CASE STUDY

Portable Monitoring Drying Of Misai Kucing (Orthosiphon Aristatus) System

Author(s)
Muhammad Effendy
Mohd Farid Woo

NI Product(s) Used
LabVIEW, CompactRIO

Category
Industrial Machinery & Control;
Electronics & Semiconductor;
Energy;
RF, Wireless & Mobile Communications;

The Challenge:
Creating a portable system to monitor the drying of Misai Kucing to preserve and sustain its best quality at desired temperature.

The solution:
Using LabVIEW Data logging as the graphical development environment that integrates with NI CompactRIO as a controller to process the raw data, thermocouple used to measure surface of the solar panel, relay used to switch on or off with respect to temperature by the thermocouple, high voltage solar panel used to measure voltage generated and heating coil is used to heat up Misai Kucing at desired temperature.

Who Are We:
Virtual Instrument & System Innovation (VISI) is a Malaysia-based NI Alliance Partner (Silver) that specializes in engineering system developer and integrator. We build customized engineering solutions based on specific and individual user requirements and specifications. To date, we have built and deliver various industrial automation, remote monitoring and test & measurement systems nationwide. Our core competency is focusing on utilizing software and hardware tools from National Instruments (NI). With these skills and competency, VISI has successfully penetrated several key industries including Marine & Offshore, Manufacturing, Aerospace, Energy and R&D.

System Overview:
The system is using LabVIEW software, an integrated and graphical development environment. By taking the advantage of the unrivaled performance and flexibility of the CompactRIO platform which improves the way of designing and deploy in advanced of control and monitoring.

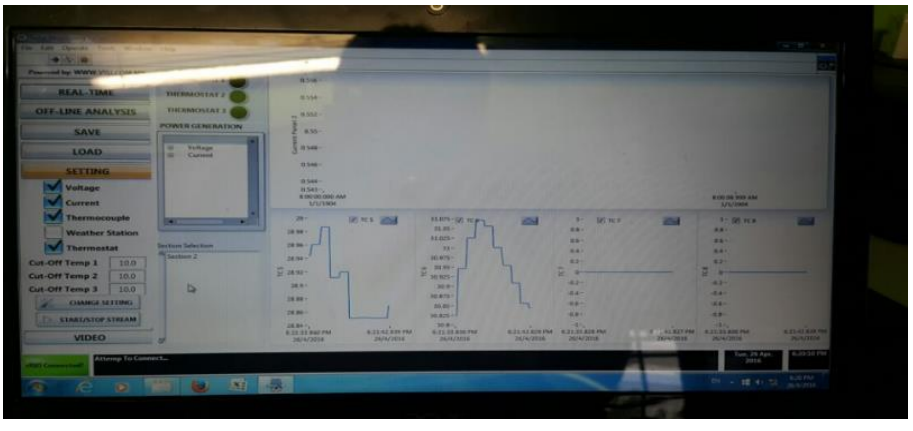

Figure 1: Software User Interface

CASE STUDY

Drying of Misai Kucing System is composed of:

- **Thermocouple** – 16 channel K type thermocouples was used to measure the temperature via surface of solar panel as the main source power.
- **Solar Panel** – Solar panel is the source of power and high voltage as an approach of green technology and as an effective method to preserve misai kucing at its best quality.
- **Relay** – Relay is used to switch on or off with respect to temperature by the thermocouple to heat up the misai kucing plant at desired temperature.
- **Heating Coil** – Heating coil will be turn on by relay if the temperature is less than 40 degrees Celsius as the drying temperatures will also affect the metabolites concentration of the dried leaves of misai kucing extracts.
- **DC Current Transducer** - DC Current Transducer is a device that converts DC signals into analog signals used to measure the DC current flow from solar panel.
- **CompactRIO** – CompactRIO platform is the main controller of the system which programmable with LabVIEW software and can be integrated with other on-board subsystems. CompactRIO used is NI cRIO-9114 which contain of NI module 9214 for the thermocouple, Module NI 9225 for the high voltage Solar Panel, module NI 9205 for the DC Current Transducer to measure DC current flow from solar panel and module NI 9472 for the outsource 24v relay.

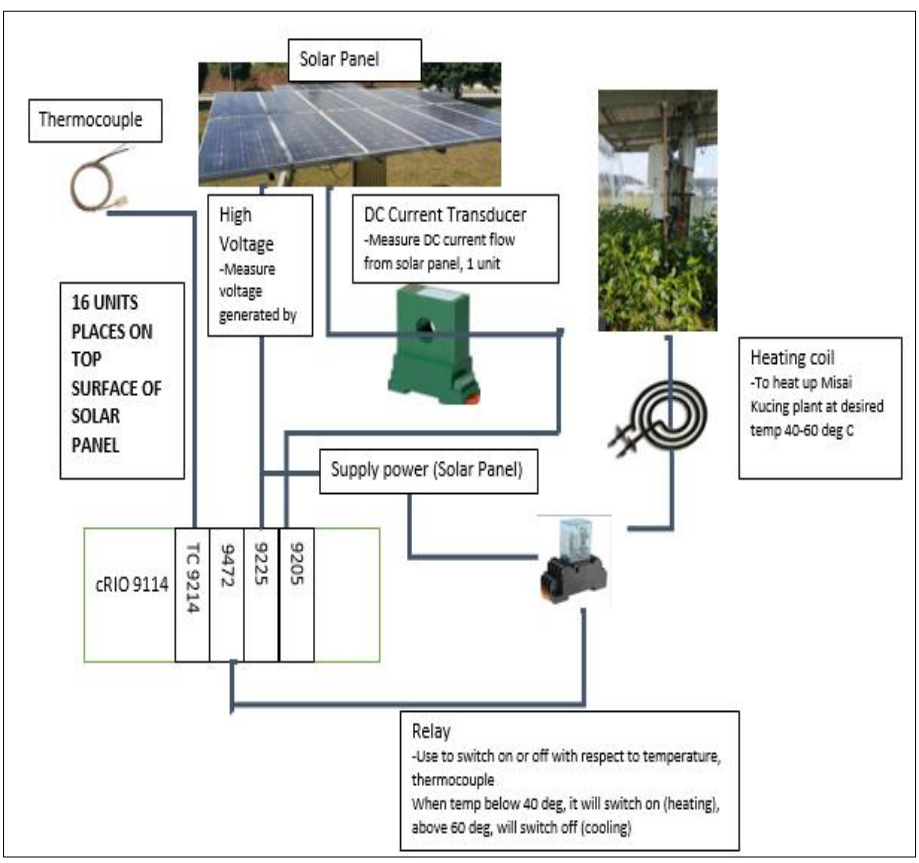

Figure 2 : System Architecture

Conclusion

Overall, LabVIEW and the CompactRIO platform have helped us achieve all projects we have set out to do. This is especially impressive since our demands tend to change throughout the development.

We try to plan everything, but sometimes that is just not possible, and the flexibility of LabVIEW and CompactRIO is a great asset because we can iterate on designs without scrapping all our previous efforts.