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The Newsletter for PC-Based Data Acquisition and Control
Issue 189, April 2014

Welcome to our April issue. This month we've stories on detecting pollution from aquaculture and how to collect readings from force gauges.

I hope you find Monitor useful - if you wish to download our free data acquisition software please do so from http://www.windmill.co.uk/jsarrpsrr.htm. Should you wish to remove yourself from our mailing list though, go to http://www.windmillsoft.com/daqshop/Monitor_Newsletter.html

You can download Monitor as a pdf file from http://www.windmill.co.uk/monitor/monitor189.pdf

Any questions, comments or data acquisition stories, contact monitor@windmillsoft.com or get in touch via Twitter or Google+.

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Windmill Software helps detect Fish Farm Pollution

Web link: http://www.windmill.co.uk/aquaculture-particulate-mapping.html

Salmon fish farms are proliferating. The open nature of many such aquaculture systems impact the surrounding sea, not least by releasing particles of organic matter.

One approach to this problem is to farm shellfish like mussels or oysters nearby to feed on the organic particles. In Asia this is a centuries old practice, but is it always a good idea?

Farmed Salmon release organic particles into the sea, polluting the waters. Excessive nutrients can contribute to toxic algal blooms which may poison marine animals. The blooms also deplete oxygen which can directly kill sealife.

Researcher Lindsay M Brager has been investigating the potential for this type of *multitrophic aquaculture* in Fundy Bay in Canada.

Brager **mapped the spread of particulate matter** from two salmon farms. She used several sensors, including

- a transmissometer to measure the optical properties of the water,
- a flurometer to measure the chlorophyll a content of particles,
- a CTD to measure Conductivity, Temperature and Depth,
- and a current meter to measure average current speed and direction.

She towed the sensors at undulating depths between 0.5 and 10 m at 2 m sec $^{-1}$. On-board she used Windmill software to combine the sensor data stream with simultaneous GPS readings.

After data collection Brager produced contour maps to summarise and observe spatial patterns of particulate matter concentrations.

Fundy Bay has strong tidal currents which mix the water. The Windmill software helped Brager determine that suspended solids rarely reached levels outside the natural range of concentrations existing in that area. This conflicts with research in other regions. Her results showed that concentrations of particulates around salmon farms vary greatly depending upon where the farms are located. In areas where the organic matter from fish farms was widely dispersed, the co-culture of bivalves and fish wouldn't deal with the waste stream.

The Windmill software to collect GPS and other measurements is available for £50 from our web site.

Further Reading:
Brager, L. M. (2013). Spatial and Temporal Dynamics of Suspended Particulate Matter Surrounding Finfish Farms on the East and West Coasts of Canada.

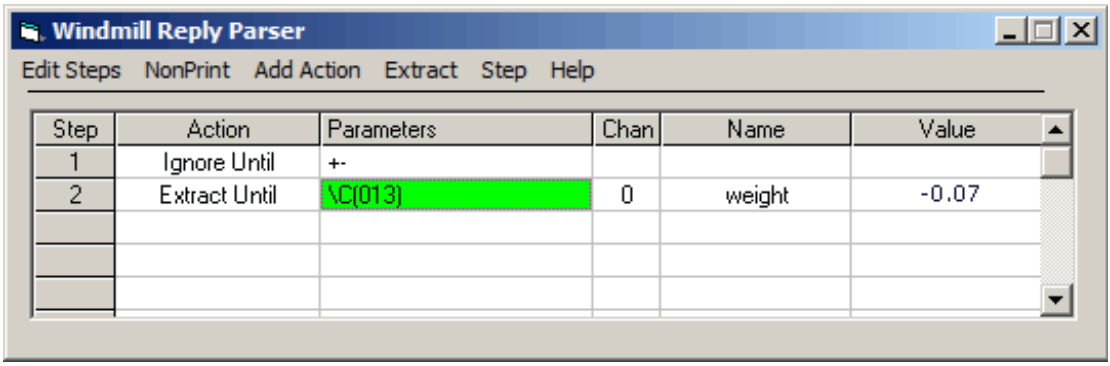
Questions on Using Windmill: Excel

Question: What settings to use with a Mark-10 Force Gauge?

> Attempting to find a parse string that works for our new Mark-10 Force Gauge. Using ComDebug I got the following string from a "?" prompt.
>
> 1 -
> 2 0
> 3 .
> 4 0
> 5 7
> 6
> 7 013
> 8 010
>
> What would be an appropriate parse that would allow me to log the weight from this gauge?

Answer

> The reply comprises 8 characters: the sign, the reading, a space, carriage return (013) and line feed (010). You could Ignore everything until + or -, then extract until the carriage return. This will give a reading of -0.07 . If the space is always present you could instead extract until space. Use the NonPrint menu to enter the carriage return character. More details are at http://www.windmill.co.uk/driver-mark10-force.html



Data Acquisition Exhibitions and Conferences

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

Smart Automation Austria
6-8 May
Vienna Austria
Trade fair focusing on factory and process automation.
http://www.smart-automation.at/en/vienna/home/

Control
6-9 May
Stuttgart Germany
World's leading trade fair for quality assurance.
http://www.control-messe.de/en/control/

Lab Indonesia
7-9 May
Jakarta Indonesia
Exhibition for laboratory and measurement industries.
http://lab-asia.com/index.php/indonesia

National Manufacturing Week
13-16 May
Sydney Australia
Product zones include process control & instrumentation, automation & robotics, electrical and engineering.
http://www.nationalmanufacturingweek.com.au/

Automatica
3-6 June
Munich Germany
Platform for automation and production-process innovations.
http://www.automatica-munich.com/

Sensor + Test
3-5 June
Nuremburg Germany
For Measuring, testing and monitoring tasks in all industries.
http://www.sensor-test.de/welcome-to-the-measurement-fair-sensor-test-2014/

Renewable Energy and Entec Pollutec
4-7 June
Bangkok Thailand
Pollution control and renewable energy technology exhibition.
http://www.renewableenergy-asia.com/

Factory Automation
19-22 June
Bangkok Thailand
Data acquisition, control systems and software, automation, loggers, electronic instrumentation...
http://www.reedexpo.com/en/Events/3552/Factory-Automation

Labworld China
26-28 June
Shanghai China
For the laboratory, analytical and biotech equipment sector.
http://www.cphi.com/china/networking/lab-equipment-zone

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 Google+ - https://plus.google.com/107072683025496630222/

Wire up hives to keep bees happy and healthy
A do-it-yourself hive, complete with sensors to track temperature, humidity and pollution to keep bees happy and stress-free.
Source: The New Scientist
http://www.newscientist.com/

Tiny wireless sensor alerts users to telltale vapours
Researchers have developed a small electronic sensing device alerts users to the presence of chemical vapours in the atmosphere.
Source: Georgia Tec
http://www.news.gatech.edu/

Mudslides could be predicted with acoustic sensors
Hear that? Acoustic sensors that detect soil movement in slopes prior to landslides may, in future, provide early warnings and help to avoid tragedies.
Source: The New Scientist
http://www.newscientist.com/

Living plant sensors can monitor pollution
MIT researchers embedded carbon nanotube into plants which made them fluoresce in the presence of nitric oxide, thus making them function as a photonic chemical sensor.
Source: Massachusetts Institute of Technology
http://web.mit.edu/

Industrial control statement of cybersecurity principles issued
The statement lists a number of actions that the vendors believe they have a responsibility to take.
Source: National Electrical Manufacturers Association (NEMA)
http://www.nema.org/

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

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

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