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The Newsletter for PC-Based Data Acquisition and Control
Issue 239, August 2018

Welcome to Monitor, the data acquisition newsletter. Any comments or questions email monitor@windmillsoft.com.

You can download this issue as a pdf file from <http://www.windmill.co.uk/monitor/monitor239.pdf>.



Contents

- * [Measuring moisture absorption of shells for biofuels](#)
- * [Your Data Acquisition Questions Answered](#)
- * [DAQ Exhibitions and Conferences](#)
- * [Data Acquisition News Round-Up](#)

Measuring moisture absorption of shells for biofuels

Web link: windmill.co.uk/absorption-biofuels-measuring.html

To try to stem global warming, the world is moving to renewable energy. One source of this is from biomass - fuel that is developed from organic materials.

Residues from forest field processing can be used for biomass, and this is increasingly being used in developing countries.

Researchers in Nigeria and the USA are investigating the energy properties of the shells from trees used as cash crops. Three types of tree were studied - Rubber, Bush Mango and Achi. Rubber is a perennial plantation crop. Bush mango has a wide range of usage with most important product being processed as seed cake, which is widely used in soups and stews in West and Central Africa. Achi is used for food and medicine. The edible seed is used as a thickener in soup preparation



The study wanted to quantify the energy related characteristics of these residues, and their moisture absorption characteristics.

To determine the rate of moisture sorption, the scientists placed a thin layer of the samples (100-150 g) in a wire mesh basket hung from a digital weighing

balance (Model PM 4600, [Mettler-Toledo](#)). Sample masses were monitored and continuously recorded by Windmill software on a computer at 5 minute intervals until equilibrium was reached, depending on the temperature and relative humidity of the conditioned air entering the chamber. Windmill ran on a personal computer to which the weighing balance was connected. The experiment was complete when the mass of sample did not change by more than 0.01 g within a span of one hour.

The scientists concluded that the Bush mango shell had the most favourable energy properties. However, the shells should be used soon after collection to reduce moisture absorption.

More Information

Find out how to [interface a Mettler Toledo balance to a PC](#)

Egbu CP, Simonyan KJ, Fasina O. 2018. Energy properties of non-timber forest tree shell residues for fuel. CIGR Journal, 20(1).

Your Data Acquisition Questions Answered

Question

As we use the Microlink 851 data acquisition and control unit, we keep spotting more ways it can improve how we track stuff here. I have a 12 V relay currently being used to switch on/off power to heaters. Could I run a wire loop to the 851 to monitor the on/off state of this relay, or is 12 V too high a current?



Answer

You can feed 12 V DC into one of the digital output channels on the Microlink 851. Windmill software will show "On" when the voltage is high and "Off" when it is low. You can change the words On and Off to some other values if you wanted in the SetupIML software.

The Microlink 851 unit offers data acquisition and control over Internet and Ethernet. It provides 16 analogue inputs, 32 digital inputs/outputs and 8 counters, and lets you measure, amongst other things, temperature, humidity, strain, pressure and pH. The 851 unit is available via our [on-line shop](#) or by contacting sales@windmill.co.uk. For full details see <https://www.windmillsoft.com/daqshop/acquisition-control.html>

Data Acquisition Exhibitions and Conferences

Our quarterly update of data acquisition and control exhibitions around the world.

Automation Expo

29 August - 1 September

Mumbai India

Automation and instrumentation exhibition.

automationindiaexpo.com

Industrial Automation Show

19-23 September

Shanghai China

Industrial automation, electrical systems, robotics and IT solutions.

industrial-automation-show.com

Electronics & Instrumentation

18-20 September

St Petersburg Russia

Electronics, instrumentation and automation exhibition

radelexpo.ru/en/

Control - Tech

25-27 September

Poland

Industrial measuring technology and non-destructive testing.

<https://www.targikielce.pl>

Automation

1-5 October

Brno Czech Republic

Part of the International Engineering Fair.

targikielce.pl

Testing and Control

23-25 October

Moscow Russia

Test, control and measuring equipment.

testing-control.ru

DAQ News Round-up

Welcome to our round-up of the data acquisition and control news. If you would like to receive more timely DAQ news updates then follow us on [Twitter](#) - [@DataAcquisition](#) - or grab our [rss feed](#).

Fleet of robots maps ocean fronts

For the first time ever, a section of a major open-ocean front was mapped with high resolution using a controlled fleet of dozens of autonomous robots.

Source: SCUBA Travel

<https://news.scubatravel.co.uk/>



How paper batteries can power internet-of-things sensors

By integrating bacteria into paper batteries, researchers create a

cheap, sustainable way to power billions of sensors and devices.

Source: IEEE Spectrum

<https://spectrum.ieee.org/>

Drone sensor market to increase by 24% a year

Due to the high demand for drones in end-user industries such as defence and precision agriculture.

Source: Markets and Markets

<https://www.marketsandmarkets.com/>

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<http://www.windmill.co.uk/monitorindex.html>

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