INTISARI

Jumlah inkubator bayi yang harus dimonitor tidak sebanding dengan jumlah tenaga kesehatan di ruang PICU dan NICU rumah sakit sehingga kinerja tenaga kesehatan tidak efektif dan efisien. Oleh karena itu diperlukan sistem sentral monitoring inkubator bayi berbasis *Internet of things* (IoT) terintegrasi dengan HP Android dan *raspberry* melalui jaringan internet. Sehingga kinerja tenaga kesehatan dalam memonitor data pada inkubator bayi lebih efektif dan efisien.

Piranti yang digunakan D1 mini *weMos*, oled, *loadcell*, DHT22, HP Android, *raspberry* dan LCD monitor. Sistem integrasi ini berjalan satu arah, dari masing-masing inkubator bayi mengirimkan paket data ke server kemudian diteruskan menuju HP Android dan *raspberry* Pi3 selanjutnya data ditampilkan pada LCD monitor sebagai *dedicated alert monitoring* untuk tenaga kesehatan.

Hasil pengamatan, percobaan dan pengukuran menunjukkan bahwa sistem integrasi ini dapat bekerja lebih efisien. Rangkaian terkoneksi dengan jaringan internet, data inkubator bayi melalui aplikasi sentral monitoring dapat diakses dimanapun dan kapanpun berada. Pengukuran inkubator bayi 1, pada sensor *loadcell* dengan pembanding anak timbangan ukuran 3kg, 2kg, 1kg, 0,5kg, 0,2kg, 0,1kg didapat kesalahan pengukuran 0,67%, 2%, 9%, 0%, 5% dan ketetapan akurasi 99,33%, 98%, 91%, 100%, 95%, pada sensor suhu didapat nilai kesalahan 0,50% dan ketetapan akurasi 99,5% dan pada sensor kelembapan didapat nilai kesalahan 0,24% dan ketetapan akurasi 99,76%. Pada pengukuran inkubator bayi 2, pada sensor *loadcell* dengan pembanding anak timbangan ukuran 3kg, 2kg, 1kg, 0,5kg, 0,2kg, 0,1kg didapat nilai kesalahan pengukuran 4,5%, 0,5%, 1%, 2%, 5% dan ketetapan akurasi 95,5%, 99,5%, 99%, 98%, 95%, pada sensor suhu didapat nilai kesalahan 0,51% dan ketetapan akurasi 99,49%, pada sensor kelembapan didapat nilai kesalahan 0,29% dan ketetapan akurasi 99,71%. Sedangkan pengukuran inkubator bayi 3, pada sensor *loadcell* dengan pembanding anak timbangan ukuran 3kg, 2kg, 1kg, 0,5kg, 0,2kg, 0,1kg didapat nilai kesalahan pengukuran 3%, 6%, 0,9%, 4%, 5% dan ketetapan akurasi 97%, 94%, 99,1%, 96%, 95%, pada sensor suhu didapat nilai kesalahan 0,82% dan ketetapan akurasi 99,18%, pada sensor kelembapan didapat nilai kesalahan 0,185% dan ketetapan akurasi 99.66%.

Kata Kunci: Inkubator Bayi, Sentral Inkubator Bayi, Sentral Monitoring Inkubator Bayi, Internet of Things

ABSTRACT

The number of baby incubators that must be monitored is not proportional to the number of health workers in the PICU and NICU rooms of hospitals so that the performance of health workers is not effective and efficient. Therefore, a central system for monitoring baby incubators based on the Internet of things (IoT) is needed that is integrated with Android and raspberry cellphones through the internet network. So that the performance of health workers in monitoring data on baby incubators is more effective and efficient.

The devices used are D1 mini weMos, oled, loadcell, DHT22, Android cellphone, raspberry and LCD monitor. This integration system runs in one direction, from each baby incubator sending data packets to the server then forwarded to the Android cellphone and raspberry Pi3 then the data is displayed on the LCD monitor as dedicated alert monitoring for health workers.

The results of observations, experiments and measurements show that this integrated system can work more efficiently. The circuit is connected to the internet network, baby incubator data through a central monitoring application can be accessed anywhere and anytime. Measurement of the baby incubator 1, on the loadcell sensor with a comparison of weights measuring 3kg, 2kg, 1kg, 0.5kg, 0.2kg, 0.1kg, the measurement error is 0.67%, 2%, 9%, 0%, 5% and accuracy determination 99.33%, 98%, 91%, 100%, 95%, on the temperature sensor the error value is 0.50% and the accuracy determination is 99.5% and on the humidity sensor the error value is 0.24% and the accuracy determination 99.76%. In the measurement of the baby incubator 2, on the loadcell sensor with a comparison of 3kg, 2kg, 1kg, 0.5kg, 0.2kg, 0.1kg weights, the measurement error values are 4.5%, 0.5%, 1%, 2% , 5% and accuracy 95.5%, 99.5%, 99%, 98%, 95%, on the temperature sensor the error value is 0.51% and the accuracy determination is 99.49%, on the humidity sensor the error value is 0 .29% and 99.71% accuracy determination. While the measurement of the baby incubator 3, on the loadcell sensor with comparison of weights measuring 3kg, 2kg, 1kg, 0.5kg, 0.2kg, 0.1kg, the measurement error values are 3%, 6%, 0.9%, 4%, 5 % and accuracy determination 97%, 94%, 99.1%, 96%, 95%, on the temperature sensor the error value is 0.82% and the accuracy determination is 99.18%, on the humidity sensor the error value is 0.185% and the accuracy determination 99.66%.

Keywords: Baby Incubator, Baby Incubator Central, Baby Incubator Monitoring Center, Internet of Things