

## Record attendance at our popular Oxfordshire venue

The Conformal Coating Day attracted over 110 attendees and 9 exhibitors. Our thanks to all participants on this successful day and the subsequent issues raised on *smart-e-link*



The use of Conformal Coating has provided benefits to industry for many years either in the high reliability market sector or where products have to deal with extreme environmental conditions. The workshop provided a guide to the use of coatings, their application, material types, selection and reliability. The hands-on session demonstrated some of the simple quality control techniques that are employed to measure and detect coating presence on the surface of the board. The day was balanced between materials, equipment and user views on the use of coating materials. This was a timely event confirmed by the number of attendees.



# Welcome to our newsletter

With the sad demise of the Nepcon Exhibition your committee has been arranging a busy programme of events for the rest of the year. The most recent, our Conformal Coating Day, resulted in a record attendance at the Oxfordshire Conference Centre in Thame with over 110 attendees and 9 exhibitors. Upcoming we have a wide range of seminars and workshops, including an April event in South Queensferry, Scotland; a busy May with two events at the Oxfordshire (the first being a joint event with IMAPS) and an exciting 'Silicon to Package' Workshop at Intel in Ireland. We have proudly announced that the 'Manufacturing Process Improvement' events at three venues in South Africa offer free places to students at University Electronics Departments. We welcome four new members to our busy Technical Committee, ably chaired by Sue Knight. At our most

recent Steering Committee Meeting a decision was taken to support our members attending the NEW, National Electronics Week Exhibition, to be held at Earls Court 17-19th June. Our booth number is M29 and we will be launching our free Lead-Free Defect Guide 2 (the first Guide proved very popular and all copies have been snapped up).

Feedback is always welcome, SMART Group remains YOUR Trade Association, run by members for our members. Many thanks for your continued support. Mike Judd

PS Comment on *smart-e-link* received from a member

"This forum has been and always will be, for me, an incredible resource. Once again thanks to everyone for your answers and to the link"

## SMART Group South Africa invests in the future

SMART Group South Africa is offering South African University's Electronics Departments the opportunity to attend a unique learning experience by offering them free places at each of its upcoming April SMART Group Electronics seminars entitled 'Manufacturing Process Improvements'.

Steve Eglinton, Chairman said, "A key aim of SMART Group SA is to educate and improve the knowledge of our Electronics Engineers, this is a great way of reaching the people who will shape the future of the electronics industry within South Africa".

The seminar program "Manufacturing Process Improvement and Optimisation" will run in Cape Town, Midrand and Durban, with world class speakers from Europe and the USA. It is attracting excellent numbers of delegates with most of the major companies in SA represented.

## Stack/Package On Package Assembly Workshop

"Next generation for design & assembly engineers to scream about"

Thursday 1st May The Oxfordshire, Thame

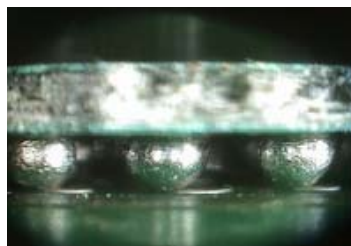
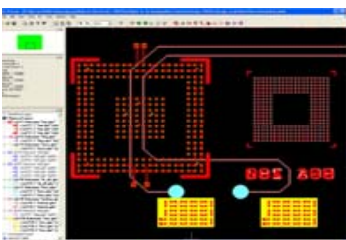
SMART Group Package on Package and STACK Die workshop will feature many different design, assembly, rework and reliability issues with these packaging systems. Don't wait till they hit your shop floor! They are in production today. This is a joint SMART Group event with IMAPS.

### Book today

[www.smartgroup.org/pdf/popassembly.pdf](http://www.smartgroup.org/pdf/popassembly.pdf)

### Workshop table top flyer

[www.smartgroup.org/pdf/tabletopspace.2004.pdf](http://www.smartgroup.org/pdf/tabletopspace.2004.pdf)





# Microbus

## Company Background

Formed in 1981, initially as a design consultancy, Microbus started manufacture of its own single board computer products in 1986. These boards were supplied to OEMs and designed into products in the military, medical, industrial and telecommunications markets for applications requiring 24 hour, 7 day a week operation.

Microbus was developed by buying the assets of its In-vehicle Computing technology from Xyratex (formerly an IBM company). IBM had been in the early stages of developing an In-vehicle Computer and had defined the market standards; at that time Microbus was a supplier to the project from its OEM boards division. Building on the work done by IBM, Microbus used its extensive experience and technical expertise in the field of rugged PC computers to develop the range of In-vehicle Computers it sells today.

Since 1999, Microbus has had exceptional success in its initial target market; the UK Emergency Services. Many Police and Fire services now rely on Microbus for their In-vehicle Computing. The largest single deployment in the World is believed to be London's Metropolitan Police Force with 1,500 Microbus In-vehicle Computers. This tender was won in 2003 after an extensive evaluation process by the Met, encompassing both UK and international suppliers of In-vehicle Computers. The computers contribute to the safety of the officers and enable the Met's officers to perform millions of Police National Computer (PNC) checks a year directly from their vehicles, greatly increasing efficiency.

In 2002 a contract was won to supply London Ambulance Service NHS Trust (LAS) with In-vehicle Computers. Now installed in



BMW Demonstrator with technology inside. Installations in vehicles including helicopters and coastguard boats

500 Ambulances and Paramedic response cars, this deployment assisted LAS in achieving its target call response times and increased efficiency in life and death situations.

In 2000 Microbus started to supply Dial a Cab with 2,000 In-vehicle Computers for its Black Cab Taxi service in London. Deployed for over five years, this is still one of the most advanced taxi systems available, with integrated swipe card and printer facilities.

Building on its pre-eminent position as the number one supplier of In-vehicle Computers in the UK, Microbus has expanded into the International market. With its strong background in technical excellence and support, contracts have been won in Sweden, Belgium and Italy. Microbus is a dedicated designer and manufacturer of In-vehicle Computers. With the advent of digital radio networks the uses

of these computers are growing rapidly. Microbus engineers work closely with the companies supplying the radio networks and data enabled applications. For example, the Airwave project over TETRA, pioneered in the UK by Lancashire Constabulary and Lancashire Fire & Rescue Service has proved the success of the Microbus In-vehicle Computers with this type of network.

Microbus computers are used for many applications and across a wide number of industries. A typical application is Automatic Number Plate Recognition (ANPR) Systems. ANPR is used extensively by the police forces in the UK and increasingly so in Europe. Microbus is the leading supplier of In-vehicle computers to this market. In addition to Emergency Services they are used in such diverse applications as Flight Refuelling Bowsers and Bus Lane Enforcement Systems.

## Visit to Microbus

I was grateful to Steve Lewis, Sales & Marketing Co-ordinator and Julian Gilbert, Quality Manager, for the tour of the Microbus facility in Loudwater near High Wycombe. The company are active members of the SMART Group, attending events and participating on *smart-e-link*. In fact, Julian was at our recent Conformal Coating day, as this may be a future requirement for a new product. He also spoke highly of the usefulness of the link.

The company is still located on the original site where it was formed in 1981 by Ed West & John Evans. It now employs around 70 people in sales, marketing, engineering and production, despatch, service, repair and offices, in a facility very close to the M40, with great views of the nearby hills. A third of the workforce is involved directly with production. The building is over three floors, so it's impressive how space has been utilised in this expanding business. The logic of the layout is impressive and the whole production area is ESD protected.

Microbus are ISO 9001 registered for design and manufacture, handling the

product through from concept to it going out the door. Every process is bar-coded to ensure full traceability.

The production area includes a DEK screen printer; two Mydata pick & place machines, a My12 and TP11 Hydra; a Heller 1500 forced air convection reflow oven; a small Electrovert/ATF wave soldering machine (with two pots-for lead or lead-free solder).

A Kerry Microsolve 450C cleaning machine (every product is cleaned); an Orbotec AOI, ERSA Scope & rework equipment; Shock, vibration and an ESQEC Test Chamber.

The company used Tin Technology as an outside source for process proving BGA's.

The main production board supplier is Prestwick Circuits, also Cortec in Canada and for prototypes Garner Osbourne.

Although some products are exempt for lead-free, the company hopes to eventually be totally lead-free. Julian commented "Lead-free has not been such a challenge as our mobile computer

products fall under the EU "End Of Life Vehicle" Directive which, at present, permits the use of lead solders for certain applications. The embedded side of our business, where we sell to OEMs, i.e. single board computers and peripheral boards are mostly lead-free.

"Other challenges have been obsolescent components. We had to redesign some boards to take new components because parts were obsolete. Long term supply is always an issue, particularly in the mobile side because of qualification for eMarking and after this the customer does not want it changed, i.e. fixed builds. To change something can be quite a challenge and the product will need to go through a complete re-qualification process.

About 40% of our output is exported, mainly within Europe with Scandinavia significant with their wireless technologies".

Thanks to Steve & Julian the time spent with me.

Mike Judd



Julian Gilbert & Steve Lewis

# SMART GROUP 2008 PAST EVENTS



**'Production Machine Selection Criteria Workshop'**  
January 22nd at the Oxfordshire



Peter Grundy Workshop leader with delegates.

**'LGA & QFN Design, Assembly & Rework Workshop'**  
February 27th at the Oxfordshire



Practical workshop area supporting the seminar

**'PCB Design and Manufacturing Workshop 2'**  
February 7th at Agilent Technology,  
South Queensferry, Scotland



Delegates at this Scotland event in collaboration with Northern UL Circuits Group

**'Cleaning Workshop'**  
March 12th at ITRI, St Albans



Speakers: L to R Graham Naisbitt (Gen3 Systems), Alan Partridge (Guyson), Oliver Manger (Zestron), Benoit Fillastre (MB Tech), Tom Madden (Gen3 Systems)

**'Rework & Repair Seminar & Table Top Exhibition'**  
February 21st at the Osprey Hotel, Nass, Co Kildare, Ireland



Speakers L to R Keith Bryant (Dage), Vincent Synnott (SMART), Grace O'Malley (iNEMI), Richard Boyle (Henkel), Rob Mullane + Moss Doyle (ATEK Training)

**SMART Group Conformal Coating Workshop**  
Tuesday, March 18, 2008, Oxfordshire Golf Club, Thame



Speakers: L to R Graham Naisbitt (Gen 3 Systems), Peter Woolcott (Chiltern Connections), Matt Hayward (Henkel UK), Dr Chris Hunt (NPL), Marie Kaing (Humiseal), Lee Hitchens (SCH Technologies)

## DIARY 2008

**April 17th**

Improving Product Reliability – Awareness Seminar  
South Queensferry, Scotland

**April 21st**

Manufacturing Process Improvement  
Stellenbosch, South Africa

**April 22-23rd**

Manufacturing Process Improvement  
Midrand, South Africa

**April 24th**

Manufacturing Process Improvement  
Durban, South Africa

**May 1st**

Package On Package, Stack Die Assembly  
The Oxfordshire

**May 13th**

AOI & X-Ray Inspection Workshop  
The Oxfordshire

**May 22nd**

From Silicon to Package Workshop  
Intel, Leixlip, Ireland

**June 10th**

A-Z of SMT & Conventional Assembly  
Leicestershire

**June 17-19th**

National Electronics Week Exhibition  
London

**July 2nd**

Thermal Management – Thermal Interface Materials  
NPL, Teddington

**September 10th**

Solving Counterfeit Components – The Problem, Identification & Testing  
St.Albans, Hertfordshire

**September 25th**

Environmental Directives Update Seminar  
Galway, Ireland

**December 4th**

Logistics in Electronics Workshop  
Cork, Ireland

Delegate comment at February Scotland event:

*“SMART Group events are always good value...  
...could potentially save ourselves thousands”*

## Hello Smarties



Above: Martin Morrell

Left: L to R Neil Stanton, Marion Quarrington & David Bruce

Due to the overwhelming uptake to the posting a number of months ago for people to join the Technical Committee – we have taken the opportunity to expand and strengthen the committee skills across the electronics industry by adding four more industry professionals to our ranks.

I am pleased to announce that as a result the SMART Group Technical Committee has been joined by Marion Quarrington, Martin Morrell, David Bruce and Neil Stanton.

"Marion is the NPI Manager at MTL Instruments Ltd, and will be well known to many of you for her postings on *smart-e-link*. Her background is grounded in the practical user's side of the industry with experience as a process engineer in the thick film industry, specialising in assembly techniques, as well as a process/production engineer and in management roles in general electronics industry, for both CEMs and OEMs."

Martin expands and strengthens our PCB Fabrication side with the majority of his career being spent working within the UK PCB industry and as a strong advocate of DFM. He has worked in fabrication in a variety of roles from quality to production but primarily within the technical area covering process control, research and development. He is Managing Director of Artetch Circuits Limited and will be known to many Smarties for his contribution to our conferences and seminars."

Neil is a Scheme Manager for BSI Product Services and is involved in the Management of Certification (e.g. Kitemark) Schemes and assessments on companies within the SMT supply-chain (OEMs, CEMs, Kitting Houses, Component Suppliers/ distributors, PCB fabricators etc.) on various schemes covering IPC-A-610, RoHS Compliance and IECQ standards. He also gets involved in seminars and work with Regulatory and Enforcement Agencies. He came to this role from a background in both conformal coating and solder materials. His role at BSI means that he is able to offer us up to date knowledge on RoHS, REACH and EuP amongst other areas.

David is Principal Production Engineer at Meggitt Avionics and in the course of his career has worked in three of the key geographical areas for electronics (U.K., South Africa and China), through this he has been able to work in both CEM, OEM and across the spectrum of high value, high quality environments including telecoms, medical and aerospace. Having used the SMART Group in the past to learn and gain knowledge he now aims to get more involved and brings both a broad knowledge of electronics manufacturing and enthusiasm for all things related to electronics manufacturing to our future events. As always if readers have any suggestions or requests for future seminars or events, please don't hesitate to let us know.

Sue Knight Chairperson SMART Group Technical Committee.