March 2010

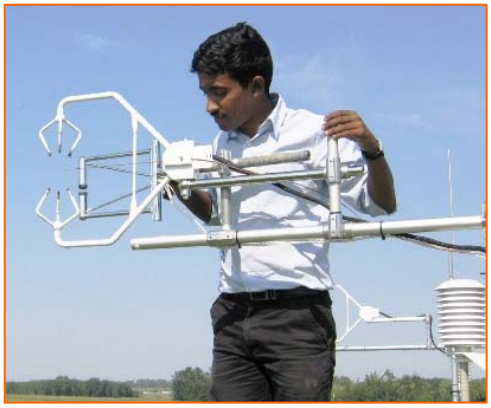
Introducing the Black Globe Sensor for Heat Stress

Environmental factors such as temperature, humidity, and wind may be measured to assess heat stress, which, in severe cases, leads to fatigue, exhaustion and possibly disability or death. Loss of physical and mental efficiency in people occurs under definable degrees of heat stress. The Black Globe's temperature measurement is combined with other parameters to calculate the Wet Bulb Globe Temperature Index (WBGT) sometimes referred to as the Humidex. How much heat stress are YOU under?

Also in this issue we introduce another Elcome Technologies staff member who helps integrate Campbell Scientific systems and provides technical support for our customers; customers like the researchers in Kerala forests who know how much water uptake is occurring in the forest areas by inserting sensors into trees to measure how much sap is flowing inside the tree.

Enjoy this fourth edition. If you have any suggestions or have a project that may benefit other users, please contact Elcome Technologies Pvt Ltd. We are always interested in our clients' projects and sharing these with other Indian users. We also provide training - if you or a colleague is interested in a basic data logger training course in your area, contact us today,

Featured Employee – Alex Mathew, Elcome Technologies Pvt. Ltd



Alex Mathew,
Elcome Technologies Pvt. Ltd

Covering the southern territory for Elcome Technologies is Alex Mathew. Although based in Chennai, Alex regularly travels the entire southern region visiting existing and new customers, installing equipment and performing maintenance.

Joining the team in 2007, Alex received his first experience helping install 8 AWS in West Bengal. Since then he has gained much experience installing systems for HCL, CMMACS, and IGL. Researchers appreciate his vast experience which helps him identify the best solutions for their monitoring challenges. In his spare time, Alex enjoys listening to spiritual words, playing football and learning new technologies.

Meet Elcome's Campbell reps at the following conference:
March 4-6 Pusa Krish Vigyan Mela New Dehli

For more information on how to reach Campbell Scientific in India, please visit the "Contact Us" section of our website

Measuring water consumption of tropical trees in the Western Ghats using Campbell Dataloggers

In a project funded by the Ministry of Environment and Forests, Government of India, scientists at the Kerala Forest Research Institute, Peechi, Kerala, India are measuring the water consumption of dominant species in the moist deciduous forests of the Western Ghats. The experimental plot is located in the Nilambur Forest Division of Kerala where they are using the heat pulse velocity method to measure the sap velocity inside tree trunks. Essentially, temperature sensors and a heating element are inserted into small holes drilled into the tree trunk. A heat pulse causes the sap to rise in temperature. The velocity of this heat pulse is detected by the temperature sensor inserted above the heating element. Sensor measurements and data storage is controlled by a CR10 data logger. Although commercially phased out (CR1000 is latest technology), the CR10 continues to be the backbone of this reliable system providing quality data. Data is downloaded via laptop and subjected to post-processing for determining the flux of water inside the tree. The heat pulse generating system is manufactured by Edwards Industries, New Zealand and is easily interfaced to Campbell Scientific dataloggers. The CR10 is a very versatile logger which can handle a complicated program like this without any data loss.

Dr Jose Kallarackal is the Principal Investigator in this project, assisted by Mr. K.T. Vivek and Mr. Shajeesh Jan.

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Dr Jose Kallarackal inserting the sensors into a tree trunk.

Tree trunk with the heater and temperature sensors inserted into the sapwood.

Campbell Corner – Tip
Accurate equipment makes for quality research data

What does "AutoRange" mean? Amongst several design features which make Campbell Scientific data loggers exceptionally accurate, the auto range ability in programming is one of the most powerful. This feature can be chosen when programming the logger to measure sensors that output a voltage signal. An example to help explain it is, when using a voltmeter to measure battery voltage; most meters have a range option. By turning a dial or pressing some buttons, you change the range of voltage that will be measured, usually 0-10v, 0-50v, or 0-200v. When measuring a AA battery, I know the battery should be around 1.5V when new. By choosing the range closest to 1.5V but slightly higher, I avoid over-ranging the meter and get the best resolution possible.

Many sensors output a voltage signal. If the logger only has one range, every signal is measured over that range. Consider the accuracy or rather, inaccuracy of measuring a AA battery with a voltmeter on a 0-200v range vs 0-2v range. Using the auto range ability, Campbell loggers automatically switch to the best possible range* so that you get optimum resolution and that makes for quality research data.

* See the data logger specifications for exact ranges

Watch for our next issue to be released in June 2010