunjukkan persentase error sensor di bawah 1% pada beban 50-300 kg, RFID RC522 berhasil membaca seluruh kartu dengan tingkat keberhasilan 100% pada jarak 4,5 cm, dan data berhasil tersimpan otomatis ke *Google Spreadsheet*. Hasil pengujian tersebut membuktikan bahwa sistem penimbangan getah karet terintegrasi RFID berbasis *Internet of Things* (IoT) dapat bekerja dengan cukup baik sesuai tujuan perancangan sehingga mampu membantu proses penimbangan dan pencatatan data hasil timbang menjadi lebih mudah.

Kata kunci: *Loadcell*, RFID RC522, ESP32, *Internet of Things*, *Google Spreadsheet*

ABSTRAC

DESIGN AND DEVELOPMENT OF AN RFID-INTEGRATED RUBBER LATEX WEIGHING SYSTEM BASED ON THE Internet of Things (IoT) ***(2026:50 Pages, Figures + Tables + References + Attachment)***

ALSYA AMANDA PUTRI

062330320612

ELECTRICAL ENGINEERING

STUDY PROGRAM OF ELECTRONICS ENGINEERING

STATE POLYTECHNIC OF SRIWIJAYA

The process of weighing natural rubber at the farmer and collector levels is still largely done manually, which can lead to data recording errors and inefficiencies in managing the weighing results. The purpose of this report is to design an integrated RFID-based Internet of Things (IoT) rubber latex weighing system using an ESP32 microcontroller, a 350 kg loadcell sensor, an HX711 module, an RC522 RFID module, and a 16x2 I2C LCD. Weighing data is automatically sent to Google Spreadsheets via a Wi-Fi connection after the farmer's RFID card is successfully read. Test results show a sensor error rate of less than 1% for loads between 50 and 300 kg, the RC522 RFID module successfully read all cards with a 100% success rate at a distance of 4.5 cm, and the data was successfully saved automatically to Google Spreadsheet. These test results prove that the Internet of Things (IoT)-based RFID-integrated rubber latex weighing system functions effectively as intended, thereby simplifying the weighing process and the recording of weighing data.

Keywords: Loadcell, RFID RC522, ESP32, Internet of Things, Google Spreadsheet