Welcome to Monitor, the data acquisition and control newsletter. Don't forget that as a thank you for subscribing you can download our data logging software from http://www.windmill.co.uk/jsarrpsrr.htm.

In this issue: how automated data collection helps aquaculture research, getting data via I2C and our quarterly roundup of the measurement and control exhibitions - the Excel Corner returns next month.

You can download Monitor as a pdf file from http://www.windmill.co.uk/monitor/monitor212.pdf.

Contents

Measuring Concentrations of Picoplankton in Shellfish Aquaculture

Web link: http://www.windmill.co.uk/measuring-concentration.html

The smallest plankton - picoplankton - is one of the most abundant plankton in the sea. Although very small (less than 2 micrometres) it provides an important contribution to the food and growth of shell fish like edible mussels.
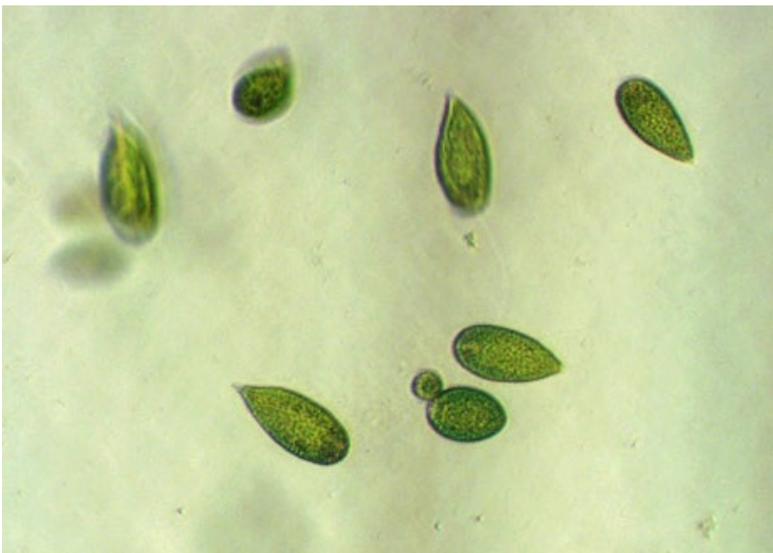
Phytoplankton by Krengefors (CC BY-SA 3.0)

In a paper published in this month's *Marine Biology* journal, scientists from Canada and France predicted that without this picoplankton the edible mussels would be nearly 30% smaller. They used Windmill Software as part of their research to reach this conclusion.

Mussels are grown commercially on 2 m long plastic sleeves suspended from

longlines in areas like St Peter's Bay in Canada. The researchers, lead by Remi Sonier of Fisheries and Oceans Canada, removed mussels and took water samples from the bay. Back in the lab they placed these into chambers with a flow of water.

Each chamber was equipped with a fluorometer (Turner Designs' CYCLOPS 7 submersible sensor) connected to a Microlink 751 data acquisition controller. They were measuring fluorescence to learn how much chlorophyll was in the water, which is a measure of phytoplankton levels.

Windmill software provided a quasi-real-time (5 second delay) graphical display of fluorescence. After an hour, the scientists turned off the water flow and monitored the decline of fluorescence - and hence the decline of phytoplankton - over time on the computer screen.

Microlink 751 data logging and control unit with submersible fluorometer

Windmill helped the researchers determine the concentration of the pico-phytoplankton and the larger nanoplankton that was in the water to start with and that that was consumed by the mussels.

Shellfish aquaculture is an industry dependent on natural resources - mainly phytoplankton - and the ability of the marine environment to replenish itselft in a sustainable way. This research provides new information on the value of picoplankton in mussel acquaculture.

Further Reading

The Microlink 751 and Windmill software is available from our shop for just £295 at http://www.windmillsoft.com/daqshop/daq-usb.html

You can read the original research at Picophytoplankton contribution to *Mytilus edulis* growth in an intensive culture environment, Marine Biology April 2016, 163:73.

Windmill Question: How to read I2C Data?

Web link: http://www.windmill.co.uk/i2c.html

Question

I have a project that gives me I2C data which I would then like to log using Windmill 7. Please could you detail what I would require to make the I2C data suitable for the software to read? Many thanks.

Answer

The I2C bus is a serial communications protocol using just 2 wires. You would need an I2C to RS232 converter. You should then be able to log

data using Windmill 7. We have an example of [product testing over IC2 here](#).

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](#).

Underwater Robots Make Independent Decisions
Linking multi-sensor systems aboard an AUV (autonomous underwater vehicle) means the vehicle can independently make decisions about what action to take next - such as to change direction to follow a shoal of squid.
Source: SCUBA News
http://news.scubatravel.co.uk/

Flexible and transparent pressure sensors can wrap round fingers
A transparent, bendable and sensitive pressure sensor has been developed by Japanese and American teams.
Source: Eureka Alert
http://www.eurekalert.org/

Photonic pressure sensors beat mercury-based
New photonic pressure sensor compares well against traditional mercury-based method, outperforming it at low pressure ranges.
Source: NIST
http://www.nist.gov/

Engineering software market to grow
According to Reports Web, the market for software used in design or manufacturing automation is set to grow considerably between now and 2025.
Source: Reports Web
http://www.reportsweb.com/

Magnetic memory chips could use one million times less energy
Engineers have shown for the first time that magnetic chips can actually operate at the lowest fundamental energy dissipation theoretically possible under the laws of thermodynamics.
Source: Next Big Future
http://nextbigfuture.com/

Data Acquisition Exhibitions and Conferences

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

Sensor + Test
10-12 May 2016
Nuremberg Germany
A comprehensive overview of system expertise for measuring, testing and monitoring tasks in all industries.
[sensor-test.de](#)

National Manufacturing Week

11-13 May 2016
Sydney Australia
New products and technologies across the entire range of industry
sectors.
nationalmanufacturingweek.com.au

International Fair of Technique and Technical Achievements

16-20 May 2016
Belgrade Serbia
Factory of the future and industrial automation.
tehnika.talkb2b.net/en

Balttechnika

18-20 May 2016
Vilnius Lithuania
Industrial equipment and materials, industrial robots, electronics and
automation.
http://litexpo.lt/

International Engineering Fair

24-27 May 2016
Nitra Slovakia
Engineering fair of machinery, tools, equipment and technologies.
agrokomplex.sk/en/

ICA 2016

2-4 August 2016
Kuala Lumpur Malaysia
Instrumentation, control and automation technology exhibition.
icaexpo.com.my

MLAB 2016

2-4 August 2016
Kuala Lumpur Malaysia
Laboratory instrumentation, equipment, automation and services.
mlabexpo.com.my

For previous issues by subject see
http://www.windmill.co.uk/monitorindex.html

DOWNLOAD DATA ACQUISITION SOFTWARE
As a thank you for subscribing we offer you the ComDebug data logging and
Com port trouble-shooting software. Log data over RS232, RS422, RS485 or
Modbus. Also included is a month's trial of the Windmill 7 logging, charting and
control programs. To download go to http://www.windmill.co.uk/jsarrpsrr.htm

SUBSCRIBING OR CANCELLING SUBSCRIPTION Visit
http://www.windmill.co.uk/newsletter.html and add or remove your e-mail
address.

Windmill Software Ltd, PO Box 58, North District Office,
Manchester, M8 8QR, UK
Telephone: +44 (0)161 833 2782
Facsimile: +44 (0)161 833 2190

E-mail: monitor@windmillsoft.com
http://www.windmill.co.uk/
http://www.windmillsoft.com/
Google+