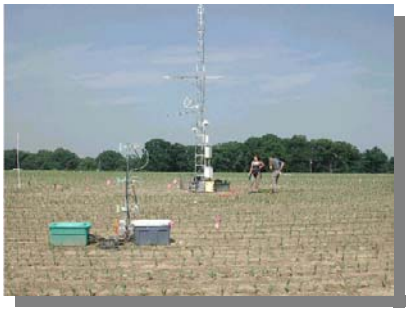
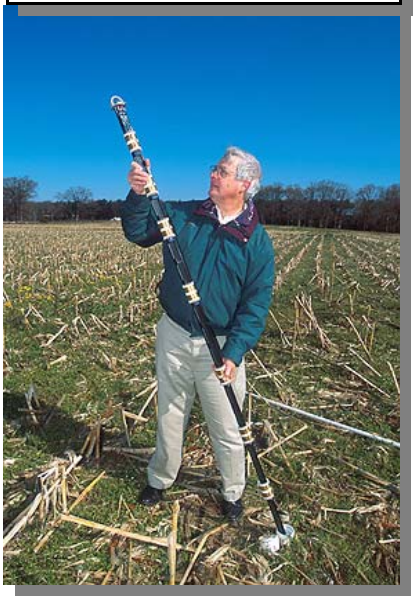
Environment Information Technology

Customer Newsletter - December 2002



Atmospheric monitoring at the OPE3 site. The project involves 60 research groups both nationally and internationally



OPE3 scientist inspects Sentek EnviroSCAN soil probe.

This will be our final newsletter for the year. On behalf of EIT staff I would like to take this opportunity to thank you for your support and business during the year. We extend to you our best wishes for a safe and enjoyable Christmas and New Year period.

Following is a brief history of most recent developments and activities.

In November, 6-8, I was pleased to have the opportunity to attend the First International Symposium on Soil Water Measurement using Capacitance and Impedance held at USDA Beltsville, Maryland, USA. The symposium brought together a small group of the world's leading scientists, technologists and manufactures involved with precision measurement of soil water content for management of irrigation waters. Over two dozen scientific papers and poster displays dealing with technologies used in world irrigation water management were presented. The increasing world population will require more produce from a finite amount of land and irrigation water. Therein lies the challenges to sustainably increase future outputs with fixed inputs.

Presentations included current state of art technologies for point and multi-point measurement of soil water, and advances in sensor precision and accuracy under varying conditions of temperature, salinity and soil types. Applications of these technologies both in research and practice were included.

A field visit to the USDA's OPE3 (**O**ptimising **P**roduction Inputs for **E**conomic and **E**nvironmental **E**nhancement) site provided insight into this multi faceted research project. The project involves 60 international scientific groups collaborating to ' develop process based algorithms and models at various spatial scales to resolve complex environmental and economic issues'. For more info visit http://hydrolab.arsuda.gov/op3/ .

The OPE3 project encompasses remote sensing, water and chemical behavior, atmospheric monitoring and riparian buffer research. Groups involved include USDA, NASA, national and international universities, government instrumentality's and private companies.

The site is the world's most comprehensively instrumented agricultural research site. Soil moisture monitoring alone generates some 13 million data points from a network of 48 Sentek EnviroSCAN multi-level soil moisture probes. Data from these probes is contributing to the understanding of the dynamics of soil water movement and chemical translocation in the environment.

EIT soil moisture telemetry system for USA

In conjunction with Paltin International (Beltsville, MD) we installed a radio based soil moisture monitoring system at the Laurel Park Racetrack. This installation uses EIT telemetry and data recording platform to collect soil water data within a trial site at the track. Soil moisture is continuously measured at four depths within the trial area using Sentek EasyAg soil probes. Information collected will assist the future track and irrigation management.

Lismore City Council Effluent Reuse Irrigation Scheme

We recently completed an upgrade of the EIT telemetry based soil moisture and effluent irrigation scheme in November for Lismore City Council.

Soil moisture is continuously measured in irrigated pasture approx 1.0 km from the site managers' office. For this project we wrote a software program which dynamically links soil data to an Excel spreadsheet via a Direct Data Entry (DDE) routine within the spreadsheet. This spreadsheet based approach allows us to represent the irrigation area graphically as well as dynamically colour code irrigation areas according to real time soil moisture status.

Soil moisture is measured using Streat Aquaflex straps which have proven ideal for long term deployment in a grazed pasture situation. In addition to soil moisture monitoring, the EIT data recording platform collects information of irrigation pump run times, flow volumes and local rainfall.

Hunter Valley Waterwise Field Day

On Wednesday 23rd October we attended a successful field day conducted by NSW Department of Agriculture at Milbrovale Vineyard in the Hunter Valley.

The field day presented information on new legislation to be introduced in the State of New South Wales covering future water resource allocations. The new legislation will cover harvestable rights from surface and ground waters and also include new regulations for on farm storage dams.

Much discussion centered on soil moisture monitoring technologies, efficient irrigation design systems and irrigation scheduling methodologies.

The Hunter Valley is a long established premium wine-growing region in Australia. As with much of the rest of Australia the region is experiencing severe drought conditions at present.

This vineyard is one of the top vineyards in the district and has been using EnviroSCAN soil moisture monitoring systems for irrigation scheduling for the past seven years.

Photo – EIT telemetry display – we were lucky as it was blowing a 30 knot dust storm outside in 40 Dec C heat..

The EIT IPC with contact alarms

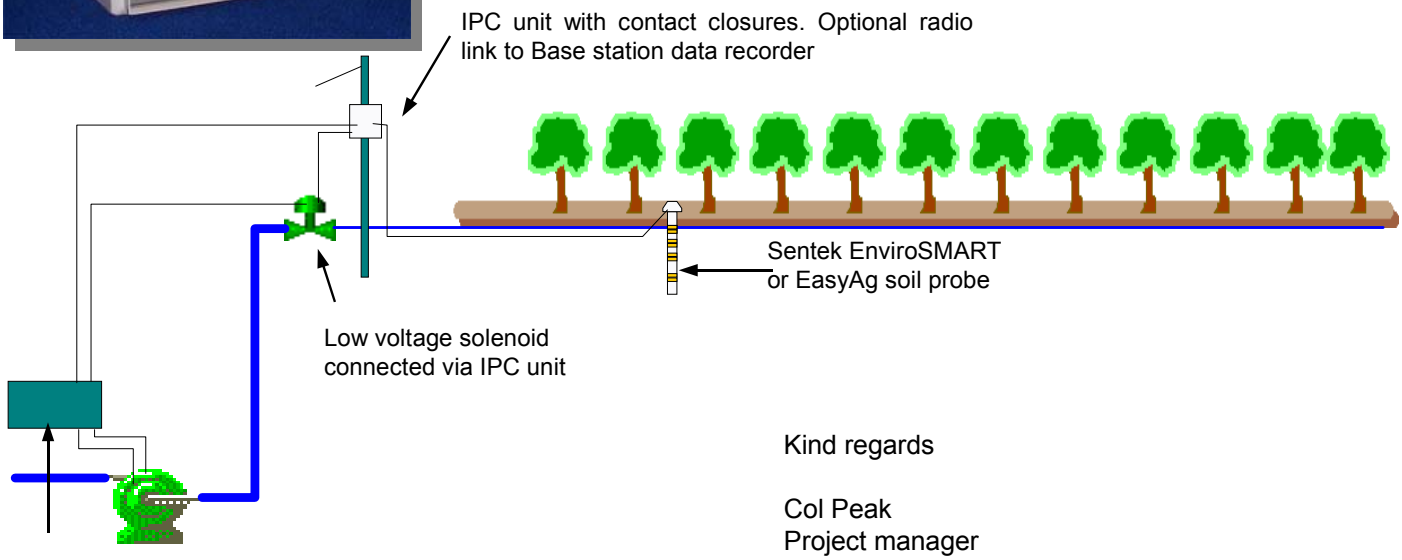
The IPC unit is a programmable device initially designed to collect data from soil sensors (such as Sentek EnviroSMART, EasyAG, Streat Aquaflex and Delta T ML1) and then control data transfer over radio.

In the past I have used IPC as an abbreviation for Intelligent Probe Controller. (A closer look of the fine print of the circuit board defines the unit as an "IPC - Infinite Capability Controller" and is another development my colleague, Dr Rob Hannah).

The IPC will support sensors with analogue, RS 485 and SDI-12 data protocols. Thus it is ideally suited to a very large range of sensors. The IPC also has direct input for solar panels and currently supports a number of radio types.

The IPC / S2 unit provides two contact closures. These contacts will function according to programmed alarms (set points) associated with attached sensors. The IPC can be programmed via a Notebook or PalmPilot. As an example application, let's assume you have a standard timer based irrigation controller and wish to incorporate irrigation scheduling based on soil moisture conditions rather than duration of time periods. In this case you can use the IPC to interrupt a valve operation by wiring the solenoid through the IPC contact closures. Soil moisture probes connected to the IPC will provide the soil moisture values. The IPC may be programmed to only allow the solenoid to activate if the soil moisture is within your desired setpoints. Alternatively the IPC can connect to a warning light and indicate to the irrigation manager an alarm threshold.

If the IPC is linked to the EIT R Tech series data recorder via telemetry then it can also initiate an additional alarm at the recorder or generate an SMS message to your mobile phone advising of alarm condition.



Kind regards

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