

City News

SPRING 2005

No. 8

Introduction

It's my pleasure to introduce this, my first City News since my appointment, and note that its publication coincides with Sensor+Test 2005 in Nuremberg; undoubtedly the biggest event in our exhibition calendar and probably the most important gas sensor show worldwide. I look forward to meeting many of our current and prospective customers during the show early in my tenure.

At Nuremberg this year we are launching a number of significant new products, some of which are included in this newsletter. The enhancements to the MICROceL[®] range, a new oxygen sensor and a reduced power pellistor, provide gas

detector manufacturers with a range of sensors ideal for use in small portable instruments.

Our new PID sensor has been developed in response to the growing need for low level VOC detection and provides manufacturers with a simple and cost effective way to add this capability to gas detectors.

For those who are coming to Nuremberg the City team and I hope to meet as many of you as possible and for those who can't attend I hope this newsletter keeps you up to date with our new developments.

David Baldwin-Evans, Sales and Marketing Director.



New Sensors Enhance MICROceL[®] Range

City Technology is enhancing the MICROceL[®] range of miniature gas sensors with the addition of two important new sensors: MICROceL[®]OX O₂ sensor and MICROpeL[®]40 reduced power pellistor.

MICROceL[®]OX

In developing this sensor we have combined over 28 years' experience in the design and development of gas sensors with radical design concepts to produce an oxygen sensor that is 38% smaller than current 4-Series format sensors. This very significant reduction in size is achieved without any loss in performance or lifetime. The sensor has a minimum-operating lifetime of 24 months.

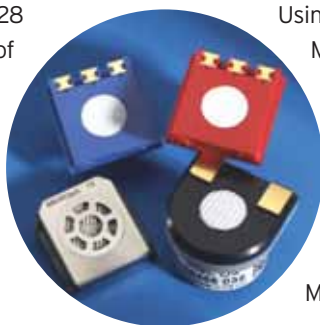
In response to the requirements of gas detector manufacturers, MICROceL[®]OX uses the "industry standard" capillary diffusion barrier so directly measuring the

concentration of oxygen in the atmosphere. The sensor incorporates the innovative IMES[™] (Injection Moulded Electrolyte Seal) mechanism that ensures the highest possible seal integrity is maintained throughout the product life.

MICROpeL[®]40

Using a new design of catalytic bead the MICROpeL[®]40 requires 40% less power than conventional pellistors so reducing consumption from over 250mW to less than 155mW. Like the rest of the MICROpeL[®] range the new sensor is available in 3 versions: the standard MICROpeL[®]40, the MICROpeL[®]40C with enhanced poison resistance and the MICROpeL[®]40M for use in mining applications.

City Technology's complete range of MICROceL[®] sensors (oxygen, carbon monoxide, hydrogen sulphide and combustible



continued overleaf



THE POWER BEHIND
GAS DETECTION

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- Profile on Jonathan Gilby
- City launches new Photoionisation Sensor
- Technology - Photoionisation Detection
- New Addition to Sales and Marketing Team
- City Out & About

IN PROFILE

Jonathan Gilby

With over 24 years of service Jonathan Gilby is currently the longest serving member of staff at City Technology. During these years Jonathan has been involved in almost all aspects of the business and consequently has a huge breadth of knowledge of technology, applications, manufacturing and the marketplace.



Jonathan Gilby -
Director of Quality and Innovation

The company Jonathan joined in February 1981 would be hardly recognisable as the same company today. In those days City Technology was only 4 years old and was still being funded by grants from the Wolfson Institute and external contract work to supplement the revenue generated from the sale a few thousand oxygen sensors per year to a handful of customers. It's almost unimaginable today that in 1981 City had no computers and Jonathan began his career with the company using a slide-rule for calculations.

Before joining City, Jonathan had just completed an Open University degree in Physics and Chemistry which he had studied for whilst working as a science lab technician in one of the largest and most progressive schools in Coventry. His first role at City was working for Bryan Hobbs on a number of oxygen sensor projects before turning his attention to toxic sensor development programmes where he was responsible for developing a 4-electrode CO sensor which met the stringent hydrogen cross sensitivity specification for flue gas analysers.

During his early years with City Jonathan was able to use his personal interest in computing and electronics to help develop the CiTistat which became widely used for testing sensors. This expertise in electronics resulted in Jonathan becoming much more involved in customer support, in particular helping new customers to design electronics to maximise sensor

performance. During this period Jonathan established relationships and became a well-known face (and voice) with many customers around the world.

By the early 1990's Jonathan was working in a market development role and was instrumental in City's entry into both the automotive and medical markets. As Jonathan explains, **"This was a tremendously exciting time for both the company and me personally as it was the first time in 10 years we had entered new markets. Understanding the needs of new customers and delivering sensors to meet these on-time and within budget was often tough, but ultimately satisfying. In one case we went from a concept to a completely new released sensor in only 7 months."**

In his current role as Director of Quality and Innovation Jonathan is promoting the use of modern Quality tools throughout the organisation particularly emphasising the need for visual concern management systems. As he explains, **"It's important in all areas of the company to be able to see at a glance what the issues are, who owns them and what they are doing about it"**.

Jonathan continued, **"As a company we have a goal to deliver innovative, defect free products, on-time and to our customers requirements. Quality is central to the achievement of this and it's the responsibility of everyone in the company not just one department"**.

'New Sensors Enhance MICROcel® Range' continued

gas sensors) offer OEM instrument designers a truly significant opportunity to reduce the size of future gas detectors. Together the four sensors occupy 70% less volume than the current industry standard 4-Series sized sensors. Using the reduced power pellistor provides the option of reducing the size of battery pack or extending operating time before re-charging or replacement of cells.

This size reduction has been achieved without any compromise to performance. All the MICROcel® sensors continue to perform to the very exacting demands of industrial safety and hygiene applications across a wide range of environmental conditions. In fact the small size of the sensors improves some of the performance parameters, notably faster response times.

For further details of the MICROcel® range please email sensors@citytech.co.uk

City launches new Photoionisation Sensor

With the growing requirement to detect a wide range of toxic Volatile Organic Compounds (VOCs) at levels significantly below their LEL (Lower Explosive Limits) PID is emerging as the most suitable technique. The introduction of City's new PID sensor provides OEM instrument designers with a simple, high performance, low maintenance and cost effective solution to this technique.

City Technology's PID sensor uses the standard 7-Series format and utilises a high-energy 10.6eV uv lamp which can easily be removed from the sensor for either cleaning or replacement.

City's PID sensor uses a novel electrode stack incorporating a third electrode - the fence electrode - unlike conventional PID's which utilise only two electrodes (an anode and cathode) for ion collection. The 3-electrode design improves performance and extends lamp operating lifetime.

The fence electrode, which is located in the electrode stack between the anode and cathode, substantially removes the background signal due to photo-ejected electrons from the cathode, and any background that can arise from contamination and condensation on the ionisation chamber walls. By reducing these background effects, the fence electrode improves baseline stability and hence increases the minimum detection limit of the sensor. Additionally, the user does not need to service the lamp or replace the stack as frequently as in other PID cells.

For further details of the PID sensor please email sensors@citytech.co.uk



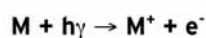
Technology

PHOTOIONISATION DETECTION

The detection of volatile organic compounds (VOCs) at and below their occupational exposure limits is becoming ever more important. Many VOCs have surprisingly low occupational exposure levels (significantly below their LELs) and can present a serious chronic health risk to those exposed.

Photoionisation detectors (PIDs) have been used for some years and provide a broadband but non-selective method of measuring VOCs at low levels in the atmosphere. Improvements in the design of PIDs have meant that portable, relatively low cost instruments are now available resulting in their increased use for workplace monitoring and leak detection.

PIDs operate on the principle that molecules can be broken down into positive ions and electrons if exposed to ultraviolet light of sufficient energy. The molecule absorbs the high energy photons, becomes excited and ejects an electron:



The ions generated are then detected on electrodes in the ionisation chamber.

The energy source used to ionise molecules is a lamp that provides high energy UV light (usually at 10.6eV) which is transmitted into the sensing chamber via a window.

Following ionisation the positively charged particles are collected at the cathode and the electrons at the anode. Neutralisation of the charged particles at the electrodes generates a small electric current called the photoionisation current which is proportional to the number of ions hitting the electrode and hence the concentration of the gas. By amplifying the photoionisation current, the concentration of the gas present in the ionisation chamber can be determined.

Every molecule has an energy at which it can be ionised - its ionisation potential (IP measured in electron volts, eV). Providing that the energy of the lamp is sufficient to ionise the molecules then the gas can be detected. For organic compounds the energy required to ionise the molecule will generally decrease with chain length and the degree of unsaturation of the compound and the signal will thus increase. Functional groups will also affect the PID signal with ketone, ether and sulphide groups being more sensitive than alcohol, aldehyde and alkane groups.

VOCs are common in many workplace environments. Confined space and routine workplace monitoring together with spillage and leak monitoring are the most common uses of PID. Distillation products from oil (petroleum, diesel, fuel oil, paraffin, etc) are the most commonly monitored VOCs but solvents, plasticiser products, paints, refrigerants, etc. can also be detected with PID technology.

New Appointment Strengthens Sales and Marketing Team

David Baldwin-Evans has recently joined City Technology in the role of Sales and Marketing Director.

David started at City in February 2005, bringing with him a wealth of global marketing and sales expertise gained in world class companies such as Ford, Visteon, the BBC and Sony. David gained a BSc Econ from the University of Wales before starting his career at Ford. He joined City from Chubb Electronic Security where he had most recently been UK Sales & Marketing Director, following 3 years in a global marketing role for Chubb plc.

In addition to his responsibilities at City, David is also responsible for the sales and marketing activities for City's sister sensing business, SensoriC, based in Bonn.



David Baldwin-Evans - Sales and Marketing Director

New version of CDROM now available

The latest version of City's CDROM (Vsn 3.0) is now available. Containing all current product data sheets, MSDS sheets and operating instructions the CD is an invaluable reference tool for using City's wide range of sensors.

To receive a copy please email us at sensors@citytech.co.uk

City Out and About

Thank you to everyone who attended the AHR (ASHRAE) show in Orlando in early February. It was our 7th time at AHR and proved to be the busiest yet.

Future events where City will be exhibiting are:

Sensor+Test 2005	10-12 May, Nuremberg, Germany, Hall 7 Booth 725
MICONEX	13-16 September, Shanghai, PR China, Booth A037
AAPEX	1-4 November, Las Vegas, USA
MEDICA	16-19 November, Dusseldorf, Germany
AHR 2006	23-25 January, Chicago, USA

For up to date information and exact booth locations at these events please see our website www.citytech.com

We want your views

We would like to hear what you think of this newsletter. Do you find the content useful and interesting, or does it cover things you already know? Are there any topics that you would like to be covered in more detail?

Whatever your views we would like to know - please forward any comments to Nicola Nye - nicola.nye@citytech.co.uk

e-Newsletter

Issues of the newsletter are available either in print or electronically.

If you would like to receive future issues electronically please inform Nicola Nye - nicola.nye@citytech.co.uk

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