

ABSTRAK

Untuk menjaga kualitas barang selama proses pengiriman, pemantauan dan pengendalian telah dilakukan. Lebih dari itu posisi kendaraan dilakukan pelacakan menggunakan GPS. Namun, pemantauan konvensional dan pengendalian suhu dan kelembaban dilakukan secara manual. Selain itu, pengukuran yang tidak akurat selama proses pengiriman mempengaruhi barang terutama untuk paket barang dan minuman. Pelacakan yang tidak akurat telah berkontribusi sebagai salah satu faktor yang menyebabkan kendaraan kehilangan kendali. Untuk mengatasi keterbatasan ini, mengintegrasikan proses pengiriman seperti suhu, kelembaban, pelacakan dan sistem pelacakan diusulkan berdasarkan Internet Things (IoT).

Sistem ini dilakukan dengan menggunakan Arduino Uno, RFID MFRC522, GPS Neo6M, DHT11 dan RTC DS1307. Kinerja sistem telah memantau kelembaban dan suhu dengan benar dan kami menggunakan sistem pelacakan jarak jauh menggunakan Neo6M berdasarkan IoT. Hasil pengukuran data dikirimkan ke Clouduino melalui jaringan internet setiap saat. Selanjutnya pengukuran dan pelacakan realtime divisualisasikan ke Web menggunakan API Google Maps. Hasil kinerja menunjukkan bahwa dalam dua perlakuan percobaan, seperti pengukuran statis dan mobilitas, menunjukkan sistem telah dirancang dengan baik.

Pada pengukuran statis, nilai rata-rata interval pengiriman data adalah 5,75 detik dari nilai interval yang dirancang sebesar 5 detik, nilai rata-rata penyimpangan dari interval waktu pengiriman data adalah 0,75 detik, serta rata-rata delay antara pengiriman dan penerimaan data adalah 0,3 detik. Sedangkan pada pengukuran dinamis, nilai rata-rata interval pengiriman data adalah 6,22 detik dari nilai interval yang dirancang sebesar 5 detik, nilai rata-rata penyimpangan dari interval waktu pengiriman data adalah 1,22 detik, serta rata-rata delay antara pengiriman dan penerimaan data adalah 2,31 detik.

Kata Kunci- Monitoring, Suhu, Kelembaban, SIM800L, IoT.

ABSTRACT

To maintain quality of goods among shipment process, monitoring and controlling is performed. Moreover, position of the vehicles is performed by GPS tracking. However, conventional monitoring and controlling temperature and humidity is done manually. Moreover, inaccurate measurement during shipment process is affected to the goods quality especially for goods and beverages packets. Inaccurate tracking has contributed as one factor which causes vehicle lost in control. To addressing these limitation, integrating shipment process such as temperature, humidity, tracking and tracking system are proposed based on Internet of Things (IoT).

The systems are conducted by uses Arduino Uno, RFID MFRC522, GPS Neo6M, DHT11 dan RTC DS1307. The system performance has monitored humidity and temperature properly and us range tracking system is conducted using Neo6M based on IoT. Data measurement result are delivered onto Clouduino over Internet network at any time. Therefore realtime measurement and tracking are visualized onto Web using API Google Maps. The performance result shows that within two experiment treatments, such as static and mobility measurements, the propose system are performed well.

In the static measurements, the average value of interval of data transmission was 5,75 seconds from the designed value of interval was 5 seconds, the mean value of the deviation from the interval of data transmission was 0,75 seconds, and the average delayed time data sent and the data received were 0,3 seconds. While at dinamic measurements, the average value of interval of data transmission was 6,22 seconds from the designed value of interval was 5 seconds, the mean value of the deviation from the interval of data transmission was 1,22 seconds, and the average delayed time data sent and the data received were 2.31 seconds.

Keyword- Monitoring, Temperature, Humidity, SIM800L, IoT.