

## INTISARI

Dalam sektor pertanian masih banyak petani jamur yang melakukan pembudidayaan secara manual. Faktor lingkungan yang mempengaruhi pertumbuhan jamur tiram diantaranya adalah suhu dan kelembaban. Terdapat penelitian yang menjaga suhu dan kelembaban pada kumbung jamur tiram menggunakan Zelio Smart Relay. Zelio ini mengontrol keluaran aktuator secara otomatis berdasar suhu dan kelembaban yang terjadi, namun sistem kendali dalam penelitian tersebut masih bersifat lokal. Oleh karena itu pada penelitian ini dibuat sistem yang dapat melakukan setting, monitoring dan logging secara jarak jauh.

Sistem jarak jauh yang dibuat adalah pengembangan dari metode sistem kendali lokal Zelio tersebut. Pengembangan ini adalah berbasis Raspberry Pi 3 melalui GUI. Sistem memiliki empat menu yaitu menu utama, setting, monitoring dan logging. Menu utama untuk membuka submenu. Dalam menu setting, terdapat pengaturan nilai setpoint suhu dan kelembaban, kondisi on/off aktuator, pembacaan setpoint sistem lokal, dan tombol enable. Menu monitoring akan menampilkan nilai suhu dan kelembaban, serta status aktuator sekarang berdasar pada interval waktu. Dalam menu logging, terdapat pilihan interval logging data, penyimpanan data secara otomatis dalam format csv, fasilitas untuk membuka file csv, dan menampilkan plot dalam bentuk grafik.

Sistem jarak jauh ini telah berhasil diimplementasikan dan diuji. Komunikasi pertukaran data secara jarak jauh antara Raspberry Pi dan Zelio menggunakan jaringan LAN atau TCP/IP berhasil dilakukan. Dari pengujian, sistem berhasil menjalankan fitur dalam menu setting yaitu dapat mengatur nilai setpoint suhu dan kelembaban, mengatur kondisi on/off aktuator, menampilkan setpoint sistem lokal dan mengatur kondisi on/off tombol enable dari GUI. Dimenu monitoring, sistem dapat menampilkan nilai suhu dan kelembaban, serta status aktuator sekarang berdasar pada interval waktu 5, 10 dan 15 detik. Dimenu logging, data berhasil disimpan dalam format csv berdasar pada interval logging 5, 15 dan 20 data. Penamaan file otomatis berdasar tanggal berhasil dilakukan, file csv berhasil dibuka, dan berhasil menampilkan plot dalam grafik.

Kata Kunci: Setting, Monitoring, Logging, GUI, Raspberry Pi

## ABSTRACT

In the agricultural sector there are still many mushroom farmers who do manual cultivation. Environmental factors that influence the growth of oyster mushrooms include temperature and humidity. There is a research that maintain the temperature and humidity in oyster mushrooms' greenhouse based on Zelio Smart Relay. This Zelio automatically controls the actuator output based on the temperature and humidity that occurred at that time, but the control system in that research is still a local system. Therefore, this research created a system that can do remote setting, monitoring and logging.

The remote system created was the development of Zelio's local control system method. This development is based on Raspberry Pi 3 through a user-friendly GUI. The system has four menus, namely the main menu, setting, monitoring and logging. The function of main menu is to open the submenus. In the setting menu, there are some setting that can be done, those are set point temperature and humidity setting, on/off actuator condition setting, enable button setting so that the system can be set from the local/GUI, and also local system set point reading. The monitoring menu will display temperature and humidity values, as well as current actuator status based on time interval. In the logging menu, data can be stored automatically in csv format based on interval logging data, there is also a facility to open csv files, and to display plot in graphic.

This remote system has been successfully implemented and tested. Communication of remote data exchange between Raspberry Pi and Zelio using LAN or TCP / IP networks was successfully carried out. From the testing, the system managed to run the features in the setting menu which is able to set the temperature and humidity set point values, set the on/off condition of the actuator, display the local system set point and set the on/off condition of the enable button in the GUI. In the monitoring menu, the system can display current temperature and humidity values, and current actuator status based on 5, 10 and 15 seconds time intervals. In the logging menu, the data were successfully saved in csv format based on 5, 15 and 20 data logging intervals. Automatic file naming based on date was successfully done, the csv file was successfully opened, and data was successfully displayed in graphical plot.

Keywords: Setting, Monitoring, Logging, GUI, Raspberry Pi